

THE EFFECTS OF DROUGHT ON HOUSEHOLD FOOD CONSUMPTION: A CASE OF  
OKAHAUYULU AND EESHOKE VILLAGES IN ENGELA CONSTITUENCY,  
OHANGWENA REGION, NAMIBIA

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## **ABSTRACT**

The increasing of drought instances in Namibia has had a devastating effect on people's livelihood, particularly in the arid and semi-arid parts of the country. Faced with an increasing frequency of droughts, the local communities of Okahauyulu and Eeshoke Villages are constantly at risk of food insecurity, which exacerbates their food consumption during the times of drought due to their dependence on rain-fed agriculture. The study investigated the effects of drought on household food consumption, using a case study of Okahauyulu and Eeshoke Villages in Engela Constituency of the Ohangwena Region. The study was guided by the following objectives: to investigate and compare the household food consumption patterns during drought and non-drought periods; to explore the challenges that households faced in coping with the food shortages in the past drought; and to examine the coping mechanisms/strategies employed in instances of food shortages during the drought periods. A mixed methods approach, drawing on both qualitative and quantitative research methods was employed, which exposed the study to a rich data set. To meet the quantitative dimension, a total of 86 households were selected through stratified sampling and 14 participants purposefully sampled as key informants for the focus group discussion to meet qualitative objectives. The study exposed that during normal periods, households have adequate food to consume and they sell surplus food to cater for other household necessities. It is also emerged that, during trying times, households lack enough food and as such, they deviate from normal consumption patterns and resort to skipping meals. Moreover, the findings revealed that the main coping mechanisms employed included reducing the quantities of meals served, destocking livestock, seasonal migration by men to the *ohambo* (cattle post), salaried casual labour, basket weaving and extraction of Marula oil by females, reliance on the government drought relief food, and support from family, friends and community network ties. However, the study found that the coping strategies employed were not adequate to curtail the effects of drought on households' food consumption in the study area. Thus, evidence suggests the need for the government to install water tanks at every household so as to harvest water during the rainy season, excavate earth dams which can be lined with trampolines, provision of diversified drought resistant seeds, conservation agriculture, and capacity building of households through subsidized education.

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## **DEDICATION**

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## DECLARATION

I, **GABRIEL FANUEL MWANINGA**, herewith affirm that the work contained in this study is for the purposes of attaining my degree of Master of Arts in Development Studies. The write up is my own original work and that I have not used any other bases than those recorded in the reference or cited in the references. No part of this thesis may be copied, kept in any retrieval system, or transmitted by means of electronic, mechanical, photocopying, recording or otherwise without the prior permission of the writer, or The University of Namibia in that behalf. I, Gabriel Fanuel Mwaninga, further give the University of Namibia the right to reproduce this thesis in whole or in part, in any format, which The University of Namibia may deem fit, for any person or institution requiring it for study and/or research purpose; provided that The University of Namibia shall surrender this right if the whole thesis has been or is being published in a manner satisfactory to the University of Namibia which may deem it fit.



Gabriel Fanuel Mwaninga

October 2022

Date

## **LIST OF ACRONYMS**

<b>APA</b>	American Psychological Association's
<b>DEWS</b>	Drought Early Warning Systems
<b>FDG</b>	Focus Group Discussion
<b>FAO</b>	Food and Agricultural Organisation
<b>FCS</b>	Food Consumption Score
<b>FHI</b>	Family Health International
<b>GRN</b>	Government of the Republic of Namibia
<b>HH</b>	Household
<b>IFAD</b>	International Fund for Agricultural Development
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>KI</b>	Key Informants
<b>MAWF</b>	Ministry of Agriculture, Water and Forestry
<b>NGOs</b>	Non-Governmental Organisations
<b>NSA</b>	Namibia Statistics Agency
<b>SADC</b>	Southern Africa Development Cooperation
<b>SDGs</b>	Sustainable Development Goals
<b>SPSS</b>	Statistical Package for Social Science
<b>UNAM</b>	University of Namibia
<b>USAID</b>	United States Agency for International Development
<b>WFP</b>	World Food Programme
<b>UNEP</b>	United Nations Environment Programme

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background Information**

Development debates at both international and national platforms are increasingly becoming more and more dominated by agriculture, taking into consideration sustainable food production which results in food security. However, vulnerability and climate change in the broader spectrum are perceived as barriers to achieving sustainable livelihoods and food security. The Sustainable Development Goals anticipate that by 2030, food security and improved nutrition which are linked to the second goal of the Sustainable Development Goal (SDGs) - Zero Hunger on the agenda of the United Nations, are attained. Moreover, Zero Hunger continues to be one of the most urgent development problems in the world today. Estimates indicate that, in 2013, globally, almost 850 million people still experienced chronic hunger due to drought, and the most vulnerable people lacked adequate nourishment for normal physical development (Carpena, 2019). The study aimed to investigate the effects of household food consumption patterns as shaped by drought in Okahauyulu and Eeshoke villages in Engela constituency, Namibia, from the year 2004 to 2019. The 15 year period was considered adequate in coming up with conclusive evidence as far as the trends are concerned for carrying out an informed analysis of the effects of drought on household food consumption patterns in the study area.

The study further examined factors limiting coping mechanisms to drought in a rural agricultural set-up. Also, the study interrogated the effects of drought on households in drought prone areas and how this affects poverty alleviation efforts in Namibia. The chapter is structured as follows: background information of the study, statement of the problem, research objectives, significance of the study, limitations and delimitations of the study, ethical issues, literature review, research design and research methodology, and rationale, research questions, and ethical considerations. Secondly, the chapter discusses the conceptual and analytical tools that underpin the study.

## 1.2 Background of the Study

Drought is one of the most pressing developmental challenges in the world today. Concurrently, the changing climate appears to be larger than the on-going fight to end hunger. The frequency, intensity, and duration of droughts are expected to increase worldwide in the coming years, thereby threatening global and household food consumption. Nakanyete et al. (2020) proffer that drought is one of the significant natural disasters that affect various regions globally. It is further reported that, drought severely affected areas such as North-Eastern China, North Korea, North Ontario in Canada, Southern Australia, Angola, Botswana, Zambia, South Africa, Zimbabwe and Namibia are likely to experience drought (Angula & Kaundjua, 2016; Nakanyete et al., 2020).

Studies conducted by Yu et al. (2018) in North-Eastern China further indicate that drought had an effect on the household food consumption which resulted in sharply reduced crop yields, shortages of drinking water for about 33 million rural households and 22 million heads of livestock during the drought. Moreover, the protracted, extensive, extreme and incomparable droughts in recent years were described to have greater socioeconomic impacts, particularly on the households and the country in general. Yu et al. (2018) further established that the two 2-year major droughts in 1928 - 1929 and 1965 - 1966 caused more than one million deaths among the North-Eastern Chinese household. A prolonged and severe drought was reported to have caused a significant decrease in the household production of crops and had a serious effect on food supply and food security.

Furthermore, Yusa et al. (2015) researched about the effect of drought on household food consumption in Canada. The findings revealed that, drought is perceived as a pathway for increasing household exposure to injuries, air pollution, food, water and vector-borne diseases. The study further exposed that during drought, people at high risk of food insecurity are infants

and children, elderly people, the socially and economically disadvantaged, pregnant women, people with chronic diseases and compromised immune systems due to lack of balance diet. In Australia, Hanigan et al. (2019), researched the effects of drought on household food consumption and the findings exposed that there has been an increased incidence of suicide in rural populations of the country, particularly among male households and their families, due to drought which is representing 9% of the total deaths recorded. Moreover, Shikangalah (2020) opines that climate change is one of the greatest challenges that the world is currently facing and that during the twentieth century, the average temperature increased by at least 0.6°C and it is expected to increase further by at least 1.4°C in the 21st century. The changes in temperature and rainfall patterns impact on water resources, affecting socio-economic and biophysical environments, and hydrological cycles. This is due to their differential levels of exposure to climate risks as well as their limited adaptive capacity. The reduction in crop production is projected to increase by 50% (Republic of Namibia, 2011) due to drought induced by climate change. Moreover, the impacts of reduced crop yield result in decreased household food security, increased poverty and rural-urban migration for subsistence farming communities in Northern Namibia.

Additionally, in 2019, the impacts of climate change resulted in drought that severely affected areas such as North-Eastern China, North Korea, North Ontario in Canada, Southern Australia, Angola, Botswana, Namibia, Zambia, South Africa and Zimbabwe (Shikangalah, 2020). Africa has been recognised as most vulnerable to climate change, with impacts severely affecting poor communities in the Southern Africa Development Community (SADC) countries.

In Southern Africa, the drought has led to an almost complete lack of rainfall during the planting season (Shikangalah, 2020). Southern Africa has a highly variable climate with recurring droughts, an endemic feature of agriculture which is the resource base of most of the population (Brain, 2017). Studies conducted by Shikangalah (2020) and Nakanyete et al. (2018), described Namibia

as one of the driest countries in Africa that is prone to catastrophic events in which the households fight survival during dry seasons. Namibia is one of the most susceptible countries to the effects of climate change due to the aridity in most parts of the country. Events resulting from climate change such as droughts, drive most of the population to poverty when they occur. During the past three decades, the country recorded an extreme drought which led to the development of the National Drought Policy and strategy of 1997. Furthermore, the drought of 2012/2013 was thought to be the worst for the decade, as around 42% of the total population experienced food insecurity (Shikangalah, 2020). Predictions for the Namibian climate have shown that there will be a further drop in the amount of rainfall and that it will also be highly variable, leading to drier conditions and further water shortages as well as yields, coupled with a reduced food production from rain-fed agricultural activities.

Theorists such as Garmestani et al. (2009) postulate that resilience in the context of Okahauyulu and Eeshoke villages focus on the survival of short term and adaptability which focuses on long term survival. The theory encompasses the ability of the households to be able to adjust to changes in terms of response, coping or entrepreneurial capacity which is often used in place of adaptive capacity. Whereas Sen (1985) indicates that the capability approach understands how households cope and recover from droughts in order to escape poverty traps and make ends meet. Therefore, livelihoods were quantitatively measured in terms of households' capability and freedom with relation to socio-economic aspects. The majority of the northern part of the Namibia population relies heavily on subsistence farming which is prone to drought negativities. More so, drought has disproportionately negative effects on poor countries, especially Namibian rural areas (IPCC, 2018), which also has a high potential to put the subsistence agricultural sector at risk (Maharjan & Joshi, 2017).

### **1.3 Statement of the Problem**

Namibia Statistics Agency [NSA] (2014) reports that, Ohangwena region has 143 425 poor households, of which more than 12 925 poorer household groups are in Engela constituency and they are often susceptible in the face of drought induced by climate change in socio-economic and demographic terms.

Kaereho and Tjizu (2019) proffer that, over the years, there has been an annual decrease in the Namibian economy of up to 50%. Bank of Namibia (2019) also expose that the agriculture sector which constitutes 70% of the country's economy is negatively affected by drought as a result of climate change. The Bank of Namibia further indicates that Namibia has experienced a deepening economic decline of 1.7% for 2019, which represents a further worsening from an insignificant contraction of 0.1% in 2018, of which most of the subsistence farming was crippled, with minimum harvests, and some did not harvest anything from their fields. According to the Ministry of Agriculture, Water and Forestry [MAWF] (2019), the subsistence farmers experienced a poor harvest that showed a reduction from 53 percent in 2018 to 42 percent in 2019. This reduction in the harvest increased hunger among 370 000 people, mostly poor households, which makes them to be more vulnerable to drought.

According to NSA (2014), Ohangwena Region is one of the fourteen (14) regions of Namibia with a population of 245 446 people. Ohangwena Region is the second most highly populated region in Namibia, following the Khomas Region which houses the Capital City, Windhoek. The Ohangwena Region forms a long, narrow stretch to the South of the Angolan border. The region has 12 constituencies including Engela constituency. This thesis therefore investigated the effects of drought on households' food consumption in relation to the droughts that took place in 2004 - 2019 in Ohangwena region and in part cuticular Okahauyulu and Eeshoke villages. Major droughts affecting large portions of the country occurred far back in the 1930s and for an extended period

in the 1960s up to the 1970/71 season, which was declared the most devastating drought experienced to date in the Ohangwena region (MAWF, 2019). The effects of drought had significant impacts on the country's GDP, as the agricultural sector which is the back bone of the country's economy is susceptible to rainfall variability. The study was conducted in Eeshoke and Okahauyulu villages. The two villages have a combined population of 305 inhabitants from which a sample of 86 was drawn.

Given the importance of the Northern zone to the Namibian economy as a whole and the importance of agriculture to the inhabitants of Engela area, it was important to study and understand the specific effects of drought on food security. Okahauyulu and Eeshoke are among the villages that are negatively affected by droughts. Households of Okahauyulu and Eeshoke do not have other commercial activities in which they engage in to supplement their livelihood. Instead, they heavily depend on subsistence farming. These two villages are found on the flood prone area and their land type is more characterised by sandy and clay soils. Severe and prolonged droughts, flooding and loss of arable land due to desertification and soil degradation are reducing agricultural yields and causing crop failure and loss of livestock, which endangers rural and pastoralist households. Given the nature of the two villages, there is no available literature that focusses on the effects of drought on households' food consumption, specifically for Okahauyulu and Eeshoke villages.

#### **1.4 Justification of the Study**

Earlier scholars such as Angula and Kaundjua (2016) revealed that there is an increase of awareness on the seriousness of food insecurity and its effects on the long-term livelihood of households. However, there are no studies that empirically investigated the effects of droughts on households' food consumption at local and household levels in the study area. Therefore, the available evidence is critically scant as little has been done in investigating the effects of droughts on households' food consumption and coping strategies in achieving food security in Okahauyulu

and Eeshoke villages. This therefore made it necessary to have a study that investigates the effects of droughts on households' food consumption at local and households' level in the study area, to aid responsible organs and agencies in designing appropriate policies and programmes that are dedicated in alleviating food insecurity in the study area. Such a study can also help in planning and developing interventions of improving food security at local and household level. This background information was the motivation behind the current study that set out to investigate the effects of droughts on households' food consumption, using a case study of Okahauyulu and Eeshoke villages, Engela constituency, Ohangwena region, Namibia. The current study is in line with Sustainable Development Goal (SDG) number two, which advocates for zero hunger, thus emphasising on ending hunger, achieving food security and improving nutrition and promoting sustainable agriculture. It is also in line with the Food and Nutrition Policy for Namibia.

## **1.5 Objectives**

### **1.5.1 Overall Objective**

The overall objective of this study was to investigate the effects of drought on household food consumption in Okahauyulu and Eeshoke villages in Engela Constituency, Ohangwena Region, Namibia.

### **1.5.2 Specific Objectives**

The specific objectives of this study were:

- i. to investigate and compare the household food consumption patterns during drought and non-drought periods in Okahauyulu and Eeshoke villages; and
- ii. to explore the challenges that households faced in coping with the food shortages in the past drought period in Okahauyulu and Eeshoke villages; and

- iii. to examine the coping mechanisms/strategies employed in relation to the shortage of food during the drought periods in Okahauyulu and Eeshoke villages.

## **1.6 Significance of the Study**

This study provides critical information to the government and humanitarian agencies and all drought relief stakeholders on the best approach to assisting households to address challenges due to drought that is induced by climate change. This study also serves to provide pathways and implementation strategies for policy recommendations on the dangers of climate change which are critical for promoting development and how communities can build long term resilience.

The study further fills the gap that exists in literature and methodological approaches on drought that is induced by climate change and the vulnerability of rural-areas. Finally, the study serves to enlighten debate intricacies pertaining to drought and the plight of rural livelihoods among academics, policy makers and households practicing subsistence farming in Namibia.

## **1.7 Limitations of the Study**

Limitations are shortcomings that the researcher has no control over, and they influence the research findings. Such influences are beyond one's control and there is nothing one can do to avoid them. Limitations influence the methodology and conclusion of the research (Creswell, 2014). The limitation experienced during this study is that many household heads were not present and only children or household care takers were present, and they could not provide information in the absence of the household head's consent. The study was also affected by the impact of the COVID-19 pandemic. As a result of COVID-19, the number of people in a given gathering was reduced. This also impacted the number of participants expected in a focus group.

To ease the limitations above, the researcher clearly explained the purpose of the study to all participants before the actual data collection commenced and in this way, the researcher managed to get enough participants. The researcher presented the clearance certificate, consent form and permission letter from the Ohangwena Regional Council. Moreover, all COVID-19 protocols were explained and observed by all research participants and subsequently this allowed the process to start.

### **1.8 Delimitation of the Study**

The study looked at the effects of drought on household food consumption between the period of 2004 and 2019. The study did not extrapolate generalisations until the present time, for instance beyond the period of the study. The study was strictly confined to households and key informants such as the constituency councillor, the headman and faith-based organisations in Eeshoke and Okahauyulu villages, which suffered adverse impacts of drought induced by climate change and of which vulnerable livelihoods became susceptible.

### **1.9 Outline of the Thesis**

An outline of the chapters is offered to give the reader a synopsis of the thesis as a whole.

- Chapter One is a brief introduction of what the study comprises. Chapter one also focuses on the orientation of the study, statement of the problem, the objectives of the study, the key debates of the literature review, the significance of the study, the final aim of the study, and finally an outline of the different chapters.
- Chapter Two covers the literature review. It reviews some of the literature surrounding food consumption patterns and coping strategies established during drought periods in Eeshoke and Okahauyulu villages.

- In Chapter Three, the research methodology is outlined with regards to how the study was conducted and the procedures followed by the researcher.
- Chapter Four is the presentation of findings generated during field work.
- Chapter Five is the discussion of the findings and it compares the findings with the reviewed literature.
- Chapter Six outlines some conclusions and makes some recommendations based on the study and it is followed by a list of references and annexes.

## **10. Definition of Terms**

### **10.1 Drought**

Drought by way of definition by Nakanyete et al. (2020), is “an extended period of abnormal dryness due to below-average or badly timed rainfall that causes a pronounced decrease in forage yields relative to what is expected in an average year”.

### **10.2 Households**

A household is defined as a social unit that consists of a person or a group of people related or unrelated, who live together in the same homestead / compound but not necessarily in the same dwelling unit (NSA, 2014).

### **10.3 Food Consumption**

According to Ndzelen (2015), food consumption is an aspect that incorporates dietary diversity, which indicates the food eaten by a household over a specifically mentioned period of time. Food frequency provides information about the number of days in which a particular food group is eaten over a mentioned period.

#### **10.4 Food Security**

The term food security has been used over a time to mean different things. In this context, it refers to a situation that exists when all individuals, consistently, have physical, social and economic admittance to adequate, protected and nutritious food that meets their dietary needs and food inclinations for a functioning and sound life (Carpena, 2019).

#### **10.5 Food Insecurity**

Carpena (2019) defines it as a situation that exists when people lack secure access to sufficient amounts of safe and nutritious food, for normal growth and development and an active and healthy life. It may be caused by the unavailability of food, insufficient purchasing power, inappropriate distribution or inadequate use of food at the household level.

#### **10.6 Subsistence Farming**

Mathijs and Noev (2018) define subsistence farming as a form of small-scale agriculture in which farmers grow crops and raise livestock with the primary intention of feeding themselves and their families.

#### **10.7 Climate Change**

Ahmed (2020) defines climate change as the changes in climate that are observed over long periods of time, attributed directly or indirectly to human activities, and above that are caused by natural climate variability. However, according to IPCC (2014), climate change refers to any change in climate over time, whether as a result of human activity or due to natural variability.

## **CHAPTER TWO**

### **LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

#### **2.1 Introduction**

This chapter is a review of the existing literature which is related to the theoretical framework of the study on the effects of drought on household food consumption in other countries with almost similar situations as those of Namibia, particularly Okahauyulu and Eeshoke Villages in Engela Constituency, Ohangwena. Although much has been written on droughts in general, this study sought to bridge the gap in context specific research, in an attempt to critically examine the effects of drought on household food consumption in the two selected villages and how households cope with the adverse effects presented by drought. The chapter presents the historical background of drought as one of the life-threatening forces and its effects on household food consumption and livelihood adaptation. This study is guided by the philosophers of the adaptive cycle theory by Garmestani et al. (2009) and Amartya Sen's capability theory as complimented by Nussbaun (2003). The philosophers lay emphasis on the fact that in terms of adversities, change and capacity, households should be given an opportunity to make choices and decisions about and realise goals and objectives not limited to personal well-being. The present study therefore sought to investigate how the households in the research area made their choices and efforts to cope, function and adapt to change with food insecurity due to drought induced by climate variability. It is also worth noting that human activities that trigger droughts are the widespread of cutting down of trees for making homesteads and cooking purposes. These activities are common in the study areas and as such they can cause deforestation and enhance climate variability.

#### **2.2 Theoretical Frameworks**

This study employed adaptive cycle and capability theories. Adaptive Cycle Theory focusses on determining how the societies adopt to various changes which is a result of climate change. It

examines the dynamics of resilience to the socio-ecological system. Whereas the capability theory that Sen (1985) mentions in illustrating his approach, posits that those that are part of a more explicit list include many of the entitlements that are also stressed in the human rights movement: political liberties, freedom of association, free choice of occupation, and a variety of economic and social rights. And capabilities, like human rights, supply a moral and humanly rich set of goals for development, in place of “the wealth and poverty of the economists (Nussbaum, 2003). These two theories are crucial to provide guidelines on the effect of drought on households’ food consumption in Eeshoke and Okahauyulu villages since they focus on changes and adapting to new circumstances. They are detailed as follows:

### **2.2.1 Adaptive cycle theory**

Adaptation cycle theory was invented by Garmestani et al. (2009). The authors explained adaptive capacity as the system of actors to accomplish the system’s resilience; resilience being the amount of change that a system can endure without entirely collapsing. Resilience in the context of this theory focuses on the survival in the short term and adaptability focuses on long term survival (Garmestani et al., 2009). The theory also encompasses the ability of the households to be able to adjust to changes in terms of response, coping or entrepreneurial capacity as often used in place of adaptive capacity. This theory is relevant to the situation which requires modification as a result of shocks or surprises, whether unexpected or expected, without having to significantly compromise a way of life. Similarly, this theory was also reviewed by Sundstrom and Allen (2019), in which they redefined it as a capacity of any human system to increase (or at least maintain) the quality of life as individual members in a given environment or range of environments. Holling and Gunderson (as cited in Sundstrom & Allen, 2019), indicate that the idea of the adaptive cycle emerged from experiences with productive ecosystems that exist in temperate regions where

rainfall is unpredictable, although seasonally inconstant. It refers to the manner in which people act, bearing in mind their limited resources, when facing a threat to their livelihoods. Thus, the imbalances in exposure and the coping strategy of the households in Eeshoke and Okahauyulu villages in relation to droughts, the resilience discourse applies as a tool to analyse the households' ability to bounce back after a calamity which in this instance is drought. It is under this discourse that the theme of adaptive cycles theory is uncovered, which looks at how social or ecological systems change over time. The motivation of resilience thinking is that societies should understand why and how the systems are changing and find ways to cope and adapt with climate variability.

The theory enabled the researcher to identify groups that are likely to come out worse off when faced with a hazard, which helped to realise the best possible options in adversities (Perez-Orellana, Delgado & Marin, 2020). This research is based on adversities such as droughts in Eeshoke and Okahauyulu villages, which are part and parcel of agricultural systems in Namibia, and as such households should be resilient enough to overcome such challenges.

### **2.2.2 Amartya Sen's Capability Theory**

This theory was established invented by Sen 1985, and reviewed by Nussbaum 2003. The theory is fundamentally based on a 'people-centred' approach which puts human beings at the centre of phenomenon. The approach of this theory is established around the framework for the evaluation and assessment of individual well-being and social change in society, in this case, Eeshoke and Okahauyulu villages, where drought adversely impacted households' livelihood and left them more destitute and vulnerable to the effect of drought. This approach enabled the researcher to grasp how drought affected household livelihoods and factors limiting sustainable livelihoods in the study area. The capability approach further provides a framework for analysing and comprehending drought's impacts on households' food consumption from a human development

perspective that focuses on what people are actually able to achieve, and how policies can be changed towards expanding people's freedom. The base of this theory stems on capabilities and functioning in which households should be given an opportunity to make choices and decisions about their personal well-being.

In the context of this study, the capability approach refers to those physical activities (such as ploughing on the land and animal rearing) by the household that brought about measurable positive changes in their communities over time, i.e., activities that led to the creation of empowerment in terms of capacity building for the households to make decisions, and realise their objectives and improvements in the livelihoods of the household members. Livelihoods are categorised on an asset pentagon which is known to include labour, productive assets, human capital, social capital, and household relations (Nyankweli, 2012). Along with Nyankweli's discerning, assets are an important worth of a society such as Eeshoke and Okahauyulu villages. Once assets are depleted due to adversities such as the recurring droughts in the study areas, households need to endure change in order to avoid adversities such as drought that make them susceptible.

Therefore, the capability approach comprehends how households cope and recover from droughts in order to escape poverty traps and make ends meet. In the present study, livelihoods were quantitatively measured in terms of households' capability and freedom in relation to socio-economic challenges. It is on this fundamental reasoning that capabilities, like human rights, supply a moral and humanly rich set of goals for development in place of the wealth and poverty of the economists (Nussbaum, 2003). With this framework in mind, it enhances household resilience, reduces their vulnerability to drought, minimises food insecurity and poverty while contributing to the empowerment of personal dignity.

### **2.3 Household food consumption patterns during non-drought periods**

The non-drought period is referred to as a season with an abundant harvest in which households yield surplus on harvests, enough to sustain members for the entire year with maximum consumption. Studies conducted by Pouane et al. (2017) in Sub-Saharan Africa indicated that although Africa is considered as the hunger prone area, there were also some cases of obesities that were recorded. The World Health Organisation [WHO] (2018) also complement the findings of Pouane et al. (2017), as the WHO findings indicate that South Africa alone recorded an estimated 29% of men and 57% of women who are overweight or obese. The report states that being overweight and obese is linked to the availability of food and that people consume large amounts of food or as they eat as many times as they can in a day. The study further revealed that in all regions, obesity seems to grow as income increases, which have a negative impact on health and public health expenditures such as through ailments which include diabetes, heart disease, hypertension and some forms of cancer (WHO, 2018; Pouane et al., 2018).

A study conducted by Moomaw and Barthel (2019), established that the world produces enough food for its citizens during normal periods of precipitation. Nevertheless, food demand is only met in the collective, as there are some profound disparities in access to food across geographic regions and across the spectrum of incomes at both the household and country levels. Notwithstanding considerable efforts to combat global hunger, the report produced by the Food and Agricultural Organisation (FAO, 2018) indicated that in 2008, at least 1.5 billion people were consuming more food which contributed to them being overweight and obese during good years of rainfall, whereas 925 million people were recorded as undernourished in 2010. Although during the good rainfall seasons people had extra food to consume, the rise of overweight and obese people is dangerous as it provides new and unique challenges to households and governments as they strive to provide sustainable dietary sustenance to citizens. Moomaw and Barthel (2019) reported that little attention was given to obesity when hunger and under nutrition became globally prominent. Even though

developing countries are recoded with high rates of hunger, authors indicated that obesity is found to grow rapidly in all developing regions during the non-drought periods.

A research conducted by FAO (2018) in China, Brazil and Colombia to determine how households survive during non-drought periods revealed that China recorded an overweight rate increase from 10% to 15% in three years, while in both Brazil and Colombia, the figure hovers approximately at the 40% level as compared to a number of European countries.

Chege and Muthamia (2016) researched on the effects of drought on households' food consumption in Kenya. Their research found that the livelihood of households in arid and semi-arid lands depend on animal husbandry. Food consumption patterns during normal periods have been shown to fluctuate depending on the food security situation in a household. Chege and Muthamia (2016) further established that, during the rainy season, there was enough food for household consumption and the surplus was sold to cater for household necessities such as paying school fees and expenses related to getting medical attention. Additionally, during the rainy season, the pastoralists were also restocking as a way to recover the livestock disposed during the dry season.

#### **2.4 Household food consumption patterns during drought period**

Kinsey et al. (2018) conducted a research on the effects of drought during the 1991-1992 period on food consumption in Zimbabwe. Their study findings revealed that, the drought showed that food consumption was below what it used to be in other drought years. Moreover, food consumption was maintained partly through the government's drought relief programmes. Kinsey et al. (2018) also reported cases of changes in diets and reduced or rationed food consumption which results in households cooking a mixture of garden vegetables and small quantities of maize per kilogramme.

Their findings further revealed that people eat small amounts of food with insufficient nutritional content and drink a lot of water to complement their nutrition.

As a result of drought, it is expected that households experience changes on household food consumption. When Mutasa (2010) researched on the drought conundrum in Buhera and Chikomba Districts of Zimbabwe, it was indicated that subsistence agricultural households are made worse off by droughts because of the reduction in agricultural yields, which also decreased the non-market income. As a result, with regards to households employed as casual or salaried workers, whether in the agricultural or non-agricultural sector, labour income falls due to droughts. Overall, these results underscore the critical role that the market and the non-market incomes play in revealing why aggregate food consumption and nutrition decline. Poor household plan for food shortages both seasonally and for unexpected inter-seasonal events. Chege and Muthamia (2016), narrate that the change in dietary diversity, the number of meals consumed per day, and the frequency of food consumption across seasons was an indicator of how different seasons affected household food security and food consumption patterns.

Moreover, Moomaw and Barthel (2019) analysed the critical role of global food consumption patterns in achieving sustainable food systems and food for all. The findings revealed that, during drought periods, small and marginal farm size households are more affected than the large farm size households. They further found that, large size households are not much negatively impacted except for the curtailment in social expenditures, as they try to maintain their status by using their savings or borrowings. Moreover, the same study revealed that small size households reduce the consumption patterns since the total expenditure in a drought period is higher because of the higher prices they pay for few agricultural commodities purchased from the market.

To further understand the effect of drought on household food consumption, Ndubueze-Ogaraku et al. (2016) analysed the household consumption expenditure on selected staple foods in Nigeria. Their research findings revealed that as a result of drought, the household total expenditure is less than in a normal year in most of the food stuffs. The findings revealed that during the drought season, households consume food labelled as famine food, non-conventional food, referred to as food and fodder. It was also reported that in the context when food is easily transported to the villages, such extreme situations are rare. A reduction in expenditure becomes necessary but relatively easy and better credit facilities enable households to maintain their status with reductions or postponement of non-essential consumption. It was further reported that during drought periods, households vary their food consumption patterns in order for them to commensurate with the food scarcity (Ndubueze-Ogaraku et al., 2016).

## **2.5 Household challenges in coping with food shortages during drought periods**

Ngema, Sibinda and Musemwa (2018) accentuate that food security at the household level remains a major challenge in Sub-Saharan Africa and for many other developing countries, particularly those in Africa. Findings on the food consumption indicator and other indicators of food access such as terms of trade and price analysis revealed that Southern Africa faces the greatest food security challenges. There has been slow progress in improving access to food, sluggish income growth, high poverty rates and poor infrastructure, which hamper physical and distributional access. The increase in food prices leads to a decrease in access to quantity and quality food for households. Several studies conducted by Mutasa (2010) Ndlovu (2011), and Mallick and Raffi (2020) in Zimbabwe and Bangladesh noted that the drought relief food distribution programmes take too long to come to the household's rescue and that this is only targeting certain households that are regarded as most vulnerable. FAO (2018) and International Fund for Agricultural Development [IFAD] (2015), noted that the encounters of drought go beyond agriculture into

related sectors, thereby affecting major food supply chains and resulting in incidents of price spikes. This is because of the reliance of these sectors on agriculture for raw material so as to increase food production, which is needed to provide for the ever-increasing population.

However, Puoane et al. (2017) and World Food Program [WFP] (2018) argue that these actions, in the long run, weaken household resilience as they disrupt household assets and resources. For example, households resort to eating just once a day and as a result, they may suffer from malnutrition in the long run. This affects households' ability to work and engage in other livelihood activities to restore normal life.

According to Ngcamu and Chari (2020), the shortage of supplies, which dramatically increases food prices and substantial reliance on imports, is a critical challenge faced by the households to cope with the drought, which has a direct and severe effect on the more vulnerable and poor communities. Hence, a combination of the socio-economic and environmental issues has resulted in food insecurity which has led to crop failure, a reduction in production and diminished power generation, and thereby negatively impacting the well-being of the households.

Additionally, the studies conducted by Fagariba et al. (2018) and Ngcamu and Chari (2020), in Ghana found that in East Africa, specifically the Upper East Region of Ghana and in the Great Lakes Region, the availability and quality of water suffered as a result of drought, thereby affecting socio-economic activities such as agriculture which is the backbone of the country's economy. To date, various researchers have shown the adverse consequences of drought, for instance, a negative effect on unemployment as farmers lose their alternative sources of income as highlighted by Sutcliffe et al. (2016). It is reported that, female household heads, as the main income-earning members of the family, take responsibility for non-household production but they must also attend to household production such as child care and domestic chores (Mallick & Rafi, 2010; Fagariba et al., 2018). However, women face restrictions in their mobility outside the home and they tend

to be relatively disadvantaged in the labour market. This finding indicates that when a dry shock occurs, female-headed households reduce consumption of fatty products (e.g., cooking oils, ghee, meat) to a much larger extent than male-headed households, which is difficult for households to adjust in a short time period.

FAO (2018) confirms that in Namibia, the main staple foods (Mahangu and Maize meal) are available in most local markets, however, at higher prices than those observed at the same time in normal years. It was also indicated that some households do not receive food assistance from the government. FAO also stated that Sub-Saharan Africa faces the greatest challenges to cope with food insecurity due to slow progress in improving access to food, sluggish income growth, high poverty rates and poor infrastructure which hamper physical and distributional access.

Supporting this are Mutasa (2010) and Ndlovu (2011), who conducted studies in Bulilima, Mangwe, and Buhera and Chikomba Districts of Zimbabwe, and they established that an increase in illness was identified as one of the major effects of droughts and water stress, with 64% in Buhera and 87% in Chikomba, thus arguing that the desperation for food resulted in people eating poisonous fruits and drinking impure water from unreliable sources due to hunger. This resulted in their immune systems being weakened by changes in diets thereby making it easier for them to succumb to diseases that they would have otherwise fought off easily had they accessed enough nutritious food.

Droughts do not only impact household's access to food, but further compound the communities' problems with regards to water availability and accessibility. For example, 62% of participants in Chikomba claimed to have been affected by depleted water resources, thereby resulting in people walking long distances in search of water. Water is one of the key basic needs for both human and animal survival. Households indicated that when there is no rain, they do not have alternative means to get water. Households further stated that water accessibility is a huge problem as the

water table gets lower, which makes it difficult to produce their own food and for animal survival (Mutasa, 2010; Ndlovu, 2011).

In the same vein, Mutasa (2010) pointed out that some households indicated that lack of livestock is one of the challenges to cope with food shortages. Livestock such as cattle are regarded as a sign of asset and wealth. When there is a drought, one can use those cattle to trade with grain, or one can sell them and get money to buy grain and other necessities such as paying for school fees and as a means to get medical attention. Cattle are also used as draught power, and the lack of draught power is often taken as a contributor to the household's late cropping and poor yields, and overall susceptibility. Therefore, those households that do not own livestock remain susceptible to food insecurity whether in drought seasons or in seasons of plenty. Some households revealed that women also have challenges to breastfeed their babies due to shortages of food and eating unbalance diets, which escalated the rate of malnutrition among children. A sick person might own livestock and assets, but for as long as s/he is not fit enough to work in the fields, the person remains vulnerable to poor harvests, and will be heavily affected in drought seasons. Another challenge indicated is that of a widow or widower, with no livestock and having a limited asset base, looking after several other dependents, who are usually his/her orphaned grand/children, and at the same time lacking the necessary means to acquire agricultural inputs and pay for tillage labour (Mutasa (2010). A similar study was conducted by Rao (2017) and Carpena (2019) in rural Anantapur District of India, and reported that at least 10 cases of suicides in Anantapur District owing to failure of food acquisition and production in families have been reported.

Locally, an overview of the 2019 drought in Namibia as presented by Shikangalah (2020) revealed that because of reduced crop yields, households lost hope due to the vulnerability of the country's precipitation as the ecosystem capacity is negatively affected and it becomes unable to cope and adapt to climate change variability. Shikangalah also revealed that stock theft increased

dramatically, and this affects destitute families. In addition to this study, another study conducted by Nakanyete et al. (2020) about drought as a disaster in Namibia indicated that the death of livestock as a result of food shortages is a big challenge. The households find it a challenge to cope with the shortage of food as many human lives were lost during the 2019 drought, three people died instantly as the walls of the dug well collapsed. Moreover, at least 90 000 livestock were reported to have died of thirst, while one-third of the country's population was affected as the staple cereal production depreciated significantly. The country was also challenged to improve its early warning system. There is a gap between indigenous knowledge with conventional knowledge which makes it difficult to detect the early drought signs as communities are always caught by surprise.

Supporting the above findings, is another study conducted by Brain (2017) on drought coping strategies in Mutasa district of Zimbabwe, which exposed the fact that the shortage of food exacerbates the situation by encouraging women to engage in sex as an economic strategy for survival. The main challenges reported are related to access to food and water for household use, financial resources for medical attention, and purchasing other domestic necessities. Similarly, Chege and Muthamia (2016) studied the effects of seasonality on household food security and food consumption patterns of pastoralists in Kaijiado district of Kenya. The study established that, during the dry seasons, households lacked the capacity to access adequate food due to low food production, low frequency of food consumption, a smaller number of meals consumed and reduced nutrient intake among children. Seasonality had a significant effect on food security with the situation becoming worse during the dry season. In the same vein, Ndubueze-Ogaraku et al. (2016) pointed out that household food consumption patterns worldwide have been undergoing dramatic changes. As a result, households find it difficult to adapt to this change which results in an unbalanced diet and subsequently acute malnutrition among children, the old aged, as well as susceptible groups and adults.

Several studies conducted by Mutasa (2010) and Ndlovu (2011) in Buhera, Chikomba, Bulilima and Mangwe Districts of Zimbabwe established that households have to travel long distances in search of grain to buy; depletion of livestock as some are either sold or traded in exchange for grain; an increase in crime with livestock and grain being the main targets for theft; and poor crop yields as possible effects of droughts. In all the above communities of Zimbabwe, 3% of the respondents highlighted cases of husbands being left by their wives as the impacts worsened. The people mandated with compiling the lists of those who should receive assistance were often accused of favouritism and deliberately leaving out households that should be the true beneficiaries (Mutasa, 2010; Ndlovu, 2011).

Other studies conducted by Fagariba et al. (2018) and Kumasi et al. (2019) in upper east Ghana reported that lack of property rights of female small-holders did not permit them to have full control of farmlands to adequately implement appropriate strategies to adapt to the changes in climate. This was further compounded by the lack of access to markets which also made them more susceptible to climate change and variability, with regards to being financially resourced to cope and acclimatise to the change. Focus Group Discussions (FGD) participants in the upper area of Ghana acknowledged lack of early warning systems, animal feeds, and water for livestock in the dry season, veterinary drugs and unavailability of tools for afforestation and composting as some of the challenges bedevilling them, as well as the absence of adequate irrigation dams to cultivate crops in the dry season and for watering the livestock (Kumasi et al., 2019).

## **2.6 Coping strategies employed by households during drought periods**

Deprived people are not passive to the unexpected shocks as they plan strategies to tackle unusual, irregular or adverse situations for food self-sufficiency (Norhasmah et al., 2019). In this study, coping deals with an individual's ability to manoeuvre, absorb, accommodate, and recover from drought effects. As coping mechanisms, households employ various coping strategies during

drought periods. Coping strategies for drought refers to the manner in which households act within the limitations of existing resources and a range of opportunities to achieve various means (Brain, 2017). Brain (2017) further states that household coping strategies focus mainly on what the households do in the wake of disasters and these comprise of indigenous survival mechanisms and support from intra- and inter-household networks. Quannndt (2021) views coping with drought as the reaction undertaken by households to accommodate the effects of a shock, while others view it as a short-term survival strategy which is engaged in within the existing socio-economic context.

According to Ndlovu (2011), communities that have lived under drought situations for many years develop coping strategies to reduce the effects of droughts. These strategies include reductions in the number of meals, migration, institutional and social safety nets and the sale of assets such as livestock. These coping mechanisms are credited with saving lots of lives during drought induced food shortages and famines which are caused by other factors.

Another study which was conducted in 1974 and 1984 by Berlie (2018) on famines in northern Ethiopia found that although humanitarian aid was influential in saving people's lives, indigenous coping mechanisms were equally influential. Berlie (2018) confirmed that indigenous survival techniques and the collective efforts of the households themselves were instrumental in saving a greater number of people from death. This challenges the view of the communities as heavily dependent on outside help and not working towards safeguarding their lives. In contrast, they employ strategies to anticipate, prepare for, withstand and finally withdraw from the ambit of the crisis. Berlie's conclusions are in line with those by Kumasi et al. (2019) who claims that: "households often have the capacity to endure difficult years. Their mixture of crops and multiple sources of income, their kinship ties and community links of mutual support, and their food reserves and borrowing capacity can often see them through a bad spell.

Additionally, Mutasa (2010) showed that coping with droughts in communal areas requires perseverance and innovation. The communities put in place crisis anticipation measures that are important to safeguarding food availability and accessibility, at least within the households' own means. For example, from the recounted experiences of previous droughts, coping was drawn from the cultivator's skill, with the staple crops being finger millet and pearl millet, and also the families' ability to maintain grain stocks in reserves for longer. Furthermore, Mutasa (2010) accentuates that adjusting consumption, particularly food intake, is an important food consumption coping strategy during the drought years. It can be in the form of reducing the number of meals, the quantity and quality of food, or switching from superior grains to coarse grains. In extreme conditions of famine, people have been compelled to resort to eating wild flora and fauna, i.e., forest leaves, tree barks, hunting birds and animals.

In Namibia, a study conducted by Pelema (2018) in Olukonda on farmers' gendered coping and adaptation strategies to droughts, points out that during the period of droughts when crop production or the household income decline, rural households draw on a number of alternative sources for cash and food, such as livestock sales, asset sales, informal transfer, and borrowing, in order to reduce non-food expenditures, rationing of available foods for both human and livestock consumption, and demographic adjustments. When livestock are threatened by droughts, the main option is to sell some animals, buy animal feed and/or move some animals to areas with available grazing such as Angola. Pelema further highlights that although the households sell their livestock, the government also assists communities with drought relief food and fodder for their livestock.

To support this, Matanga (2017) studied farming systems in Zimbabwe to determine how communities cope during the drought period. The study indicated that communities grow crops that are resistant to drought such as millet (rukweza) and rapoko and bulrush millet (mahunga). Moreover, Mutasa (2010) recommended short, medium and long season sorghum varieties which

reduce the risk of complete crop failure. Ndlovu (2011), also suggested that mixing many seed varieties of the same plant species can reduce the risk of crop failure because some varieties are early, and others are late maturing and they react differently to droughts.

According to Matanga (2017), a variety of ethno-science-based drought coping strategies are utilised in the Southern part of Mberengwa District in Zimbabwe. These drought coping strategies include multiple cropping, early planting, planting drought tolerant crops, basin tillage, transhumance movement, supplementary feeding, destocking, deep welling, barter trade, selling/hiring labour and begging. In coping with droughts using drought tolerant crops, households aim for the survival of at least one crop which they consume until to the next harvesting season.

In the same vein, a study conducted by Mishra (2017) among the Oraon tribe of Sundargarh District of Orissa, India, established that, during drought periods, the Oraons implemented a range of coping strategies to reduce their vulnerability to the calamities. The study reports the use of cultural and traditional rituals to appease such as the Lord Indra (the god of rain). They also reduce food consumption and they change their pattern of consumption such as avoiding breakfast or changing their breakfast to low cost food. Another coping strategy is that elders only eat three times a day while children consume at least four times a day. One of the strategies is that elders do not eat during the day but only drink traditional brews. The majority of people abandoned the agricultural occupations and engaged in alternative employment. Some people sold or pledged their lands and household assets to earn income to buy food while some migrated temporarily to other places for livelihood.

Moreover, Ndlovu (2011) established that households started to reduce the sizes of the food portions, skipped some of the meals, at times went for the whole day without food, were forced to

eat unusual wild fruits and vegetables, ate premature crops, borrowed from neighbours and provided labour in return for food. But when the situation deteriorated, mechanisms such as sending some of members of the family to other relatives, distress disposal of livestock and other productive household assets and migration were not uncommon. In another study conducted by Olaleye (2018) in Kenya revealed that during the droughts of 1994/95, farmers engaged themselves in various activities such as trading in small stores or running a taxi as well as horticultural activities. The increased involvement of the areas affected by drought in the cash economy and improved transport links with major cities of Kenya has opened up possibilities for migration in search of employment. Other coping strategies adopted by households in Zimbabwe during drought periods include gardening and selling vegetables, working as casual labourers, selling livestock and livestock products such as milk, and little use of credit was employed unlike in other countries of the world.

Ndlovu (2011) conducted another study in Bulilima and Mangwe Districts of Zimbabwe and found that households use drought coping strategies such as asset disposal, including the selling of livestock to earn an income during a period of drought to buy supplementary feed to save other cattle during drought years. Although the selling and consumption of small livestock, especially chickens and goats, was common to most of the households who had them, this coping mechanism did not significantly reduce vulnerability because of the little money they fetched on the market. Supporting this, Ndzelen (2015) indicates that buying and selling cattle is generally recognised as a common strategy that is used by men to cope with income fluctuations due to drought in many rural areas. However, a relatively large proportion of households in African regions often do not own any.

According to WFP (2018), various coping strategies such as generally large determinants of household food security. Other recommended coping strategies are the ability of the household to

diversify its sources of income, physical assets, income, consumption and levels of food production. Some communities engage in illegal actions like prostitution and child labour, and other actions like migration and begging to lessen the impact of food security in the short term. In addition, some of the coping strategies employed by households that can have a long run impact on food security include eating less preferred/expensive food, borrowing food, relying on help from friends and/or relatives and reducing the number of meals eaten in a day (FAO, 2018).

In a study for analysing the effects of coping strategies on household food security in Umbumbulu village in KwaZulu Natal, by Knight, Roberts, Aber, Richter and Size Research Group (2017) recommends employing a Coping Strategy Index (CSI) to analyse the coping strategies employed by households and as a substitution indicator for food access and to manage shortfalls in food consumption. However, contrary to the opinion of Ndzelen (2015), Knight et al. (2017) and WFP (2018) argued that short term coping strategies will affect household resilience, and the coping strategies employed by households in the Umbumbulu community indicated resilience to shocks in the long term. Most of the coping strategies employed by households were effective in mitigating the food insecurity situation. Some of the coping strategies, like reducing the number of meals to one per day were irreversible, meaning that they were detrimental to the livelihoods and future food security situation of the households.

A study by Wuni (2018) in Ghana proposed engagement in small businesses as a coping strategy during drought to buy foodstuffs for household consumption. Commodities commonly traded include fuel, wood, charcoal, household cooking ingredients, and edible plants. The study also revealed that during droughts, households also engage in some dry season gardening using water from available dams to engage in small-scale vegetable agricultural projects. Nuhu and Matsui (2019) propounded that to cope with drought, agro-pastoralists implement various strategies,

including increased livestock sales and movement/migration to distant pastures. Faced with crop failure, livestock sales offer an alternative to buffer consumption against income shocks. This potential of livestock sales declines, however, in the case of households in certain low-income and high-risk environments that face simultaneous asset and income shocks. Recommendations by Akong and Downing to improve agro-pastoral strategies include diversification in the livestock mix, improving livestock marketing and transportation, organising supplementary feeding, stabilising livestock prices, destocking, ensuring mobility, and establishing slaughterhouses and restocking schemes. However, effective implementation remains a challenge. Many agropastoral areas such as Makueni district continue to experience adverse effects from droughts, and local adaptive capacities are often insufficient, thereby necessitating relief food interventions, as was again the case in the recent 2008/2009 severe drought.

Several studies by Brain (2017) and Moomaw and Barthel (2019) displayed a variety of non-food related coping strategies and food-related coping strategies. Women's descriptions of non-food related coping strategies to food insecurity were categorised into five themes, i.e. cloth purchasing behaviours, reducing school-going children's expenditure, delaying the payment of bills, adjusting lifestyles and increasing cash and income earning. Food-related coping strategies were categorised into four themes, i.e. food stretching, food rationing, food seeking and food anxiety. Food stretching is a strategy of food insecurity that affects the quality of diet. Food rationing comprises of coping strategies of food insecurity related to the quantity of food available for the household's consumption. Food seeking is a strategy of acquiring food through socially unacceptable ways and food anxiety is a strategy that indicates households allocating money to buying staple food in order to prevent food insecurity. Each coping strategy showed a different level of perceived severity, that is, less severe, quite severe, severe and very severe.

IFAD (2015), FAO (2018) and WFP (2018) in their analysis of the state of food security, employed the Food Insecurity Experience Scale (FIES), a methodology developed by FAO (2018) for assessing the access dimension at the individual and household levels. The above study, used a Food Consumption Score (FCS) devised by a study conducted by WFP in 2012. The FCS uses the dietary diversity, food frequency and nutritional importance of food groups consumed as a substitution for food access. Findings on the food consumption indicator and other indicators of food access such as terms of trade and price analysis revealed that Sub-Saharan Africa faces the greatest food security challenges. According to Carpena (2019), coping strategies are the various activities that people resort to in order to obtain food, income or other services when they experience a disruption in their normal means of livelihood. Household coping strategies can be determined by the level of consumption to mitigate shocks, the ability of the household to diversify its sources of income, physical assets, income, consumption and levels of food production.

The impact of a coping strategy employed by a household on food security can be felt both in the long and short terms. Coping strategies employed by households that have a short-term impact on food security include eating less preferred/expensive food, borrowing food, relying on help from friends and relatives, and reducing the number of meals eaten in a day (FAO, 2018).

In their food assessment on livelihoods, Young et al. (2017), revealed that households commonly change their diets or reduce food intake when faced by food shortages which are considered as less drastic coping strategies, and these have no adverse effect on households' physical resources and cash. The authors also indicated that some people engage in immoral activities which have a negative impact in their life but still they do this as long as they get something to eat. A study conducted by Ndzelen (2015) in Tanzania complements the study by Young et al. (2017). Moreover, Ndzelen (2015) exposes that during drought periods, households resort to a series of

spontaneous coping strategies that are largely dependent on the intensity of food scarcity. Furthermore, households preferred relying on less preferred foods and reducing the number of meals eaten. These are immediate responses which are taken by households where they adjust their food consumption behaviour by opting for foods that are less expensive and less nutritious or reduce their calorie intake.

Earlier studies such as that of Kinsey et al. (2018) have also shown that households follow rationing strategies in the situation of food insecurity. Researchers reported households reducing number of meals per day as a coping mechanism. They indicated that women used to cut down on the number of meals consumed per day during food insecurity situations. Brain (2017), further showed that households restrict consumption in which adults resorted to reducing or skipping meals eaten in a day. Children eat first, and then house members that always try to work eat next, followed by those not trying anything will see if there will be left overs for them.

In a related study done by Rao (2017) in Anantapur District in India, it was reported that in some extreme cases people consume a stone called Talc, a soapstone like substance which is found underneath the soil by mixing it with Ragi or Jowar flower and this is cooked and it is believed to delay hunger. The study further revealed that people who could not migrate resorted to famine food, i.e. eating of wild leaves, weeds and animals. Rao (2017) also revealed that when food was in short supply, people used to ration it in the following order - children, old people and then adults, which is similar to what Brain (2017), found in a study conducted in Selangor and Negeri Sembelilan villages.

In Orissa district of India, the money lenders charge exorbitant interest rates often as high as 50% cent per month. Rao (2017) further indicates that firstly employed members looked for further jobs to increase their wages. This was followed by non-earning members in the household such as women, children and the elderly who were drawn into employment when the recourses lessened.

Mishra (2017) also found that employed members were drawn to more odd jobs during food insecurity periods in order to increase resources. A Non-Governmental Organisation (NGO) in Orissa formed local 'cash banks' and 'grain banks' where villagers contribute a fixed amount of money and/or food grains every month through which households can survive from during periods of drought in which members of the group can withdraw a sum of money or grain from the common fund. Thus, cash banks and grain banks reduce the poverty and vulnerability of the poor by increasing capital/ asset formation at the household level, improving household incomes, empowering women, and improving the accessibility of other financial services at the community level. Mutasa (2010) also reported that households get support from social networks as an important strategy to cope with rising food prices, illness, large falls in the sale prices for crops and rising input prices, thus it was less important in dealing with the main covariate shock, drought. The study further exposed that the majority of households that reduced their food consumption did so to address the problem of rising food prices, rising input prices and drought, among others. The use of cash savings was an important strategy that was commonly practised.

In a related study conducted by Mutasa (2010), it was found that households commonly employed strategies such as reducing meals, selling small ruminants and selling non-productive assets during mild periods. If the severity of food shortage increases, households start selling big ruminants such as cows and farm oxen. Mutasa further stated that the repeated failure of rainfall made households to consume the seeds reserved for growth during the rainy season. Experiences with drought taught some households to spread their grain reserves until they would have harvested their produce during the next agricultural season, arguing that the storage facilities should never be completely exhausted as it makes households to become food insecure.

Abid et al. (2020) conducted a study in Malawi. The findings of their study indicated that some households sell their farmland, livestock and crops. Furthermore, safety nets were the major

response to drought with the result of cheap labour and reduced food consumption being the second and third important strategies, respectively. Furthermore, Mutasa (2010), reported that with scientific rainfall forecasts not being provided on time, communities use various traditional ways of predicting the rainfall patterns. Some of the indicators they used was the density and spread of spider webs in the area. However, the fewer the spider webs in the area, this is a prediction of drought and this informed people to plan/handle their food accordingly. They also use the size of the ring / circle on the moon. The small ring predicts dryness due to the absence of rainfall, of which the households have to adjust their food handling and consumption. The communities also looked at the abundance of wild fruits in order to predict the rainfall pattern. They argued that the fewer the wild fruits, the more this predicts looming drought. These predictions enabled communities to decide what crop varieties to grow, and what other activities to engage in to provide the buffer against the impacts of droughts. The study further indicated that the most common way to cope with the drought was the gathering of wild fruits, namely the muchakata (*Parinari curatellifolia*), muzhanje (*Uapaca kirkiana* or wild loquat), and mutukutu/munjekenje/musekesa (*Piliostigma thonningii*) fruits. *Parinari curatellifolia* fruits were used to bake cakes, whilst their residue was mixed with boiled water to make a tea substitute, and the pulp was crushed to make porridge and mahewu – a common sweet brew. The seeds in the hard pod, known as shomhwe in Shona, were roasted, salted, and eaten as a snack. People also resorted to cooking mangos and papaya (often referred to as paw paw) as a show of desperation. As per the communities' predictions vis-à-vis wild fruits and possible seasonal turnouts, the fruits, especially the muchakata fruits, were abundantly available in 2008. Mutasa reported that a muchakata is one of the sacred trees in Zimbabwe and is also used for traditional rituals like mukwerera. Traditional rules discourage cutting or climbing the fruit trees and throwing stones or logs to get the fruits.

The people are commanded to pick only those fruits that would have fallen down. It was impressive to hear that even though the communities were facing serious food shortages, they still stuck with those rules even though some resorted to unorthodox ways of waking up very early in the morning to pick up the fruits using household lamps to provide them with light. There were other cases of people who slept underneath the muchakata tree and they had to wake up to pick fruits when light appeared in the wee hours of the morning (Mutasa, 2010; Ndlovu, 2011).

According to Ndzelen (2015), more than 50% of the population in people in Buhera and Chikomba received humanitarian aid from the government and donor agencies through NGOs as one of the coping mechanisms. FAO (2016) established that communities depended on trade and their social networks for survival. The most common items that were traded for grain included chicken, goats and cattle. The households only traded cattle when they were faced with extremely desperate situations. In addition, some of the community members admitted to selling some of their grain and livestock garments or some clothes were bartered for grain, as well as the selling of garden vegetables too to earn an income that enables them to pay for basic necessities such as medical expenses, paying for school tuition, and even buying clothing.

Ndlovu (2010) pointed out that other coping mechanisms include some activities such as brick moulding and selling firewood and buying maize flour (mealie meal) from the neighbouring countries. In Zimbabwe, communities employed a food-for-work policy which was implemented by NGOs and the government, thus leading to the rehabilitation or construction of roads and/or dams in which people were given food.

Meanwhile, some people in Chikomba survived on roasted animal skins in one of the years commonly referred to as *gore ragochanhembe* (the year of roasted hides), as well as feeding on roots and locusts. The study further established that other coping strategies employed by households during the 1947 drought was giving daughters away in marriage, through *kuzvarira* or

betrotting, so as to receive assistance from the family of the groom which was also common in both communities. However, parents would sit down and discuss first before deciding where to take their daughter. The same practice has been implemented in Bulilima and Mangwe Districts of Zimbabwe (Ndlovu, 2011). Furthermore, Mutasa (2010) states that adversity often builds responsible planning in the communities. Having gone through the drought seasons such as the 1991/92 and 1994/95 seasons, the communities have been working towards improving their capacity to cope with droughts although several challenges still stalk them. Livestock and crop diversification and off-farm employment proved popular in Buhera, while agricultural education, crop diversification and off-farm work shaped the future of Chikomba's coping capacity. In practice, poultry diversification was, however, lagging in both Buhera and Chikomba.

Mutasa (2010) and Ndlovu (2011) further indicate that communities also used gardening as their main source of income generation, with brick moulding and building also contributing to the household's pool of income. Other off-farm activities like selling roasted termites (*majuru* – a delicacy in the rural areas) and practising traditional healing also contributed to the well-being of the households, with people who consulted the traditional healers using livestock or grain to pay for the healers' services. Water harvesting techniques were used to collect water for the community gardens. The community and also the household have to dig deep water wells to reach the water table. They also opted to grow drought resistant crop varieties, especially indigenous crops such as sorghum and finger millet.

According to the study conducted by Angula and Kaundjua (2016) in North-Central Namibia, most households sell their livestock, rely on donations and gifts as well as using the barter system to access food. In Ethiopia, the findings of the study by Berlie (2018) revealed that households employ ample coping strategies, but the tactics used differ from household to household. However, the selling of big livestock, which could be taken as the major depleting of productive assets, was

common in Woina-Dega zone. Abid et al. (2020) showed that the selling of livestock is an important strategy for poor households to cope with climate-related shocks.

## **2.7 Conclusion**

The chapter presented a review of the current knowledge that is relevant to the study objectives as outlined in chapter one. The chapter looked at the effects of drought on household food consumption in other countries and how these relate to Okahauyulu and Eeshoke Villages. The chapter also discussed challenges and coping strategies employed by households in the study area and concluded with the gap of knowledge identified. The subsequent chapter discusses and explains the research design, techniques and the methodology utilised in this study to collect data which is necessary to address the problem statement and achieve the research objectives.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter presents the methodology adopted by this study. Research methodology refers to the tools and techniques used in the research process (Creswell, 2014). The chapter describes the research design, sampling techniques, research instruments and data collection procedure employed. The chapter further describes the data analysis techniques used, and ethical issues that were taken into consideration in the process of data collection, analysis, and the reporting of the findings.

This methodology was preferred for several reasons. One of the reasons is that because there has not been much that has been written on the subject to date, it was seen as beneficial to take a broader methodological approach in order to obtain more comprehensive data (and thus more useful data). The other reason is that the study combines various topics into one body of quantifiable data, thus making a broader methodological approach more appropriate. Subsequently, the researcher used both secondary and primary sources to obtain information relevant to this study. Secondary sources included books, journals and articles, and reports. The first level deals with the justification of the unit of analysis by providing the context in which the unit of analysis - what the study measures and operates. Second-level data-collection not only provided additional understandings but also enhanced the validity and reliability of the initial data collected.

#### **3.2 Research Design**

Research designs are strategies of inquiry within concurrent mixed method approaches, drawing on both qualitative and quantitative data collection and analysis that provide specific direction for procedures in a research design (Creswell, 2014; De Vos & Strydom, 2019). It describes a research

design as not only a work plan, but an overall plan from which a research work plan will flow Sahin & Öztürk (2019). This study is a qualitative by nature and the study adopted a descriptive case study design to illustrate the situation in which households of Eeshoke and Okahauyulu villages survive during the drought season. The study was informed by an exploratory paradigm, within a concurrent mixed method approach (qualitative and quantitative) of data collection and analysis.

### **3.3 Population of the Study**

Bell and Waters (2018) state that a population is a set of all elements, possessing one or more characteristics of interest. The population of this study is 86 households which comprise of households of Eeshoke and Okahauyulu villages practicing subsistence farming.

### **3.4 Sampling and Sampling Procedures**

Bell and Waters (2018) define sampling as a method of selecting a unit or a portion of the population to represent the entire population under study. Sampling occurs when the population is too large for the researcher to attempt to study all its members. The present study employed the stratified sampling method to account for quantitative aspects because the population has mixed characteristics, and there is a need for every characteristic to be proportionally represented in the sample. The sample size of this study was 86 households and the study used a 95% confidence level in order to ensure that the research errors were minimised. However, out of this sample, only 86 households who practise subsistence agriculture and have become vulnerable due to drought induced by climatic changes were selected using the stratified sampling method and these were qualified to participate in the study. The sample was grouped into subgroups based on relevant characteristics such as age range, gender, and occupation.

To meet qualitative objectives, the study used the purposive sampling method to identify relevant participants. Among participants, the researcher identified key informants who are knowledgeable

on the subject and those who allowed the providing of key information by virtue of their positions in the households. Key Informants (KI) are individuals who, as a result of their education, experience, or physical or social location in a community, have access to information about the operations of the society, the behaviours of people in the society, or their problem and requirements. The informants also included an agricultural extension officer, the Control Administrative Officer at constituency office, Faith Based Organisation (FBO) representatives, teacher, headman (community leaders) and Regional Councillor. The study targeted 20 KI and grouped them into four groups comprising of 5 participants. Due to Covid-19 measures, only 15 informants participated, and they were grouped into three groups comprising of five participants.

### **3.5 Data Collection Instruments**

The study employed three sets of instruments to collect data. For primary data, the researcher administered the interview guide. Längler and Gruber (2019) stated that questionnaires are considered to be the most reliable and frequently used data collection instrument. Längler and Gruber (2019) further indicate that administering the interview guides, as opposed to simply distributing questionnaires guarantees reliable answers and it is considered as accommodating, especially to the present study, for this approach provided an opportunity to seek clarity and obtain more details from the respondents.

Moreover, in-depth interviews with 15 Key Informants (KI) through focus group discussions were conducted. Interview guides and FGD guides with key informants and field observations were utilised to collect information from the selected households (respondents) that have at one time or the other experienced drought and might have impacted household food consumption. During the in-depth discussions, the researcher used a note book to record the responses. Lastly, the researcher also conducted direct observations as he walked through the two villages to ascertain himself with

the type of land that the households cultivate, the number of silos on the house, the existence of the kraal, economic activities taking place in the villages and general living conditions of the household. The instruments used are discussed below:

### **3.5.1 Interviews**

According to Meriam and Grenier (2019), an interview is a direct conversation between two or more people for the purpose of identifying information from one party to the next party. It involves exchanging of questions and answers between the interviewer (researcher) and the interviewee (respondent). Research interviews are qualitative by their approach and their results are analysed by means of coding and creating themes in order to simplify the important issues provided by the interviewee. In this study, the interviews were conducted by the researcher with identified 86 household heads who were available in their houses during the interview time.

### **3.5.2 Key Informants through Focus Group Discussions (FGDs)**

FGDs were organised with 15 KI (five participants from each village and one group with officials) whom the researcher believed possess rich information on the effects of drought on the household's food consumption in the study area. The KI consisted of one (1) Agricultural Extension Officer, one (1) Control Administrative Officer, one (1) Headman, one (1) teacher, one Regional Councillor and one (1) representative from the Faith Based Organisation. The KIs in this regard were the Constituency Councillor, headman, teachers, a representative of faith-based organisations and agricultural extension workers that are crucial constituents of the research process to collect data in this descriptive and exploratory study.

According to Nyankweli (2012), this approach enables the researcher to probe deeply into the effects of drought on household food consumption in order to obtain in-depth perceptions of the

way things are, why they are that way, and how the participants in the context perceive them to be. The participants were assembled to a meeting at the village square / meeting tree. All interview guides for the identified participants were conducted in Oshiwambo, being the most common spoken language in the area under study. Moreover, a focus group discussion guide with a list of topics to be discussed guided the discussions.

### **3.5.3 Observations**

Creswell (2014) posits that one has to record the behaviour as it is happening, and this is one of the reliable tools for data collection. Creswell further contends that the observation method is the best way to answer research problems. To sustain the latter, Längler and Gruber (2019) postulate that observation is the underlying method for understanding a phenomenon in which realistic observation is the instrument for researchers. Längler and Gruber further indicate that the observation process allows researchers to obtain essential information for drawing conclusions and making decisions. The observation method was used by the researcher where a note book and observation check list were used to record major observations. The observation checklist contained the following factors: type or nature of land, number and capacity of silos in the household, kraal whether it is being used or closed due to drought, and economic activities taking place other than mahangu fields. Observation enables the researcher to cross check some responses from the 86 respondents. For instance, if the respondent highlighted that the harvest of the previous season was able to sustain the house for the next season, then the researcher by observing the number and capacity of silos would confirm that indeed the number of silos and capacity can sustain the family during drought periods.

### **3.6 Research Procedures**

The researcher obtained permission to carry out this research from the Post Graduate Research Committee at the University of Namibia after the research proposal was presented, defended, and approved by the Faculty of Humanities and Social Sciences committee and an ethics clearance certificate was issued. The researcher then sought permission from the Ohangwena Regional Council to collect data from Eeshoke and Okahauyulu villages in Engela constituency, Ohangwena Region. The researcher identified themes that needed data population before administering the guided interview and conducting an in-depth interview with key informants. These themes guided the discussions. The researcher commenced with data collection during December 2020. Participants' and respondents' consent were sought before taking part in the study. Structured and semi-structured interview guides to collect both textual and numerical data on the household experiences and patterns on how drought induced by climate change impact their household food consumption were used.

The researcher used the interview guide complimented by the field notes, to collect the data. Furthermore, the researcher conducted follow-up questions in which the notes were recorded in the note book. Following the outcomes of the guided interview and in-depth interviews, the researcher further developed verification questions to obtain additional information on major discoveries and revelations from knowledgeable or concerned individuals and institutions. The identified 15 KI were assembled for FGDs with guided topics for discussions. The researcher also observed household structures and fields during the process of collecting data to ascertain himself with economic activities taking place in the study area. The discussions were held in Oshiwambo which is a native language in that area, especially for the households (practising subsistence farmers) who were not at ease with English. This was because the researcher is fluent in Oshiwambo and therefore did not need an interpreter. Climatic data for the 2004 - 2019 periods was sourced from

the National Hydrological Services Division in the Ministry of Agriculture, Water and Land Reform and Meteorological Services Department in the Ministry of Works and Transport. However, the absence of a rainfall station in Ohangwena region made it difficult to present tables with rainfall patterns, specifically for Ohangwena region. Subsequently, additional secondary data were sourced from the internet from sources such as Google scholar, journals, articles and books.

### **3.6 Data Analysis**

Data analysis is a process of converting data collected into a meaningful format in the context of the area under study with the aim of gaining useful information and coming up with conclusions (Creswell, 2014). The approach to data analysis of this study followed the mixed-method data-analysis process drawn on both qualitative and quantitative research methods.

#### **3.6.1 Qualitative Data Analysis**

The qualitative approach is one in which the inquirer frequently makes information claims based primarily on constructivist perspectives (i.e., the numerous meanings of individual encounters, meanings socially and historically built, with a purpose of building up a theory or pattern) or advocacy/participatory perspectives (i.e. Political, issue-oriented, collaborative or change oriented) or both (Creswell, 2014). Qualitative data obtained from KI used the guided interview through FGDs and evidence from observation notes were subjected to thematic content analysis. The researcher moderated the discussions during the FGD and used the interview guide to direct the process. All participants were given equal chance to participate and this accorded the researcher the chance to probe further on certain aspects. This method involves comparing, contrasting, and classifying data in order to draw meaning from it (Bell & Walters, 2018). The findings were grouped according to emerging themes and looked for consistencies and differences to make

comparisons and contrasts. Summaries of the narrations were used in the discussion in subsequent sections.

### **3.6.2 Quantitative Data Analysis**

A quantitative approach is one in which the investigator primarily utilises post-positivist claims for creating information (i.e., cause and impact thinking, decreasing to explicit variables and speculations and questions, utilisation of measurement and observation, and the trial of theories), utilising strategies of request, for example, experiments and surveys, and collects data on foreordained instruments that yield statistical data (Creswell, 2014). Quantitative research is characterised as social research that makes utilisation of empirical techniques and empirical propositions, where an empirical proposition is a descriptive statement on what is knowledgeable about the "real world" rather than what should be.

Quantitative data from the guided interviews were coded, processed, and analysed using Statistical Package for Social Science (SPSS). Frequency distribution and cross tabulation were used to compare different variables such as numbers within and across villages. Climatic data such as amount of rainfall and temperature in a period of study were analysed using Excel to generate graphs and bar charts showing numerical patterns of various aspects of changing climate.

### **3.7 Ethical Considerations**

This study was conducted within the following ethical guidelines. Academic researchers should respect the rights, privacy, dignity, and sensitivity of the population under study, and also the integrity of the institutions within which the research occurs. Längler and Gruber (2019), point that researchers are required to acquire necessary permissions from relevant authorities before a

study begins. This study was further guided and it complied with the American Psychological Association's (APA) ethical guidelines (2001). This study followed all ethical processes prescribed by the University of Namibia to ensure that all considerations relating to research ethics were addressed and obeyed. All participants were provided with the Participant Information Sheet that introduced the researcher and the study and supplied all the relevant information relating to the study.

An ethical clearance certificate was obtained from the University of Namibia's (UNAM) Ethical Clearance Committee and subsequently permission from the Ohangwena Regional Council to conduct the research in Eeshoke and Okahauyulu villages in Engela constituency was granted. After agreeing to participate in the study, participants were given the Informed Consent Form (Appendix 5) that contained all the information necessary for them to agree to take part in the research study (each participant was required to sign the consent form before participation in the study began).

Participants were informed that their consent and that participation in the study would be voluntary and that they may withdraw from the study at any time if they consider it necessary. The participants were assured of anonymity and that information provided would be treated with utmost confidentiality.

Besides, permission to access climate data was sought from the relevant offices such as the National Hydrological Services and Meteorological Services by way of sending an email describing the type of data needed and the periods for which data was needed. Paper records were destroyed by shredding and unfortunately there was no electronic data to be reformatted in order to ensure complete destruction after five years in line with best practices of the University of Namibia.

### **3.8 Conclusion**

This chapter outlined the details of the research methods used in conducting this study. The chapter provided detailed methodologies such as the research design, population and sample, and research instruments. Furthermore, data collection procedures and data analyses were provided and enlightened as to how the data were collected and analysed. Finally, the chapter outlined the ethical considerations for this study. In the subsequent chapter, the findings of the study are presented.

## **CHAPTER FOUR**

### **DATA ANALYSIS AND PRESENTATION**

#### **4.1 Introduction**

This chapter presents the findings of the research carried out on the effects of drought on households' food consumption in Eeshoke and Okahauyulu villages in Engela constituency of Oshana region. The research was carried out by means of structured and semi-structured guided interviews, FGD with KIs and evidence from the observation. Data provided the results of investigation and comparison of the household food consumption patterns during the drought and non-drought seasons. This chapter also provides findings on the major challenges faced by households in coping with drought. Finally, the chapter reveals the coping mechanisms /strategies employed by households during drought period.

#### **4.2 Households Demographic Information**

This section serves to provide the demographic information about the households such as the gender of the household head, age, marital status, number of people in the household, occupation, patterns or number of times cooked or fed during both drought and non-drought periods.

**Figure 4. 2.1 Gender of Household Head**

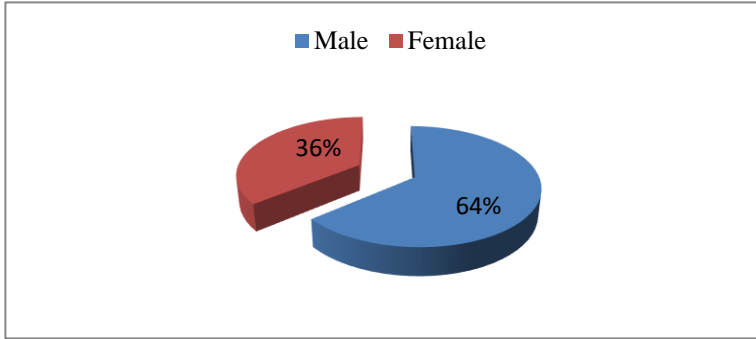


Figure 4.2.1 depicts that 36% of the respondents are male, while 64% are female.

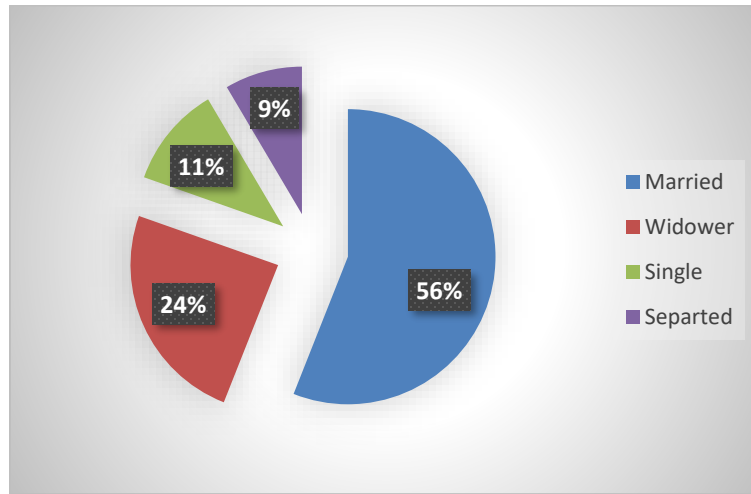
**Table 4.2.2 Respondents' age range and total number of respondents**

Male age range	Total number of respondents	Female age range	Total number of respondents
25- 31	11	31-38	4
32-38	4	39- 46	6
39-45	10	47- 54	7
46-52	9	55- 62	4
53-59	8	63- 70	5
60-66	7	71- 78	2
67-73	6	79- 86	1
		87- 94	2
<b>Total 55</b>		<b>Total 31</b>	

Findings in Table 4.2.2 show that the age range of households was between 18 and 94 years. The table above indicates that most of the respondents fell within the 35 - 70 years age group. Investigating droughts' effects on households' food consumption is an important enquiry, as age differences are often confronted with many more social and economic constraints. At the same time, droughts tend to increase older people's vulnerabilities. The study shows that 56% of the respondents were more than 60 years old, while 30-39 and 40-49 aged respondents contributed 11.1% each on the demographics respectively. The 18-29 group is small, and this might be because they can easily move to new places than the older groups and they can be attributed to rural urban migration which is predominant among age groups younger than 30 years. The appropriate foods may be unavailable for the older age, their mobility might be reduced and their dependence on others may increase. Droughts also negatively affect the traditional roles of older people, and perhaps more specifically their social positions, as communities' power and support structures are dismantled, leaving older people with less influence and power. According to the demographic information, the age range of households was between 18 and 94 years. Figure 4.1 illustrates that the majority of the respondents fell within the 35-70 years age group. This shows that the respondents were within the age group of people who would consider farming as a very significant activity and this therefore justifies the reasons for them to be more affected by droughts.

### **4.2.3 Respondent's Marital Status**

Participants were asked to indicate their marital status. The results are presented as follows:

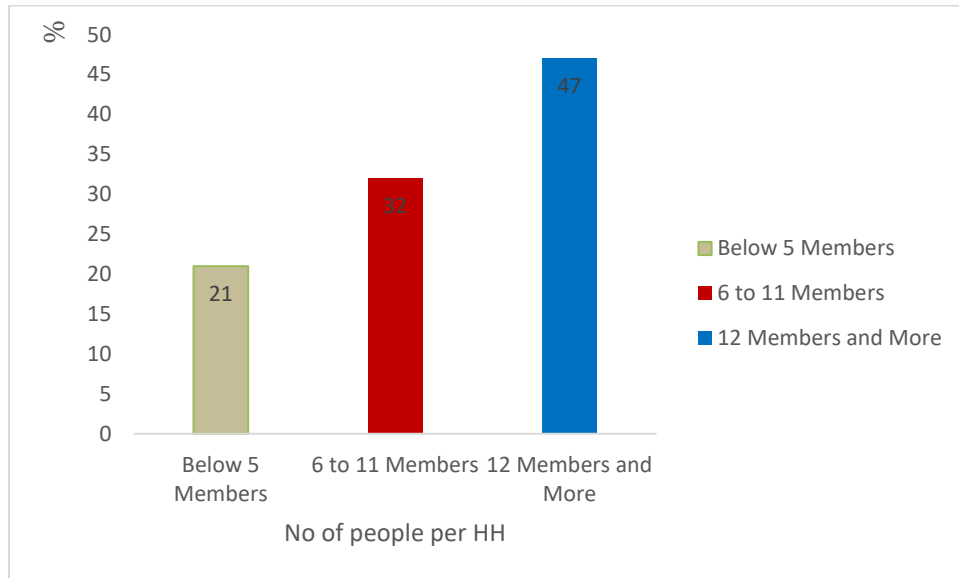


**Figure 4.2.3 Percentages (%) of Respondents' Marital Status**

Findings in Figure 4.2.3 indicate the marital status of respondents so as to give an understanding of the marital characteristics in the study areas. A total of 56 % respondents indicated their marital status as married, 24.4% are widowers, 11% are single, while 8.5% are separated and none of the respondents are divorced. Generally, the community is socially sound since most of the respondents are married and as such, they can assist each other in decision making and how to approach a hazard like drought. Moreover, most of the respondents indicated that, men migrated to cattle posts (*Ohambo*) with their livestock as well as to other places such as Angola and the eastern part of the region in search for grazing for the livestock. Ndzelan (2015) in a study done in Tanzania indicated that the phenomenon of females heading the households after the passing of their husbands may be an African cultural practice.

#### **4.2.4 Number of People per Household**

Participants were required to indicate the number of people per household. The results are presented as follows:

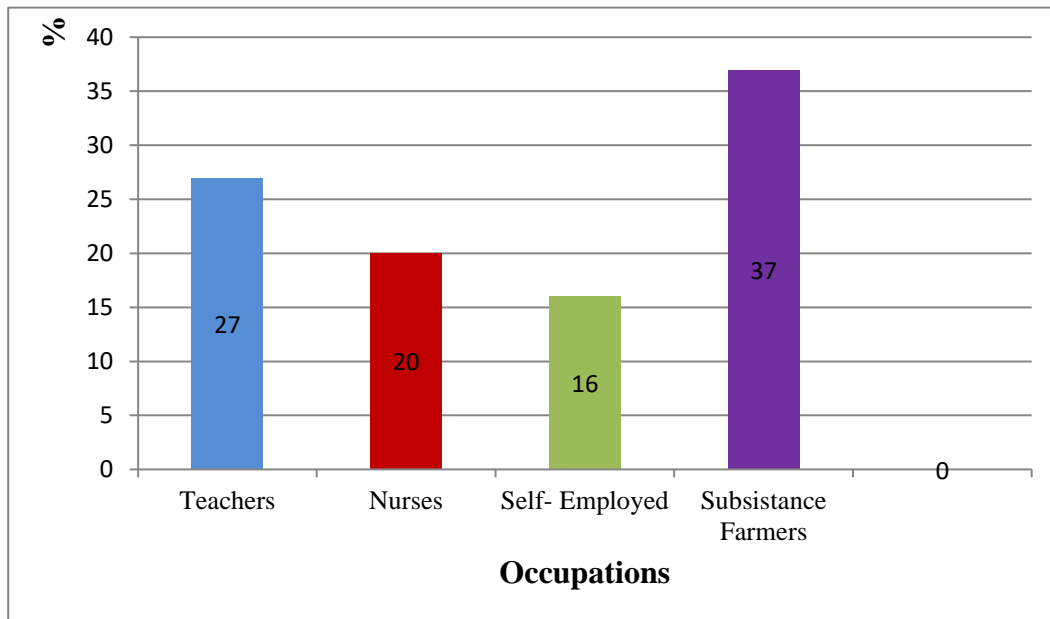


**Figure 4. 2.4 Number per household (%)**

Figure 4.2.4 reveals that 47% of the 86 households of the respondents in the study area accommodate more than 12 members, as it relates food insecurity as a problem in their household. A total of 32% of the the 86 households live in households with members between 6-11 members, and this relates to food insecurity as a problem in their household. A total of 21% of the respondents live in households with less than 5 members, as it relates to food insecurity as a problem in their household.

#### 4.2.5 Respondents' Occupations

Participants were required to indicate their occupations. The results are presented as follows:



**Figure 4.2.5 Percentage (%) of Respondents' Occupations**

Figure 4.4 portrays the employment structure of the respondents as acquired from the field investigation. Although the main activity of survival in the Eeshoke and Okahuyulu villages is primarily subsistence farming, results indicated that some of the households have additional occupations which enable them to get extra income to complement their household's food consumption. The data collected indicates that 37% are subsistence farmers with no other source of income or commercialised activities, whereas 27% of respondents have formal employment such as teachers, 20% are nurses and 16% are self-employed engaged in activities such as vehicle panel beating, selling of food and drinks at cuca shops, tailoring and selling of kapana (roasted meat).

## 4.3 Quantitative Analysis

### 4.3.1 Land Cultivation

Participants were asked to indicate the area of land they cultivate during normal, drought periods or no cultivation at all. The results are presented as follows:

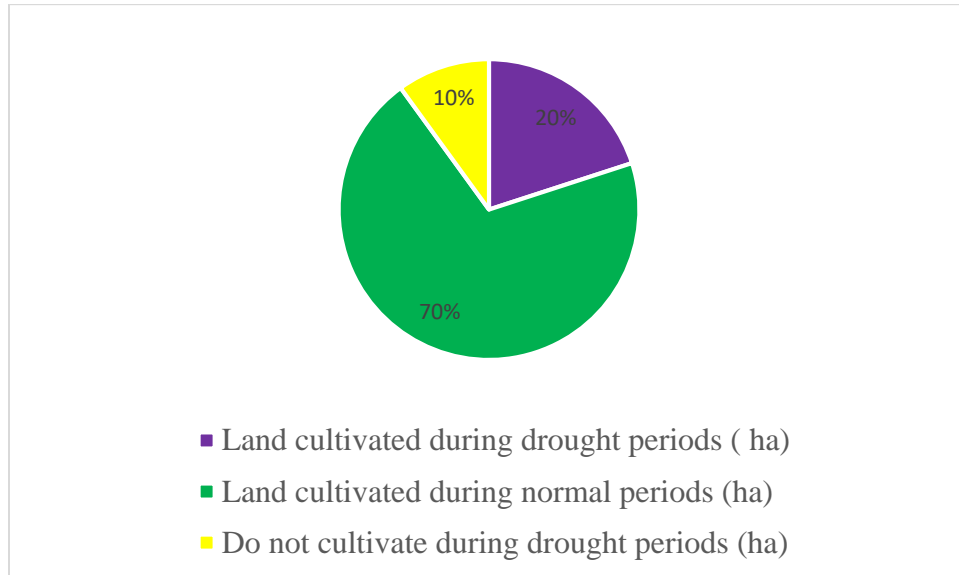
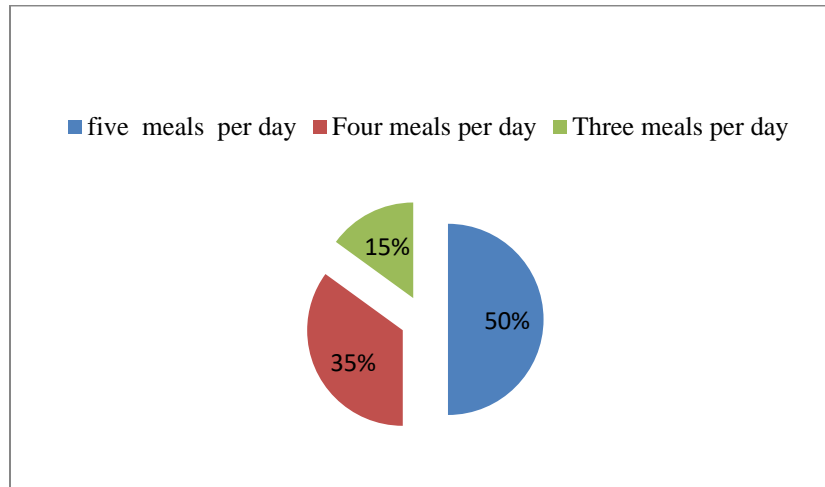


Figure 4.3.1 shows that during normal periods, the households cultivate 70% of the hectares, while during drought periods households indicated that they cultivate 20% of the hectares. Only 10% of the households indicated that they do not cultivate at all. The non-cultivation is attributed to sporadic rainfall reported by households in the study area.

### 4.3.2 Food consumption patterns during non-drought period

Participants were expected to indicate the household consumption patterns during drought periods.

The results are presented as follows:



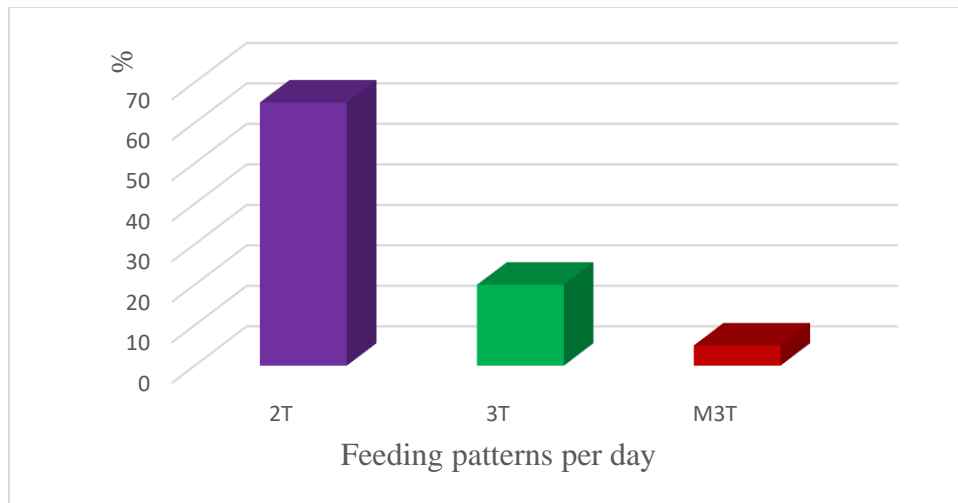
**Figure 4. 3.2 Food consumption patterns during non-drought period**

Figure 4.6 shows that a total of 50% of the respondents indicated that they eat five meals per day, 35% of respondents eat four meals per day and 15% of respondents eat three times per day.

#### 4.3.3 HH feeding patterns per day

Participants were asked to indicate the number of times they cook in their household per day.

The results are presented as follows:

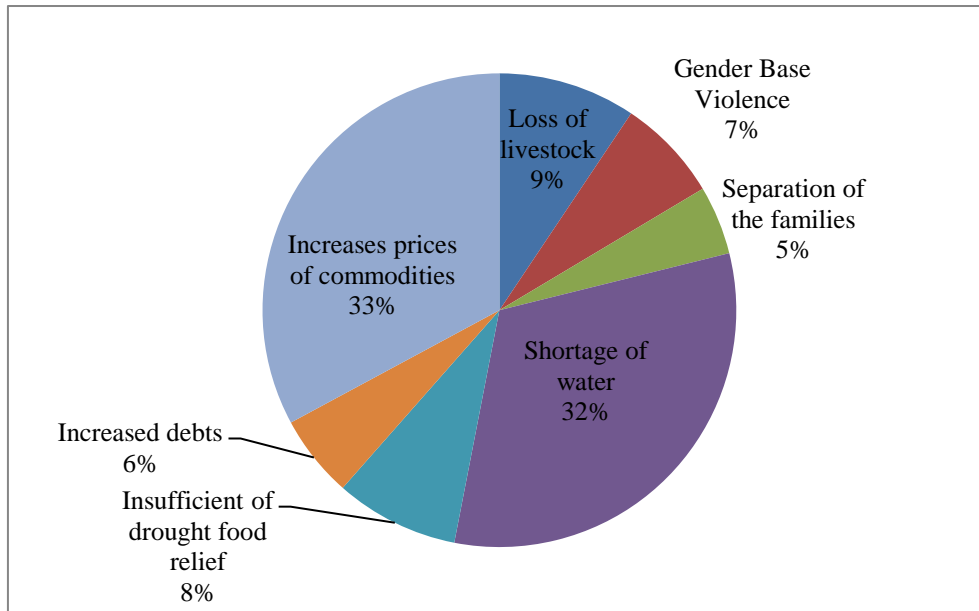


**Figure 4.3.3 Percentage (%) of HH feeding patterns per day**

Figure 4.3.3 depicts that a total of 72% respondents indicated that they eat two times per day (2T), while 22% of respondents eat three times per day and 6% of respondents eat more than three times per day. Respondents indicated that they had to cut their meals to two times a day so as to try and adjust their eating habits as a result of the drought.

#### 4.3.4 Households' challenges in coping with food shortage during drought

Participants were required to indicate the challenges they face during drought periods. The results are presented as follows:



**Figure 4.3.4 Challenges faced by households in coping with food shortages during periods of drought**

Figure 4.3.4 revealed that 33% indicated increased prices of commodities in the market as a major challenge. As a result, most of the households are subsistence farmers and they have no other commercial activities they engage in to generate income. While 8% of the households indicated that the food relief mitigation activities provided by the government are not enough. They also indicated that the supply of the food relief came late and that by the time it arrived,

it already found people in a devastated state. Furthermore, it was reported that, not everyone receives the relief food which is perceived as meant for those well connected to prominent people. Additionally, 6% of the households indicated that they have accumulated debts especially on the water bills. Respondents clarified that the increased debts are caused by the opportunity cost as they spend money on expensive food commodities. It further shows that 32% of the households indicated that the shortage of water is one of the challenges they face during drought period. Due to lack of rainfall, households indicated that their excavated earth dams and natural pans became dry, and again due to the non-payment of water bills for the water supplied by the Ministry of Agriculture Water and Forestry, their water accounts are disconnected due to high bills.

Moreover, 9% represents livestock loss being one of the challenges experienced during drought periods. Households further indicated that during drought periods, their livestock perished due to lack of grazing and water. Respondents indicated that livestock is one of the major assets whereby they can sell when they need money, or they can slaughter them when they need meat or any other household necessities. In addition, 7% of households raised that due to drought, stress and conflict in the houses increased. Household members start fighting due to the lack of food of which some indicated that men complain or accused their wives and children of not providing them with enough food. A further 5% of the household indicated that drought separated their families. Men migrate to the cattle posts in search for better grazing areas for the livestock, leaving the household responsibilities only to their wives, yet the wives are unemployed. Some men start new families at the cattle posts.

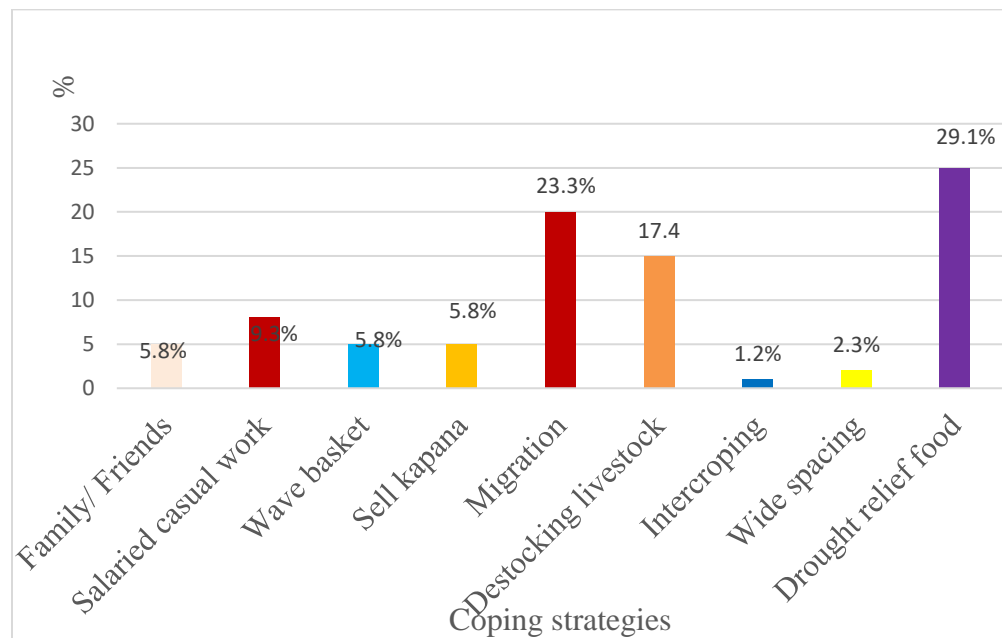
Other challenges indicated by households during the FGD with KIs include diseases such as malnutrition and hepatitis E. Respondents also highlighted that due to lack of food and a balanced diet, their children are malnourished and some contract hepatitis E. Some women

indicated that they find it difficult to breastfeed their babies as they do not have enough milk. It was also indicated that some household owners, especially men, commit suicide when their livestock perish due to drought.

#### 4.3.5 Coping strategies employed by households during drought

Participants were required to indicate the coping mechanisms employed during drought periods.

The results are presented as follows:



**Figure 4.3.5 Coping strategies employed by households during drought**

Figure 4.3.5 indicates that households use various coping strategies during drought to reduce the risk of food insecurity in the study area. Most of the households (29.1%) indicated that they received drought relief food from the government, 23.3% of the households indicated that they migrate to cattle posts. In addition, 17.4% households indicated that they destock their livestock to buy supplementary food or other animals and household necessities, and 9.3% of the households indicated that they engage in salaried casual work. Moreover, 5.8% of the households indicated having received support from family/friends, weave baskets and sell kapana. Although respondents

applied various coping strategies, it was observed that all the households did not change their cropping systems during times of drought. This could be simply because during times of drought there would not be any choices of change available as resources are scarce. Others indicated practising wide spacing and intercropping methods.

#### **4.3.6 Appropriate institution**

At this point, participants were asked to indicate the appropriate institution that provided them with drought relief food during drought periods. All respondents indicated that the government was the only institution they relied upon for food relief. Respondents were further asked whether the aid/assistance provided met their needs/expectations. All respondents indicated that the aid partially met their expectations, citing that the drought was serious, and assistance was needed more than it was supplied.

### **4.4 Qualitative Findings**

#### **4.4.1 Feeding patterns during non-drought periods**

This part of the study investigated the effects of drought on households' food consumption patterns during non-drought periods in Okahauyulu and Eeshoke villages. The age range of the participants fell within 18-94, of which the majority of the age range are within 35-70 age range and they understood the importance of subsistence farming. Only a few of the participants were either teachers, nurses, Constituency Councillor, agricultural extension officer and control administrative officer. The research introduced the topic to participants and how the discussion was going to be conducted. The participants were asked to indicate how many times they cook or feed the household members and their responses are presented as follows:

Kristofina Asser, female aged 56 years, Eeshoke village said:

We eat five times a day. Our eating patterns are characterised by morning breakfast, tradition beer (Oshikundu), lunch, afternoon snacks (millet or beans) and dinner.

Helena Elia, female 69 years, Okahauyulu village stated that:

During normal periods we eat as many times as we can. This is also the period when we yield good harvests enough for the household and we sell the surplus to cater for another household attention.

Tobias Silas, male 57, Eeshoke and Josef Haiduwa 47, Okahauyulu said:

We had sufficiently food and our eating patterns were characterised by morning breakfast made of shower milk, traditional beer (Oshikundu), lunch, afternoon snacks (beans) and dinner. We also restock livestock and sell some for additional household needs.

During key informant discussions, one participant said:

We eat a variety of food that constitute an adequate balance diet and people look happier and they have no sicknesses. (Tongeni Fillemon, 48 Eeshoke)

Based on the above findings, it is evident that during non-droughts periods, households have abundant food to consume. The food consumed are reported to have balance diets and feeding patterns were characterised by eating five times a day.

#### **4.4.2 Food consumption patterns during drought periods**

On the question of the times that the household cooks or feeds the household members during trying times. Two respondents said:

We had to change the number of times we eat per day; we also learn to reduce the portions of food we serve. We only eat two times per day, for example, we only eat lunch and dinner. (Saima Tobias, 52, Okahauyulu and Josef Paulus, 48 Eeshoke villages).

During the droughts we only eat two times a day, and sometimes they skip lunch.

(Evelina Lukas, 66, Eeshoke village).

During the key informants discussion one participant said:

We eat food that is not a balanced diet. We just eat for the sake of eating and life goes.

(Tomas Leonard, 50 Okahauyulu).

Based on the above findings, it is obvious that during droughts periods, households have adequate food to consume. The consumed food is not a balanced diet and feeding patterns were characterised by eating two meals a day and sometimes skipping meals. Moreover, from observation, it is clear that the way in which individuals, groups of people, and households interact with their natural environment are different. It is also clear that droughts affect people differently.

#### **4.4.3 Survival strategies employed by households during drought periods**

Participants were asked to indicate the coping strategies they employ during trying times. The majority of the participants said:

Our government is taking care of us by giving us drought relief food. The drought relief food is characterised by one 10 kg bag of maize meal, four tined fish and cooking oil, 750 ml per household. (Tuna Hilongwa, 52, Okahauyulu and Lavinia Silas, 47, Eeshoke villages).

As such, a few of the participants indicated that they migrate to nearby towns in search for salaried casual work to assist their families.

The above observation is a clear indication that the government is always there to assist the needy households during drought periods although the food provided was described as not enough, especially in households with a large family composition. While the majority depends on drought relief food from the government, a few of the households migrated to nearby towns in search of salaried work so as to complement their drought relief food.

During the key informant discussions, two male participants from Okahauyulu and Eeshoke villages said:

The majority of men have moved or migrated to cattle posts (*ohambos*) or to other constituencies even out of the country to Angola in search of better grass for their cattle. We also destock our livestock on a giveaway price, which is a very difficult exercise. (Simon Petrus, 62 Okahauyulu and Linus Samuel, 57, Eeshoke).

During the discussions, it emerged that in the absence of men, women are mainly responsible for weeding the crop fields. These may include paying for the tractors to plough the fields and paying for additional people to help the women to plough the mahangu field. Therefore, men are also expected to work and send remittances back home to assist women to deal with the reduction in land productivity

During the discussions one participant said:

In the past, the government introduced the food for work (*shanakulya oshanakulonga*) programme during the droughts. This programme helped us to at least have something to eat at home in times such as these. I do not know whether the so-called cash food for work (*shanakulya oshanakulonga*) programme is still existing. (Loide Hangula, 70, Eeshoke village)

According to Joseph Shiwa, 75, Okahauyulu village:

Since there is no water in the community, we men gather at the head men's house and agree where we are going to dig the next well in order to provide drinking water for our families and livestock.

This tells us, interestingly, that, households of Okahauyulu and Eeshoke villages established various survival strategies to circumvent the effects of droughts.

During the group discussion at Eeshoke and Okahauyulu, village participants gave the following accounts:

During the droughts we had to reduce the number of times we eat per day, we only eat two times a day, for example lunch and dinner, and sometimes we skip the main menu. We also learnt to reduce the portion of food we serve.

One woman during the discussion further stated that she must weave baskets in exchange for food and that they also get support from family and friends.

#### **4.4.4 Household challenges in coping with food shortages during drought periods**

This part of the study explored the challenges experienced by households in coping with droughts in Okahauyulu and Eeshoke villages. During the key informants group discussions, participants recounted the following challenges:

Water is life. During drought, we experienced shortages of water and in the process we increased our water debts. (Rauna Nghitomoka, 56, Okahauyulu and Salom Abisai, 48, Eeshokes)

According to Selma Simon, 43, Eeshoke and Simon Tomas, 56, Okahauyulu:

Drought relief food was not enough. Prices of commodities such as mahangu and millet had increased and only those with decent salaries can afford to buy them. As a result of

drought, our livestock died due to thirst and lack of grazing and human life was instantly lost.

During the key informant discussions some moderate participants stated:

Drought has just disturbed our life style. There are a lot of unreported gender-based violence cases in our houses. Due to seasonal migration, our husbands have abandoned their houses, leaving household responsibilities to their wives.

During observations of one of the village meetings and semi-structured interviews with household members of Okahauyulu and Eeshoke, the researcher found out that most participants spend time at the nearby cuca-shops as they were not in their houses. The researcher also observed carcasses and skins of dead livestock and some kraals that had been closed as the livestock had perished.

#### **4.5 Conclusion**

Based on the findings and discussions presented above, it can be concluded that during normal periods, households consume a lot of nutritious food and that they eat as many times as they can, whereas during drought periods, they reduce the quantities of food consumed and that they change their feeding patterns to two times per day.

It is also concluded that most coping strategies used in the study areas include drought relief food from the government, migration to cattle posts and nearby towns, and destocking livestock. In the next chapter, the findings of the study are discussed, linking them to the existing literature.

## **CHAPTER FIVE**

### **DISCUSSIONS OF THE FINDINGS**

#### **5.1 Introduction**

The study investigated the effects of drought on household food consumption using a case study of Okahauyulu and Eeshoke Villages in Engela Constituency of the Ohangwena Region. This chapter discusses the major findings of the study obtained through qualitative and quantitative methods which used structured guided interviews, semi structured interviews with household heads, FGD with KIs, and direct observation by the researcher. The findings of the study were discussed under the themes as provided in the research objectives and literature review.

#### **5.2 Household food consumption patterns during non-drought periods**

Households of Okahauyulu and Eeshoke villages expressed that during the non-drought season, they have adequate food to consume. The research found that 50% of the household of the sample size indicated that they eat almost five times per day. Their eating pattern is characterised with a morning tea, breakfast, lunch, afternoon snack and dinner. The indication of enough food is linked to the obesity or the challenge of being overweight among people, which has negative potential if they cannot control their eating patterns and the amount of food eaten at a given time as they have enough food at their disposal. The challenge of being overweight and obese was found by Pouane et al. (2017) and WHO (2018) in South Africa, in which they revealed that about 29% of men and 57% of women were recorded as overweight or obese as people consume a large amount of food or as they eat as many times as they can in a day. The overweight and obesity challenge was also reported by WHO (2018) and Moomaw and Barthel (2019) in China, Brazil and Colombia when they assessed the household patterns during non-drought seasons. Chege and Muthamia (2016) concurred that during the rainy season or non-drought season, households have enough food for

consumption and they are able to sell the surplus to cater for other household necessities such as paying school fees and medical attention services.

Although the reviewed literature indicated that during the non-drought season people experience challenges of being overweight and obesity, no record or information from Okahauyulu and Eeshoke villages indicated the presence of people with cases of being overweight or obesity, which indicated that they control the amount of food they consume per time and they consider balancing their diet to avoid being overweight. However, both findings of the previous literature and primary data from Okahauyulu and Eeshoke villages revealed that during the non-drought season, household eat many times, as they have extra food to consume. The minimum eating pattern indicated by Okahauyulu and Eeshoke households was three times per day, and this was revealed by the least number of the sample size which is 15%. A moderate number of households which constitutes 35% indicated that they eat at least four times per day.

### **5.3 Household food consumption patterns during drought periods**

Households of Okahauyulu and Eeshoke villages expressed that during the drought periods, they have inadequate food to consume and deviate from the normal feeding patterns. The research revealed that 72% of respondents of Okahauyulu and Eeshoke eat two times per day. Their eating patterns were characterised by considering the main meals only such as lunch and dinner. They further stated that:

We normally eat soft porridge as breakfast and brewing of traditional beer (*Oshikundu*) but we completely abolished them in order to sustain food in the houses. (Helena Elia, a 69 years old woman, from the village and also by Kristofina Asser, a 56 years old woman from the village).

Nevertheless, in Kenya and Zimbabwe, households resorted to eating just once a day. This was revealed by Chege and Muthamia (2016) and WFP (2018). Chege and Muthamia (2016) mention that inadequate food results in people getting malnutrition. Children suffer from hunger as mothers refuse to breastfeed them. The research found that 22% of respondents of Okahauyulu and Eeshoke villages changed their eating routines in which children eat four times a day, elders only eat three times per day and adults eat once per day or skip meals. The change of consumption patterns was also found by Mishra (2017) and Kinsey et al. (2018) when they conducted a research in India. In India, elders only eat three times a day while children eat at least four times a day in contrast to Okahauyulu and Eeshoke villages. Furthermore, Kinsey et al. (2018) found that households reduced their food consumption and changed their diets in which they resorted to cook a mixture of garden vegetables, eat small quantities of maize and complemented this by drinking a lot of water. Ndlovu (2011) and FAO (2018) found that households in Zimbabwe also reduce aggregate food consumption and nutrition as a result of a decline in agricultural production. Nevertheless, in Zimbabwe, households opted to seek for salaried work as a way to complement their food patterns.

Only very few households in Eeshoke and Okahauyulu villages which represents 6% of respondents eat more than three times per day. Some indicated that they cut their meals to two times a day. This indication is common in houses with working members who can afford to diversify their food consumption patterns during periods of drought. This corresponds with the findings of Ndubueze-Ogaraku et al. (2016) in Nigeria whereby households also reduced their food consumption patterns to commensurate with the food scarcity.

However, both findings of the previous literatures and primary data from Okahauyulu and Eeshoke villages exposed that during drought seasons, households cut their meals through rationing consumption to children to four times a day, and elders two times a day, so as to try and adjust their eating habits as a result of droughts. Studies conducted by Mutasa (2010) , Ndlovu (2011)

and FAO (2018) established that consumption patterns have reduced due to the prices of agricultural commodities purchased from the market which increased and this was also indicated by the households of the study area.

The study also found that in Okahauyulu and Eeshoke villages, drought did not only affect households' food consumption, but it had equally affected livestock as they died of hunger. Similarly, the dying of livestock was also experienced in Zimbabwe as reported by Ndlovu (2011).

Most households in Eeshoke and Okahauyulu indicated that the changes in food consumption patterns during drought seasons were attributed to low food production, as well as increased market prices due to inadequate food in the market. Chege and Muthamia (2016) in Kenya researched the effects of drought on household food consumption. Their findings correspond with those of Okahauyulu and Eeshoke, that, during dry seasons, households lacked the capacity to access adequate food due to low food production, low frequency of food consumption and a smaller number of meals consumed.

#### **5.4 Household challenges in coping with food shortages during drought periods**

Households face numerous shocks, most of which threaten their livelihoods and impact food consumption on their wellbeing. The research found that 33% of respondents of Okahauyulu and Eeshoke indicated that drought increased prices of commodities in the market which disturbed consumption patterns. Most of the households are subsistence farmers and they have no commercial activities they engage in to generate an income. Similar studies conducted by FAO (2018) and Ngema et al. (2018) in Southern Africa and Ngcamu and Chari (2020) in Ghana also established that households face the greatest food security challenges which are linked to major food supply chains and resulting in incidents of trade and price spikes beyond agricultural sectors. This results in slow progress in improving access to food, sluggish income growth, increases in

high poverty rates and poor infrastructure, which hamper physical and distributional access, thereby affecting households' consumption.

The research found that 8% of the households of Okahauyulu and Eeshoke villages indicated that the food relief provided by the government were not enough. They also indicated that the supply of the food relief comes late and that by the time it arrived, households were already in a devastated state. Furthermore, the households stated that not everyone in the receiving list of the relief food got food. Respondents further stated that it is perceived as only those connected to prominent people such as councillors and other officials who receive the food relief. Findings of this study correspond with studies conducted by Mutasa (2010), Ndlovu (2011) and Mallick and Raffi (2020) in Zimbabwe and Bangladesh, which exposed that the drought relief food distribution takes too long to come to the households' rescue and that this is only targeting certain households in key positions instead of the most vulnerable and deserving households.

Only very few households of Eeshoke and Okahauyulu villages, which represents 6% of the households, indicated that they have acquired debts especially on the water bills. Respondents elucidated that the increased debts were caused by the opportunity cost in which they opt to spend money on food commodities only. The research further found that the non-payment of the water supplied by the Directorate of Rural Water Supply and Sanitation Coordination in the Ministry of Agriculture Water and Forestry, resulted in their water accounts being disconnected due to high bills. During the FGD with KIs, it was found that water shortages for both human and animal consumption was one of the major challenges that households experienced. Although households of Okahauyulu and Eeshoke reported water accounts being disconnected, in Zimbabwe, Mutasa (2010) and Ndlovu (2011) revealed that households were walking long distances in search of drinking water for both humans and livestock, from contaminated and unreliable sources due to drought periods.

The research established that 32% of the households indicated that the shortage of water is one of the challenges they face during drought periods. Due to lack of rainfall, households indicated that their excavated earth dams and natural pans became dry. The fact that there are no rivers or springs in Eeshoke and Okahauyulu villages, means that they resort to digging wells to get water for human and livestock consumption. Respondents further indicated that, in the process of digging wells, the walls of the dug well collapsed and people instantly died. A study conducted by Rao (2017) and Carpena (2019) in India found increased cases of suicides due to persistent drought.

Nakanyete et al. (2020) reported that stock theft increased dramatically, and this affects the destitute families as a result of food shortages which is a big challenge, and in some cases some people instantly died. Three people instantly died as the walls of the dug well collapsed. The country is also challenged to improve the early warning system.

The research established that loss of livestock was indicated as a major challenge experienced by households in the study area. This notion was represented by 9% of the households who stated that during drought periods, their livestock perished due to lack of grazing and water. They further indicated that livestock is one of the major economic activities whereby they can sell them when they need money, or they can slaughter the livestock when they need meat or any other household necessities. The findings of this study correspond with the study conducted by Mutasa (2010) and Ndlovu (2011) in Zimbabwe, and Nakanyete et al. (2020) in Namibia. Their findings also revealed that livestock were reported to have died because of drought.

The research found that 7% of the households raised the point that due to drought, stress and conflict in the houses increased. Household members start fighting due to lack of food in which some indicated that men complain or accused their wives and children of not providing them with enough food.

It was further established that 5% of the households indicated that drought separated their families. Men migrate to cattle posts in search of better grazing areas for their livestock, leaving the household responsibilities to their wives yet the wives are unemployed. Some men started new families at the cattle posts.

Other challenges indicated by households during the FGD with KIs include diseases such as malnutrition and hepatitis E. Respondents also highlighted that due to lack of food and a balanced diet, their children get malnutrition and some contract hepatitis E. Some women indicated that they found it difficult to breastfeed their babies as they do not have enough milk. It was also indicated that some household owners, especially men, commit suicide when their livestock perished due to drought.

Ngcamu and Chari (2020), in Ghana, found that the quality of water diminishes as a result of drought, thereby affecting socio-economic activities such as agriculture which is the backbone of the country's economy. The shortage of supplies, which dramatically increased food prices and substantial reliance on imports are critical challenges faced by the households as they try to cope with the drought, which has a direct and severe effect on the more vulnerable and poor communities.

Mallick and Rafi (2010) found that women face restrictions in their mobility outside the home and they tend to be relatively disadvantaged in the labour market and they are only allowed to take care of the houses. The study further established the change of diet which is difficult for households to adjust in a short time period. Women refuse to breastfeed their babies due to shortages of food and eating unbalanced diets, which escalated the rate of malnutrition among children. Nakanyete et al. (2020) revealed that destitute families' death of livestock as a result of food shortages is a big challenge and people instantly died in an attempt to look for food and water for both human

and animal consumption. The country is therefore challenged to improve the early warning systems.

A study conducted by Brain (2017) in Zimbabwe exposed that, women engage in sex as an economic strategy for survival as they try to access food and water for household use, financial resources for medical attention, and they to purchase other domestic necessities. Mutasa (2010) and Ndlovu (2011) conducted a study in Buhera and Chikomba, and Bulilina and Mangwe Districts of Zimbabwe and found that households have to travel long distances in search of grain to buy; there was a depletion of livestock as some were either sold or traded in exchange for grain; an increase in crime with livestock and grain being the main targets for theft; and poor crop yields as possible effects of droughts. Husbands were deserted by their wives as the impacts worsened and in some cases there were instances of favouritism whilst compiling the lists of those who should receive assistance (Mutasa, 2010; Ndlovu, 2011). Additionally, Kumasi et al. (2019) in Ghana found the lack of property rights of female small-holders, which did not permit them to have full control of farmlands to adequately implement appropriate strategies to adapt to the changes in climate. Moreover, the lack of early warning systems, shortages of animal feeds and water for livestock in the dry season, veterinary drugs and the unavailability of tools for afforestation and composting were some of the challenges bedevilling them, together with the absence of adequate irrigation dams to cultivate crops in the dry season and for watering the livestock (Kumasi et al., 2019).

### **5.5 Coping strategies employed by households during drought periods**

Coping strategies are the responses of an individual, group or society to respond to challenging situations. The households of Okahauyulu and Eeshoke villages indicated that they used various coping strategies during the drought as a way of reducing the risk of food insecurity. The research

found that households relied on drought relief food from the government, donations, gifts, and, barter system from relatives and friends which constituted 29.3% of the respondents.

Similar studies conducted by Mutasa (2010) and Ndlovu (2011), Ndzelen (2015), FAO (2016) in Zimbabwe and Pelema (2018) in Olukonda, Namibia, established that households received humanitarian aid from the government and donor agencies through NGOs as one of the coping mechanisms. However, in Zimbabwe, many households which constitute 50% relied on donations and gifts as well as using the barter system as compared to only 29.1% of the households in Namibia. Although the government has provided drought relief food with the aim to help households cope with drought, participants indicated that the food provided was not enough. According to Joel Shikesho, a 47 years old male, Okahauyulu village, during the FGD with KIs said:

Most of us have up to fifteen (15) household members and only 10 kg of maize meal and two tinned fish cans were given and only after two months or so, before they would receive drought relief food. In the past the government introduced the food for work programme during the droughts, this programme really helped us to at least have something to eat, you work in exchange for food or cash depending on the choice opted by the households.

Ndlovu (2011), Pelema (2018) and Lolig et al. (2019) found similar coping strategies that households employ during drought periods. But, in Zimbabwe, the food for work programme targeted children under the age of five. In addition, income support was also provided to needy households in the form of assistance with school and examination fees, whilst seeds and fertilizer packs were also distributed before the subsequent season.

During the FGD with key informants, 23.3% of the respondents indicated that they migrate out of the constituency such as Okongo and neighbouring country Angola in search of better grazing areas for their livestock. The findings about the migration of households for better grazing for livestock concur with the work done by Ndlovu (2011) in Zimbabwe, Mishra (2017) and Rao (2017) in India, Pelema (2018) in Namibia, and Norhasmah et al. (2019) in Malaysia revealed that, during dry seasons, temporary migration of men to other areas in search of better grazing for their livestock is a common practice. With regards to migration, 9.3% of households cited temporal migration to nearby towns such as Oshikango and Ondangwa where they were employed as salaried casual work. The temporary migration of men to urban areas results in women being left alone to take care of the household needs (Ndzelen, 2015; Pelema, 2018).

The research further found that 17.4% of households indicated that they destock their livestock instead of watching them dying. Similar studies conducted by Ndzelen (2015) in Zimbabwe, Berlie (2018) in Ethiopia, and Pelema (2018) in Namibia also established that the selling of big livestock (cattle) and small livestock such as goats and chickens were the most popular coping strategy practiced by men to cope with income fluctuations due to drought.

Most of the respondents of Okahauyulu and Eeshoke households indicated that they cut unnecessary meals and only eat lunch and dinner. Furthermore, the respondents stated that sometimes they skip one main meal and feed children first and elders as well. Findings of this research correspond with studies conducted by Norhasmah et al. (2019) in Malaysia, Ndlovu (2011) in Zimbabwe, Nenzelen (2015) in South Africa, Mishra (2017) in India, and Pelema (2018) in Olukonda Namibia, that households cut down the number of meals during a drought period.

In times of adversity, households also rely on social support networks. Households of Okahauyulu and Eeshoke villages indicated that during drought periods they received support from family friends due to their kinship ties and community links of mutual support, and their food reserves can often see them through a bad spell. These include rights and obligations between members of the same household and with other wider groups with a shared identity such as a clan or tribe. The findings of this study concur with studies conducted by Ndlovu (2011) in Zimbabwe and Pelema (2018) in Olukonda, Namibia, which found that parents may influence strategic marriage partners for their daughters or sons into a relatively wealthy family so as to call on resources in hard times. Community members also assist those facing acute challenges.

During the FGD with KIs, it emerged that growing resistant seeds such as *mahangu okashana* N01 which grows dependent on the precipitation received was also one of the coping strategies practiced by households. Ndlovu (2011) in Zimbabwe also suggested that mixing many seed varieties of the same plant species can reduce the risk of crop failure because some varieties are early, and others are late maturing and they react differently to droughts.

The research found that women in Okahauyulu and Eeshoke villages weave baskets and other products such as *marula* oil and sells to the nearby local market to earn an income and complement their households' food consumption during drought periods. Ndlovu (2011) in Zimbabwe and Pelema (2018) in Namibia, also found that women are the first to diversify their livelihoods. They do basketry, process *marula* nuts and oil or sell their chickens, pigs or goats to raise money for food and other household commodities.

Mutasa (2010) indicated that in extreme conditions of famine, people have been compelled to resort to eating wild flora and fauna forest leaves, tree barks, hunting birds and animals, which was not indicated as happening in Okahauyulu and Eeshoke village. Pelema (2018) found that in

Olukonda, in Namibia, households practice informal transfer and borrowing in order to reduce non-food expenditures, rationing of available foods for both human and livestock consumption, and demographic adjustments. Contrary to other literatures and the findings of the study, Mishra (2017) indicated that for households in India, the use of cultural and traditional rituals to appease the Lord Indra (the god of rain), the strategy of the traditional healing and rituals to earn income was also revealed by Mutasa (2010) and Ndlovu (2011) as a coping strategy that is practiced in Zimbabwe. In addition to traditional rituals, the author also indicated that households engage in brick moulding and selling to earn income.

Olaleye (2018) found that some villagers in Kenya engaged themselves in various activities such as trading in small stores or running a taxi as well as horticultural activities, which were also indicated as some of the coping strategies in the Okahauyulu and Eeshoke village. Brain (2017) indicated a unique and unethical coping strategy in Zimbabwe in which some households engage in illegal actions like prostitution and child labour. Considering that this is an unethical practice, no respondent's responses indicated that it is also practiced in the area under study. Mishra (2017) and Derbile (2019) revealed that households formed local 'cash banks' and 'grain banks' at the community level where villagers contribute a fixed amount of money and/or food grains every month through which households can survive on at a later stage. Although respondents applied various cropping strategies, it was observed that all households of Okahauyulu and Eeshoke villages did not change their cropping systems during drought periods. This could be simply because during drought periods, there would not be any choices of change available as resources are scarce.

## **5.6 Conclusion**

This chapter provided the conclusions drawn from the findings of the study. The chapter also provided some recommendations that can be done to curtail some of the deficiencies that were

found. The next chapter summarises the contents of the study, provides the conclusion and also provides some recommendations that can assist the government and other interested stakeholders in addressing the challenges and coping strategies faced by the households of Okahauyulu and Eeshoke villages during droughts, and it gives a guide for future research that could be explored further.

## CHAPTER SIX

### CONCLUSIONS AND RECOMMENDATIONS OF THE STUDY

#### 6.1 Introduction

This chapter provides the conclusions drawn from the findings of the study and subsequently makes several recommendations to address certain factors that contribute to household food consumption, thereby making households vulnerable in the face of drought and thus being unable to cope with adverse effects of drought.

#### 6.2 Conclusions

The purpose of the study was to investigate and compare the effects of drought on households' food consumption patterns during periods of drought and non-drought periods in Okahauyulu and Eeshoke villages. Drought is often one of the devastating but least understood weather phenomena, largely due to its slow onset and accumulating effects on households over time. Based on the findings and discussions from this study, it can be concluded that during non-drought periods, households of Okahauyulu and Eeshoke villages demonstrated having adequate food to consume for almost five times per day. The obesity or overweight among households is an indication of enough food for the households and selling the surplus to cater for other household necessities such as paying school fees and medical attention services.

But where there is drought, households of Okahauyulu and Eeshoke villages expressed that they deviate from the normal feeding patterns. The consumption patterns were characterised with considering main meals only such as lunch and dinner. Nevertheless, in Kenya and Zimbabwe, households resorted to eating just once a day. It can be concluded that, inadequate food results in children getting malnutrition and mothers refuse to breastfeed their babies due to hunger induced by drought.

Then, in trying times, households resort to cooking a mixture of garden vegetables, eating small quantities of maize and complementing their feed by drinking a lot of water. Moreover, households opted to seek for salaried work to complement their food consumption. It was established that households with working members diversified their food consumption patterns during times of drought. The study established that households' reduced consumption patterns due to the prices for agricultural commodities purchased from the market increased and households could not afford them. As a result, drought equally affected livestock as they died of hunger and thirst.

However, households face numerous challenges or shocks, most of which threaten their livelihoods and influence food consumption destructively in relation to their wellbeing. The study established incidents of trade and price spikes beyond agriculture sectors which hampers physical and distributional access affecting households' consumption. More so, the food relief services provided by the government were not enough. Respondents further specified that it is perceived as only benefiting those connected to prominent people such as councillors and other officials who receive the food relief. Next, drought relief food distribution takes too long to come to the household's rescue and this is only targeting certain households in key positions instead of the most vulnerable and deserving households. It was also exposed that there was favouritism with compiling the lists of those who should receive drought relief food.

It was observed that water shortage for both human and animal consumption was one of the major challenges that households indicated in that they acquired debts especially on the water bills, which resulted in their water accounts being disconnected. The study revealed that households excavated earth dams and yet the natural pans became dry. Moreover, men resort to digging wells to get water for human and livestock consumption. As a result, during the process of digging wells, the walls of the dug well collapsed and people instantly died.

As a result, men migrated to cattle posts in search of better grazing areas for the livestock and in the process some of them started new families, which resulted in some men abandoning their houses and leaving household responsibilities to their wives.

Furthermore, households experienced some challenges which include diseases such as malnutrition and hepatitis E due to lack of food and a balance diet. Likewise, some household owners, especially men, committed suicide when their livestock perished due to drought. Moreover, some women indicated that they found it difficult to breastfeed their babies as they do not have enough milk. Besides, droughts weakened household resilience as they disrupt household assets and resources. The study concluded that water diminishes because of drought, thereby affecting socio-economic activities, increasing unemployment and farmers losing their alternative sources of income. It was established that the change of diet has been difficult for households to adjust in a short time of period. The study revealed that stock theft increased dramatically, and this affects the destitute families. The study established that early warning systems have not been effective, as a result households relied on indigenous knowledge to predict rainfall occurrences. Some women engage in sex as an economic strategy for survival as they have to access food, water and medical attention to purchase other domestic necessities.

The study reported that household members travel long distances in search of grain to buy. The study reported the depletion of livestock as some of them are either sold or traded in exchange for grain. The study reported an increase in crime with livestock and grain being the main targets for theft. Moreover, the study established poor crop yields as possible effects of droughts. Likewise, the study revealed that husbands were being left by their wives as the impacts worsened.

The study indicated that in trying to cope to drought, households in Okhauyulu and Eeshoke villages employed various strategies which include: households reducing the number of times they eat per day, for example eating only once per day, cutting unnecessary meals and only eating lunch

and dinner, and sometimes they skip one main meal and feed children first and elders. Moreover, they relied on drought relief food which is received from the government, households learn to eat other food varieties such as macaroni, rice, maize meal, etc, donations, gifts and, using a barter system from relatives and friends and community links of mutual support, and their food reserves can often see them through a bad spell.

Moreover, households destock their livestock such as cattle, goats and chicken instead of watching them dying. Seasonal migration by men in search of better grazing and water for their livestock as well as some men temporally migrating to nearby towns such as Oshikango and Ondangwa in search of salaried casual work. Women weave baskets and other products such as *marula* oil and selling them to the nearby local market to earn an income and complementing their households' food consumption sources during times of drought.

Findings of the present study are inconsistent with results of past studies done by Ndlovu and Mutasa in Zimbabwe on the effects of droughts on households' food consumption patterns. Ndlovu and Mutasa reported unique coping strategies which were not practised in Okhauyulu and Eeshoke villages. These strategies are inclusive of changes of cropping systems during droughts, women engaging in sex, parents' discussions of strategic marriages of their daughters and sons in well-off families to call on for support during trying times.

Although households tried various ways to manage and cope with the change and effects of drought as stated in Chapter Four, most households of Okhauyulu and Eeshoke villages were unable to cope effectively with the droughts mainly because there was a lack of information about drought occurrences and drought coping strategies as well as a lack of resources. Therefore, the findings of this study correspond with the Adaptive theory by Garmestani, Allen and Gunderson, and Sen's and Nusbau's theories. The philosophers lay emphasis on the fact that in terms of

adversities, change and capacity, Okahauyulu and Eeshoke households should be given an opportunity to make choices and decisions, and realise the goals and objectives not limited to personal well-being.

### **6.3 Recommendations**

Most households claimed that they were not ready for the droughts due to lack of information about imminent adversities, whereas others claimed that they did not know what to do and to prepare even if they had access to such information. This study recognised the households' economic status and lack of information. It is impossible to survive droughts without external help or assistance from the government and agencies at all levels. Studies done in Zimbabwe and South Africa show that during droughts, households developed several strategies ranging from varying the seeds variety, taking up maize resistant cultivars, intercropping, and changing planting dates, and applying conservation agriculture to mixed farming of crops and livestock. These strategies were proven to be successful, though they were not used by the households of Okahauyulu and Eeshoke villages.

This study therefore recommends the following:

- The government needs to improve the supply of the drought relief food, as well as ensuring timely delivery of the food and covering all the households affected by droughts.
- Households need to diversify seeds in the dry season, for example, taking up maize resistant cultivars, intercropping, changing planting dates, dry season gardening and applying conservation agriculture.
- During the FGD with KIs in both Okahauyulu and Eeshoke villages, it was recommended that the government should come up with water harvesting techniques such as installing water tanks to harvest water during the rainy season. In addition, the drilling of boreholes, and excavating earth dams lined with trampolines for water storage during the rainy

seasons is one efficient way to preserve water for use during the drought periods. The FGD with KIs further recommended water tanks to be installed at every household and boreholes to be drilled at every second household in Okahauyulu and Eeshoke villages. The participants during the GD with KIs argued that the supply of water would not only lessen the women's burden of collecting water, but it would help the entire community to cope and adapt to droughts.

- During FGD with KIs, it was further recommended that households should be trained on the availability and use of a variety of seeds that are drought resistant and that can help them to produce more food in times of droughts.
- The households further recommended that the government should promote value addition of *mahangu* on the market and that the government needs to establish *mahangu* fields in the constituencies that always receive good rains.
- The MAWF and Meteorological Services in the Ministry of Works and Transport should work together by informing the households with reliable weather forecasts, particularly those associated with possible droughts.

#### **6.4 Areas of Further Research**

- (a) There is a need to explore why households in Okahauyulu and Eesheke villages do not experience obesity or overweight conditions during normal / non-drought periods.
- (b) Further research is needed on the effects of droughts on household assets in Engela constituency and other constituencies in the region.
- (c) There is a need to explore best practises on how to improve the early warning systems in Namibia.

## REFERENCES

- Abid, M., Ali, A., Raza, M., & Mehdi, M. (2020). Ex-ante and ex-post coping strategies for climatic shocks and adaptation determinants in rural Malawi. *Climate Risk Management*, 27, 100200.
- Ahmed, M. (2020). Introduction to modern climate change. Cambridge: Cambridge University Press.
- Angula, M.N. & Kaundjua, M.B. (2016). The changing climate change and human vulnerability impacts in north-central Namibia. *Jamba: Journal of Disaster Risk Studies*, 8(2), 200 - 207.
- Assoumana, B. T., Ndiaye, M., Puije, G. V. D., Diourte, M., & Gaiser, T. (2016). Comparative assessment of local farmers' perceptions of meteorological events and adaptations strategies: Two case studies in Niger Republic. Retrieved from <https://scholar.google.com/citations?user=L0bwM74AAAAJ&hl=en>
- Bank of Namibia. (2019). *Economic outlook report*. Retrieved from <https://www.bon.con.na>
- Bell, J., & Waters, S. (2018). *Ebook: doing your research project: a guide for first-time researchers*. London: Mcgraw-hill education.
- Berlie, A. B. (2018). Coping strategies and household food security in drought-prone areas in Ethiopia: The case of lay Gayint District. *Ghana Journal of Development Studies*, 12(1-2), 1-18.
- Brain, N. (2017). *Drought coping strategies at Mutasa district in Zimbabwe*. (Master's thesis, University of the Free State, Free State, South Africa). Retrieved from [https://www.ufs.ac.za/docs/librariesprovider22/disaster-management-training-and-education-centre-for-africa-\(dimtec\)-documents/dissertation](https://www.ufs.ac.za/docs/librariesprovider22/disaster-management-training-and-education-centre-for-africa-(dimtec)-documents/dissertation)

- Carpena, F. (2019). How do droughts impact household food consumption and nutritional intake? A study of rural India. *World Development*, 122, 349-369.
- Chege, P. M., & Muthamia, O. G. (2016). Effects of Seasonality on Household Food Security and Food Consumption Patterns of Pastoralist's Children in Kajiado County, Kenya. *EC Nutrition*, 5(6), 1266-1276.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, & mixed methods approaches* (4th ed.). Thousand Oaks, CA: SAGE Publications, Inc.
- De Vos, A. S., & Strydom, H. (2019). *Research at grass roots: A primer for the caring professions*. Cape town: van Schaik.
- Derbile, E. K. (2019). *Reducing vulnerability of rain-fed agriculture to drought through indigenous knowledge systems in north-eastern Ghana*. Retrieved from [https://www.researchgate.net/publication/290427993\\_Local\\_Knowledge\\_Flows\\_for\\_Reducing\\_Vulnerability\\_of\\_Rain-fed\\_Agriculture\\_to\\_Environmental\\_Change\\_Patterns\\_and\\_Drivers\\_of\\_Flow\\_in\\_North-Eastern\\_Ghana](https://www.researchgate.net/publication/290427993_Local_Knowledge_Flows_for_Reducing_Vulnerability_of_Rain-fed_Agriculture_to_Environmental_Change_Patterns_and_Drivers_of_Flow_in_North-Eastern_Ghana)
- Fagariba, C. J., Song, S., & Baoro, S. K. G. S. (2018). Climate change in Upper East Region of Ghana; challenges existing in farming practices and new mitigation policies. *Open Agriculture*, 3(1), 524-536.
- FAO. (2018). *Early action and response for agriculture, food security and nutrition*. Accra: FAO Central Office for Africa.
- FAO, IFAD, WFP. (n.d.). *The state of food insecurity in the world. The multiple dimensions of food security*. Retrieved from <http://www.fao.org/docrep/018/i3434e/i3434e.pdf>.

- Hanigan, I.C., Butter, C D., Kokic, P.N., & Hutchinson, M.F. (2019). Suicide and drought in new South Wales, Australia, 1970-2007. *Proceedings of the National Academy of Science*, 109 (35), 13950-13955.
- Garmestani, A. S., Allen, C. R., & Gunderson, L. (2009). Panarchy: Discontinuities reveal similarities in the dynamic system structure of ecological and social systems. *Ecology and Society*, 14(1), 15 - 27.
- International Fund for Agricultural Development (IFAD). (2015). *Rural poverty report 2001: The Challenge of Ending Rural Poverty: Summary*. Oxford: Oxford University Press.
- IPCC. (2018). Glossary', In J. Agard & L. Schipper (Eds.). *Contribution of working group II to the fifth assessment report*, n.p. Cambridge: Cambridge University Press.
- Kinsey, B., Burger, K., & Gunning, J. W. (2018). Coping with drought in Zimbabwe: Survey evidence on responses of rural households to risk. *World Development*, 26(1), 89-110.
- Knight, L., Roberts, B. J., Aber, J. L., Richter, L., & Size Research Group. (2017). Household shocks and coping strategies in rural and peri-urban South Africa: Baseline data from the size study in Kwazulu-Natal, South Africa. *Journal of International Development*, 27(2), 213-233.
- Kumasi, T. C., Antwi-Agyei, P., & Obiri-Danso, K. (2019). Small-holder farmers' climate change adaptation practices in the Upper East Region of Ghana. *Environment, Development and Sustainability*, 21(2), 745-762.
- Längler, M., Brouwer, J., & Gruber, H. (2019). Data collection for mixed method approaches in social network analysis. In *Mixed methods social network analysis* (pp. 25-37). Routledge.
- Lolig, V., onkoh, S. A., Obernb, F.K., Ansah, I.G.K., Jasaw, G.S., Kusakari, Y.,... & Kranjac-Berisavljevic, G. (2019). Households' Coping strategies in drought and flood prone communities in Northern Ghana. *Journal of Disaster Research*, 9(4), 542-553.

Makoka, D. (2018). *The impact of drought on household vulnerability: The case of rural Malawi*.

Retrieved from <https://ideas.repec.org/p/pram/prapa/15399.html>

MAWF. (2019). *Crop prospects and food security situation report*. Windhoek: Directorate of Early Warning & Food Information Unit.

McGregor, S.L.T. (2015). 'Transdisciplinary knowledge creation. In P.T. Gibbs (Ed.), *Transdisciplinary professional learning and practice*, pp. 9-24. New York, NY: Springer.

Maharjan, K. L., & Joshi, N. P. (2017). *Climate change, agriculture, and rural livelihoods in developing countries*. Dordrecht: Springer.

Matanga, T. (2017). *Drought coping strategies in Chipinge Rural District* (Doctoral dissertation, BUSE, Bindura, Zimbabwe). Retrieved from <https://elibrary.buse.ac.zw/handle/123456789/7957>

Merriam, S. B. & Grenier, R. S. (Eds.). (2019). *Qualitative research in practice: Examples for discussion and analysis*. New York, NY: Jossey-Bass.

Mallick, D., & Rafi, M. (2010). Are female-headed households more food insecure? Evidence from Bangladesh. *World Development*, 38(4), 593-605.

Mathijs, E., & Noev, N. (2018). Subsistence farming in central and eastern Europe: empirical evidence from Albania, Bulgaria, Hungary, and Romania. *Eastern European Economics*, 42(6), 72-89.

Mishra, S. (2017). Household livelihood and coping mechanism during drought among Oraon tribe of Sundargarh district of Orissa, India. *Journal of Social Sciences*, 15(2), 181-186.

Moomaw, W. & Barthel, M. (2019). *The critical role of global food consumption patterns in achieving sustainable food systems and food for all*. A UNEP discussion paper. Retrieved from

Mutasa, M. (2010). *Zimbabwe's Drought Conundrum: vulnerability and coping in Buhera and Chikomba districts* (Master's thesis, Norwegian University of Life Sciences (UMB), Oslo, Norway).

Retrieved from <https://nmbu.brage.unit.no/nmbu->

xmlui/bitstream/handle/11250/187713/Mukundi%20Mutasa%20Final%20Thesis.pdf?sequence=1&isAllowed=y

Nakanyete, N., Shikangalah, R. N., & Vatuva, A. (2020). Drought as a disaster in the Namibian context.

*Int J.Sci. Res*,9,377-386.

Ndlovu, S. (2011). *Coping with drought research findings from Bulilima and Mangwe districts,*

*Matabeleland South, Zimbabwe. Practical action.* Retrieved from

<https://www.preventionweb.net/publication/coping-drought-research-findings-bulilima-and-mangwe-districts-matabeleland-south>.

Ndubueze-Ogaraku, M. E., Oyita, G. E., & Anyanwu, S. O. (2016). Analysis of household consumption

expenditure on selected staple foods in Ika North East Local Government Area of Delta State,

Nigeria. *Direct Research Journal of Agriculture and Food Science*, 4(10), 300-307.

Ndzelen, M. G. D. (2015). *The impact of drought on household food security: A case study of Northern*

*Tanzania* (Doctoral dissertation, University of the Western Cape, Cape town, South Africa).

Retrieved from <http://etd.uwc.ac.za/xmlui/handle/11394/4986>

Ngcamu, B. S., & Chari, F. (2020). Drought influences on food insecurity in Africa: A Systematic

literature review. *International Journal of Environmental Research and Public Health*, 17(16), 58

- 97.

Ngema, P. Z., Sibanda, M., & Musemwa, L. (2018). Household food security status and its determinants

in Maphumulo local municipality, South Africa. *Sustainability*, 10(9), 33 - 77.

NSA. (2014). *Namibia 2011 population and housing census main report*. Windhoek, Namibia: Namibia

Statistics Agency.

- Norhasmah, S., Zalilah, M. S., Kandiah, M., Mohd Nasir, M. T., & Asnarulkhadi, A. S. (2019). Household food insecurity among urban welfare recipient households in Hulu Langat, Selangor. *Pertanika J. Soc. Sci*, 20, 405-420.
- Nyankweli, E. M. (2012). *Foreign direct investment and poverty alleviation: the case of Bulyanhulu and Geita gold mines, Tanzania. African studies*. Retrieved from xxxx
- Nuhu, M. G., & Matsui, K. (2019). Climate change and farmers' coping strategies in the Upper East Region of Ghana. *International Journal of Climate Change: Impacts & Responses*, 11(4), 13-28.
- Nussbaum, M. (2003). Capabilities as fundamental entitlements: Sen and social justice. *From employability towards capability*, 4 - 15.
- Olaleye, O. L. (2018). *Drought coping mechanisms: A case study of small-scale farmers in Motheo district of the Free State province*. Retrieved from <https://uir.unisa.ac.za/handle/10500/4032>
- Pelema, R. D. (2018). *An investigation into farmers' gendered coping and adaptation strategies to droughts in Olukonda constituency, Oshikoto region in Namibia* (Doctoral dissertation, University of Namibia, Windhoek, Namibia). Retrieved from <https://repository.unam.edu.na/handle/11070/2271>
- Pérez-Orellana, D., Delgado, L., & Marin, V. (2020). The adaptive cycle and the ecosystem services: a social-ecological analysis of Chiloé Island, southern Chile. *Ecology and Society*, 25(4), 1 - 29.
- Puoane, T. K. Steyn, D. Bradshaw, R. Laubscher, J. Fourie, V. Lambert and N. Mbananga. (2017). Obesity in South Africa: The South African Demographic and Health Survey. *Obesity Research*, 10, 1038-1048.
- Quandt, A. (2021). Coping with drought: Narratives from smallholder farmers in semi-arid Kenya. *International Journal of Disaster Risk Reduction*, 57, 102168.

- Rao, G. B. (2017). *Household coping/survival strategies in drought-prone regions: A case study of Anantapur District, Andhra Pradesh, India*. New Delhi: Society for Promotion of Wastelands Development. Retrieved from [https://www.academia.edu/5754484/Household\\_Coping\\_Survival\\_Strategies\\_in\\_Drought-prone\\_Regions\\_A\\_Case\\_Study\\_of\\_Anantapur\\_District\\_Andhra\\_Pradesh\\_India](https://www.academia.edu/5754484/Household_Coping_Survival_Strategies_in_Drought-prone_Regions_A_Case_Study_of_Anantapur_District_Andhra_Pradesh_India)
- Republic of Namibia. (2011). *Second national communication of the Republic of Namibia to the United Nations framework convention on climate change*. Windhoek, Namibia: Ministry of Environment and Tourism, Windhoek.
- Shikangalah, R. N. (2020). The 2019 drought in Namibia: An overview. *J. Namibian Stud*, 27, 37-58.
- Sahin, M. D., & Öztürk, G. (2019). Mixed method research: Theoretical foundations, designs and its use in educational research. *International Journal of Contemporary Educational Research*, 6(2), 301-310.
- Sen, A. (1985). Well-being, agency and freedom: The Dewey Lectures 1984. *Journal of Philosophy*, 82(4), 169-221. <https://doi.org/10.2307/2026184>.
- Sutcliffe, C., Dougill, A. J., & Quinn, C. H. (2016). Evidence and perceptions of rainfall change in Malawi: Do maize cultivar choices enhance climate change adaptation in sub-Saharan Africa?. *Regional Environmental Change*, 16(4), 1215-1224.
- Sundstrom, S. M., & Allen, C. R. (2019). The adaptive cycle: More than a metaphor. *Ecological Complexity*, 39, 100767.
- WHO. (2018). *Obesity and overweight factsheet: 2011*. Retrieved from <http://www.who.int/mediacentre/factsheets/fs311/en/index.html>.
- WFP (2018). *Comprehensive Food Security and Vulnerability Analysis (CFSVA)*, Tanzania, 2012. National Panel Survey data collected during the periods of October 2008-September 2009 and

October 2010-September 2011. 76pp. Retrieved from  
[https://documents.wfp.org/stellent/groups/public/documents/manual\\_guide\\_proced/wfp203208.pdf](https://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp203208.pdf)

Wuni, I. F. (2018). *Drought coping strategies of peasant farmers in Worubogu* (Doctoral dissertation, Van Hall Larenstein). Retrieved from <https://hbo-kennisbank.nl/details/samhao:oai:www.greeni.nl:VBS:2:145724>

Yu, H., Zhang, Q., Sun, P., & Song, C. (2018). Impact of droughts on winter wheat yield in different growth stages during 2001 - 2016 in Eastern China. *International Journal of Disaster Risk Science*, 9(3), 376-391.

Yusa, A., Berry, P., J Cheng, J., Ogden, N., Bonsal, B., Stewart, R., & Waldick, R. (2015). Climate change, drought and human health in Canada. *International Journal of Environmental Research and Public Health*, 12(7), 8359-8412.

## Appendices

### Appendix 1: Ethical Clearance Certificate



#### ETHICAL CLEARANCE CERTIFICATE

**Ethical Clearance Reference Number:** HREC-NH/02/12/2020

**Date:** 01-12-2020

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

**Title of Project:** THE EFFECTS OF DROUGHT ON HOUSEHOLD FOOD CONSUMPTION: A CASE OF OKAHAUYULU AND EESHOKE VILLAGES IN ENGELA CONSTITUENCY, OHANGWENA REGION

**Nature/Level of Project:** M.A. (NON-HEALTH) (NQF9)

**Researcher:** GABRIEL FANUEL MWANINGA

**Student Number:** 99906052

**Faculty:** HUMANITIES AND SOCIAL SCIENCES

**Supervisor(s):** PROF. E. NYANKWELI & DR R. NGHITEVELEKWA

Take note of the following:

- (a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the UREC. An application to make amendments may be necessary.
- (b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the UREC.
- (c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by UREC.
- (d) The UREC retains the right to:
  - (i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,
  - (ii) Request for an ethical compliance report at any point during the course of the research.

REC wishes you the best in your research.

  
Prof. H.L. Beyer, Deputy Chair: HREC-NH  
pp Chair: HREC-NH

## Appendix 2: Request for Permission from Ohangwena Regional Council

Gabriel Mwaninga

P.O BOX 2233  
OSHIKANGO

01 December 2020

The Chief Regional Officer  
Ohangwena Regional Council  
Ohangwena Region

Dear Mr Shilongo,

**SUBJECT: REQUEST FOR PERMISSION TO CONDUCT A RESEARCH STUDY IN EESHOKO AND OKAHAUYULU VILLAGES, ENGELA CONSTITUENCY, OHANGWENA REGION**

This writing serves to inform your good office that I **Gabriel Mwaninga**, a student in the Master of Arts in Development Study (MADS) program has been studying with UNAM, Oshakati campus since 2018 and I am currently a final year student. As part of the University's requirements, I am therefore required to conduct a research on an approved topic within the social Sciences arena.

**APPROVED TITLE OF THE RESEARCH PROJECT: *The effects of drought on household food consumption: a case of Eeshoke and Okahauyulu villages in Engela constituency, Ohangwena Region***

**STUDENT NUMBER: 996052**

**PRINCIPAL INVESTIGATOR: GABRIEL F. MWANINGA**

**CONTACT NUMBER: 0812558629**

**MAIN SUPERVISOR: PROF EMANNUEL NYANKWELI- UNIVERISTY OF TANZANIA**

**CORE SUPERVISOR: DR ROMMIE NGHITEVELEKWA- UNIVERSITY OF NAMBIA**

Based on the above notion, I am hereby would like to seek for permission to conduct a research on the above-mentioned topic in Okahauyulu and Eeshoke villages in Engela Constituency, Ohangwena Region. Hereto attached please find the Ethical Clearance Certificate for ease reference.

If you would like more information regarding the research and to be informed of the final research findings, please contact Mr Mwaninga Gabriel on +264812558629 or [tulinawamwaninga@yahoo.com](mailto:tulinawamwaninga@yahoo.com). Should you require any further information from Unam about the study contact [research@unam.na](mailto:research@unam.na).

I am therefore looking forward to hearing from your esteemed office at your earliest convenience.

Sincerely Yours,



Gabriel Mwaninga

MADS candidate, University of Namibia, Oshakati Campus

## Appendix 3: Approval Letter from Ohangwena Regional Council



REPUBLIC OF NAMIBIA  
OHANGWENA REGIONAL COUNCIL

Private Bag 88011 Eenhana, Namibia

Tel. No: +264 65 264355  
Enquiries: Onesmus Shapopi  
Email: oshapopi@ohangwenarc.gov.na

Fax. No: +264 65 263033  
Our Ref.: S.4/5/1  
08 December 2020

Gabriel Mwaninga  
MADS candidate  
University of Namibia  
Oshakati Campus  
0812558629

Dear Mr. Mwaninga,

**REQUEST FOR PERMISSION TO CONDUCT A RESEARCH STUDY IN EESHOKE AND OKAHUYULU VILLAGES, ENGELA CONSTITUENCY IN OHANGWENA REGION**

Reference is made to your letter on the above-mentioned subject dated 01 December 2020.

Ohangwena Regional Council is conscious that research is one of the main academic functions of any academic institutions and took note of your Research Topic: **The effects of drought on household food consumption: a case of Eeshoke and Okahuyulu villages in Engela Constituency, Ohangwena Region.**

Based on the above, you are hereby informed that approval has been granted for you to conduct a research study in these two villages.

It is trusted that the aforementioned information will be sufficient.

Yours faithfully,

**FILLIPUS H SHILONGO**  
**CHIEF REGIONAL OFFICER**



CC: Hon. Elkan Hainghumbi  
Engela Constituency

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*All official correspondences must be addressed to the Chief Regional Officer*

## Appendix 4: Informed Consent Form

University of Namibia

Faculty of Humanities and Social sciences

Department of Sociology

**TITLE OF THE RESEARCH PROJECT:** The effects of drought on household food consumption: a case of Okahauyulu and Eeshoke villages in Engela Constituency, Ohangwena Region, Namibia

**REFERENCE NUMBER** : 9996052  
**PRINCIPAL INVESTIGATOR** : GABRIEL FANUEL MWANINGA  
**ADDRESS** : EENHANA  
**CONTACT NUMBER** : 0812558629

### Introduction

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask me any questions about any part of this project that you do not fully understand. It is particularly important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary**, and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the Research Ethics Committee at The University of Namibia and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and Namibian National Research Ethics Guidelines.

### 1. WHAT IS THIS RESEARCH STUDY ALL ABOUT?

The purpose of this study is to gain an understanding of your lived experiences on the effects of drought on household food consumption during drought and non-drought periods.

## **2. WHY HAVE YOU BEEN INVITED TO PARTICIPATE?**

You are invited to participate in this research because your house or head of the households and residing in Okahauyulu and Eeshoke village of which your house has been affected by drought during the periods under study and you poses live experiences. Moreover, the respondent may be a key informant as agricultural extension and as a regional councilor.

## **3. WHAT WILL I ASK OF YOU?**

If you agree to participate, I would like to invite you to attend an interview that will last maximum one hour, you are encouraged to answer all questions and give as much information as you can. You are welcome to speak in English or Oshiwambo, whichever one you prefer. Furthermore, if you do not understand a question you can ask for clarity in any language of your choice and withdraw anytime you feel like.

## **4. WILL YOU BENEFIT FROM TAKING PART IN THIS RESEARCH?**

You will not benefit from this research directly, but your contributions add value to the body of knowledge and could be used by policy makers and coping mechanisms for Okahauyulu and Eeshoke inhabitants in Engela Constituency, Ohangwena Region.

## **5. ARE THERE IN RISKS INVOLVED IN YOUR TAKING PART IN THIS RESEARCH?**

There are no foreseeable risks to the participants. Moreover, the participant has the freedom not to respond to any uncomfortable question.

## **6. WILL YOU BE PAID TO TAKE PART IN THIS STUDY AND ARE THERE ANY COSTS INVOLVED?**

You will not be paid for participating in this study, participation is entirely charitable. You will not incur any cost for participating in this research.

## **7. IS THERE ANYTHING ELSE THAT YOU SHOULD KNOW OR DO?**

You will receive information regarding the research through your constituency office or village head. For further information, you can contact +264 061 2064673 and [research@unam.na](mailto:research@unam.na) if you have any concerns or complaints that have not been adequately addressed by the investigator. Finally, you will receive a copy of this information and consent form for your own records.

**8. Declaration by participant**

By signing below, I ..... agree to take part in a research study entitled: *The Effects of drought on household food consumption: a case of Okahauyulu and Eeshoke villages in Engela constituency, Ohangwena Region, Namibia*

**I declare that:**

- a) I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.
- b) I have had a chance to ask questions and all my questions have been adequately answered.
- c) I understand that taking part in this study is **voluntary** and I have not been pressurized to take part.

**I AGREE / DICLINE** to being recorded during the interview.

Signed at (*place*) ..... on (*date*) ..... 2020.

.....  
Signature of participant

.....  
Signature of witness

**9. Declaration by investigator**

I **Gabriel Fanuel Mwaninga** declare that:

- I explained the information in this document to .....
- I encouraged him/her to ask questions and took adequate time to answer them.

- I am satisfied that he/she adequately understands all aspects of the research, as discussed above

**I DID / DID NOT** interpret the contents of this document into Oshiwambo.

Signed at (*place*) ..... on (*date*) ..... 2020.

.....  
Signature of investigator

.....  
Signature of witness

## Appendix 5: Participant Information Sheet

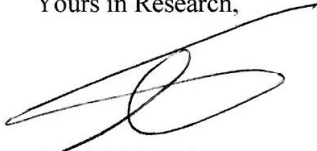
Dear potential participant,

My name is Gabriel Mwaninga. I am a master's student at the University of Namibia (UNAM) at Oshakati campus, Namibia. My dissertation is a study on The effects of Drought on Household Food Consumption- A case of Okahauyulu and Eeshoke villages in Engela constituency, Ohangwena region (2004-2019) as part of the requirement for the master's degree. I am inviting you to participate in the study on the basis of your knowledge on the topic. Participation is charitable and will take the form of a personal interview that will last 30 to 60 minutes at a location of convenient to you. You will be free to withdraw at any time, and to decline to answer any questions you are uncomfortable with.

If you agree to participate, you may choose whether you are willing to be identified by name. Moreover, I will take notes and recordings of the interview strictly confidential. Please do not hesitate to contact me (on the contact details outlined below or my dissertation supervisors, Professor Emmanuel Nyankweli ([emmanuel.nyankweli@gmail.com](mailto:emmanuel.nyankweli@gmail.com)), +255758177202 and Dr Rommie Nghitevelekwa ([rnhitecelekwa@unam.na](mailto:rnhitecelekwa@unam.na)), +264-(0) 61-206 300 or Cell:0811291987),if you have any questions about this research.

Thank you for taking the time to consider participating in my research.

Yours in Research,



Gabriel Mwaninga

MADS Candidate, Development Studies, University of Namibia

[tulinawamwaninga@yahoo.com](mailto:tulinawamwaninga@yahoo.com) or Cell: 0812558629

## Appendix 6: Interview Guide for Household Respondents

### INTERVIEW GUIDE FOR HOUSEHOLD RESPONDENTS

University of Namibia

Faculty of Humanities and Social sciences

Department of Sociology

These questions are developed to guide the interview with Household heads on the research topic in the study area.

**The effects of drought on household food consumption in Okahauyulu and Eeshoke villages in Engela constituency, Ohangwena region**

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#### INTERVIEW QUESTIONS FOR HOUSEHOLD HEAD IN EESHOKE & OKAHAUYULU VILLAGES

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**Student name:** Gabriel Mwaninga

**Supervisors:** Prof Emmanuel M. Nyankweli

Dr Rommie Nghitevelekwa

#### **Instructions**

- There are no right or wrong answers to the questions contained on this questionnaire, hence, feel free to respond to all the questions.
- To ensure confidentiality, your response will be handled anonymously.
- Your personal opinion is highly valued.

This questionnaire consists of five sections A and B. Please feel so kind to answer all the questions and complete each section by following the instruction provided in each section.

**SECTION 1: BACKGROUND INFORMATION** (tick the most appropriate answer below)

1. 1 Who is the head of the household?

Female

Male

1.2 Age range

18-28

29-39

40-50

51-61

62-72

Other -----

1.3 Which best describe your marital status

Single

Marriage

Separated

Widower

Divorce

1.3. Number of people in the household

5

6-11

Others-----

1.4 Which type of food do you consume at home

Mahangu

Maize

Rice & macaroni

Any other please specify.....

1.5 How many times do you cook/feed yourself per day during drought in comparison to normal period?

.....

2 times

3 times

More than 3 times

1.6 What is your occupation?

Teacher

Nurse

Self employed

Farmer

Unemployed

Other please specify-----

1.7. For how long you have been in this village?-----

Less than 5 years

6-10 years

11-16 years

**SECTION 2: INSIGHTS**

**2.1 What area of land do you cultivate during normal/drought period?**

**Periods Land area (Ha)**

1. Normal period
2. Drought period

**2.2 What type of cropping system did you employ during the drought period?**

- 1 = Intercropping
- 2 = Wide spacing
- 3 = Shifting to quick maturing crops
- 4 = Cultivation of vast area in different directions
- 5 = Others

**2.3 Did you have to change your cropping system during the drought period?**

Yes

No

**2.4 Did you have to move from your household village to look for food elsewhere because of drought?**

Yes

No

If yes...where.....

**2.5 Did you have access to balanced diet during drought?**

Yes

No

If yes...please elaborate.....

**2.6 Did you render services/ worked in exchange for food during drought periods?**

Yes

No

If yes....please elaborate.....

**2.7 Did you receive any food support during drought periods?**

Yes

No

**2.7.1 If yes in the previous question please select the appropriate institution**

1. Government agencies
2. NGOs
3. Private agencies
4. Farmers' union

Others.....

**2.7.2 How did you find out about the institution you received help from?**

Friends and families

Farmers' union

Community associations

News media

Others....please specify.....

**2.8 Did the aid or assistance from institution you mentioned met your expectations**

Satisfied

Somehow/ partially satisfied

Not satisfied

If not satisfied... what do you think should be done?.....

**2.9 Where you prepared for drought incidence before its onset?**

Yes

No

If yes...what do you do/have done?.....

Stored some Foods

Sell or Pledge Assets

1.10. Please list or explain the coping mechanism being put in place in the shortage of food during drought .

.....  
.....

1.11 Do you think the coping mechanisms being put in place helped the households cope and recover from the effect of drought?

If yes, please elaborate further

.....  
.....  
.....

If no, what should have been done to help people cope during drought?

**SECTION 3: GENERAL AND ADDITIONAL INFORMATION**

3.1 Which drought period if you remember do you think was worse than other periods?

3.2 What key lessons you have learnt during the drought periods in Okahauyulu and Eeshoke villages?

3.5 Anything else you wish to add in relation to the discussions at hand?

*End*

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# **Appendix 7: Focus Group Discussion (FGD) Interview Guide with Key Informants (KI)**

University of Namibia

Faculty of Humanities and Social sciences

Department of Sociology

These questions are developed to guide the interview with Key Informants through focus group discussions who are knowledgeable, because of their profession or positions they hold, on the research topic in the study area.

## **The effects of drought on household food consumption in Okahauyulu and Eeshoke villages in Engela constituency, Ohangwena region**

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### **Interview Questions For Key Informants Through Focus Group Discussions**

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**Student name:** Gabriel Mwaninga

**Supervisors:** Prof Emmanuel M. Nyankweli

Dr Rommie Nghitevelekwa

#### **1. Background information**

- 1.1 What is your profession or areas of expertise?
- 1.2 For how long have you been in this village or constituency?

#### **2. Understanding of view of the topic**

- 2.1 In your view, how do you describe the food consumption patterns during drought and non-drought periods?
- 2.2 Looking at the periods of drought from 2004-2019, what were the coping mechanisms being put in place in the shortage of food during the drought seasons?
- 2.3 Do you think the coping mechanisms being put in place helped the households cope and recover from the effect of drought?  
If yes, please elaborate further

.....  
.....  
.....  
If not, why  
.....  
.....  
.....

2.3 What are the challenges you have faced in coping with the food shortages in the past?

.....  
.....  
.....

**3. General and additional information**

3.1 What is your general perception of drought in relation to household food consumption?

3.2 Which drought period if you remember do you think was worse than other periods?

3.3 What do you think are the key lessons to be learnt during the drought periods in Okahauyulu and Eeshoke villages?

3.4 Anything else you wish to add in relation to the discussions at hand?

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**End**

## Appendix 8: Observation Checklist

University of Namibia

Faculty of Humanities and Social sciences

Department of Sociology

The checklist is developed by the researcher to guide him during the observation process. Information obtained will complement the data to be obtained from interviews and key informants through focus group discussions.

**The effects of drought on household food consumption in Okahauyulu and Eeshoke villages in Engela constituency, Ohangwena region**

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### **INTERVIEW QUESTIONS FOR KEY INFORMANTS THROUGH FOCUS GROUP DISCUSSIONS**

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The researcher will observe the following at Okahauyulu and Eeshoke villages

1. The nature of the field and type of land
2. Number and capacity of Silos in the households
3. Kraals whether they are being utilised or closed due to previous year's conditions
4. Type of economic activities taking place other than mahanagu fields.