

DIETARY DIVERSITY AND FOOD ACCESS OF DEEP-RURAL HOUSEHOLDS OF

IDUTYWA, EASTERN CAPE

by

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DECLARATION

I declare that **DIETARY DIVERSITY AND FOOD ACCESS OF DEEP- RURAL HOUSEHOLDS OF IDUTYWA, EASTERN CAPE** is my own work and that all sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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DEDICATION

This dissertation is dedicated to my family who supported me during my studies and whose words of encouragement helped me reach this milestone.

I also dedicate this work to and give special thanks to my supervisor Dr Frederick Tabit for his advice and guidance during this process. I will always appreciate his valuable contribution and dedication.

Many thanks to my community and friends, without their presence and support I would have not achieved my goal.

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ABSTRACT

The objective of this research is to investigate the food security, food diversity and coping strategies used to access food in households in the Eastern Cape rural village of Timane in Idutywa, Eastern Cape, South Africa.

A cross-sectional survey design was used in which a Coping Strategy Index questionnaire designed by Maxwell and Caldwell (2008) and a HDD questionnaire was used to gather data interviewing respondents. This study was conducted in the rural community of Timane which was divided into geographical groups from which household were randomly chosen. A total of 60 adults representing 60 selected households were interviewed to provide information on household dietary diversity.

Data was collected on the socio-biographic and HDD parameters of households. Data was analyzed and presented as correlation, percentages, means and SDs. Up to 72% of household received state grants and the Spearman's correlation between number of children and HDD score was $r = 0.38$ while that between number of adults in households and HDD score was $r = -0.93$. Food security in the Timane community largely depends on state grants and HDD increases moderately with the increase in children and decreases with the increase in adults per household. The majority of the households (72%) received state grants as a source of income within which old-age pensions constitute 28% and child grants 38%. The Spearman's correlation coefficient between the number of children in households of respondents and CSI was 0.78 ($P < 001$) while that between the number of adults in households and CSIS was 0.2 ($P < 001$).

Household in the rural community of Timane community were found to be food insecure and this gets severe with the increase in the number of children in households.

Key words: Dietary Diversity, food insecurity, coping strategies

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CHAPTER 1: INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Threats to food security arise from numerous issues such as socio-economic, political, ecological and climate factors. In South Africa, socio-economic factors have played a key role in food insecurity (Bonti-Ankomah, 2001). Although South Africa has made political and economic advances since 1994, the country still experiences poverty and unemployment. Conditions of poverty and unemployment have had an adverse effect on people's food purchasing power, nutritional status and food safety (Koch, 2011).

Although South Africa produces enough food at a national level, this has not guaranteed food security for all individual households, with food insecurity being most prevalent in African and rural households (Bonti-Ankomah, 2001). In trying to address the problem of food insecurity, the South African government has introduced strategies such as social grants aimed at creating and supporting programmes that allow households access to sufficient food and water (Koch, 2011). While there has been a decrease in the experience of hunger since 2002, under-nutrition is still a problem in the country. With the government aiming to decrease poverty within the country by half between 2004 and 2014 (Altman, Hart & Jacobs 2009), ensuring household food security is an essential element in trying to meet this goal as access to food and water is vital for human development (Altman et al., 2009).

1.2 PROBLEM STATEMENT

Food security, food diversity and coping strategies are topics that are widely researched globally, however there is limited research focused specifically on the South African rural communities.

Although hunger is not widespread in South Africa as in other areas of Southern African countries, household food insecurity persists among the majority of the black South African population (Oldewage-Theron & Kruger, 2009). Many households are food insecure without adequate food supply and therefore are more likely to be malnourished (Oldewage-Theron & Kruger, 2009).

Poverty continues to be a significant factor in household food insecurity. Fewer jobs and lower household incomes increase the vulnerability to food insecurity. On average, rural households spend less money on food than urban households as rural households may receive food from their own produce. This does, however, not include all rural households. Rural households tend to have relative lower food expenditure as they generally have the lowest incomes in society and are more vulnerable to food insecurity and malnutrition (Bonti-Ankomah, 2001).

1.3 PURPOSE OF THIS RESEARCH

The purpose of the research is to study the food security situation of households in the Eastern Cape rural village of Timane in Idutywa. The HDD score and the CSI were used as a proxy to evaluate the level of food diversity and security. The food consumption of different households with varied sources of income was also studied. The findings of this research give an insight into the current food insecurity situation of the people living in the rural communities. The findings obtained from this research provide recommendations that could be utilised by relevant authorities to improve their interventions programmes.

1.4 LAYOUT OF THE DISSERTATION

The study has five chapters which are arranged as follows:

Chapter 1: Introduction

The current chapter is the introduction to the study providing an overview and background to the study. This section also outlines the problem statement, the purpose of the study and explains the layout of the dissertation.

Chapter 2: Literature review

The literature review in chapter two provides an overview of existing literature on food security, diet diversity and coping strategies.

Chapter 3: Aims and Objectives

The chapter provides an overview of the desired outcomes of the research conducted as well as the layout of how the aims were accomplished.

Chapter 4: Research Methodology Overview

In this chapter, the research area, data collections and research instruments used are outlined. The problems encountered during the research as well food accessibility profile categories are also analysed.

Chapter 5: Research

The chapter outlines the research outputs emanating from the different research objectives which have been submitted for publication to peer reviewed journals.

Chapter 6: General discussion

This chapter discusses the results of the socio-demographic information of respondents, HDDS, household coping strategies and the awareness and knowledge of food parcels in further detail and provides a comparison to existing literature.

Chapter 7: Conclusions and recommendations

In this chapter, conclusions of the study are provided and recommendations for improvements are also provided. A list of references and appendices then follows.

CHAPTER 2: LITERATURE REVIEW

2.1 HOUSEHOLD FOOD SECURITY

Household food security is defined as the ability of households to access sufficient and nutritious food in order to live a healthy and productive life (Bonti-Ankomah, 2001). Food security is achieved when all citizens have physical, social and economic access to adequate, safe and nutritious food at all times in order to meet their dietary needs and food preferences for an active and healthy life (Bokeloh, Gerster-Bentaya, Weingartner, & Klennert, 2009). The main components of food security are food availability, food access, reliability of food and food distribution. Food availability is the continuous supply of food and is impacted by market conditions and the agricultural sector's ability to produce food while food access is the ability of a country and its individual households to get enough food on a continual basis which includes purchasing power. Furthermore, the reliability of food is the usage and consumption of nutritious and safe food. Food distribution refers to the equal provision of food as and when demanded (Department of Agriculture, 2002).

2.2 FOOD SECURITY IN SOUTH AFRICA

National food security and household food security indicators for South Africa reveal that South Africa has been meeting its food needs of its growing population from domestic sources in the past 20 years (Department of Agriculture, 2002). Although South Africa produces enough food at a national level, individual household food security remains a problem. This is because the ability of individual households to achieve food security depends on households having secure food supplies as well as purchasing power to obtain food. If households are unable to grow or buy sufficient food, and social assistance grants are not available or not efficient, households may experience hunger. Households are more likely to experience food insecurity if the majority of its resources such as human, financial and material resources are used to meet food needs, with a small amount or no amount of

resources left to fulfil other basic needs such as housing or clean water (Bonti-Ankomah, 2001). It is estimated that over 14 million people living in South Africa are in a situation of food insecurity which has contributed to an estimated 1.5 million children under the age of six having stunted growth due to malnutrition (Earl, 2011).

People in rural areas can produce agricultural goods for their own consumption if they have land available to them and rural households that have their own land can also sell resources such as wood and herbs to generate an income. Moreover, being able to produce food for the household to eat and being able to produce resources to sell are important elements to ensure food security (Bonti-Ankomah, 2001).

The South African government has seen the importance of providing people with tools to enable them to feed themselves as well as creating strategies to ensure food security in the long term and have used the right-based philosophy to food security. This approach is integrated in the country's constitution in which social and economic rights, the right to food are seen as fundamental to the country's development (Earl, 2011).

2.3 GOVERNMENT SOCIAL ASSISTANCE GRANTS

With the level of unemployment in South Africa having increased, it has been important for government to provide social assistance grants in poverty stricken societies as this assists to increase households' purchasing power which allows households the opportunity to obtain food to increase their calorie intake and improve nutritional wellbeing (Bonti-Ankomah, 2001). Social assistance grants are currently available to South African citizens based on various criteria. These assistance grants include the following: older persons, war veteran, child support, disability, foster child and care-dependency. Each of these grants has a different set of requirements and provisions. In summary, it stipulates the following for each: the grant for older persons is for South African citizens who are 60 years and older and who

can demonstrate their need. The war veteran grant provides income for citizens who are 60 years or older or disabled and fought in the Second World War or the Korean War. The child support grant is for children under the age of 15 years. Disability grants are for disabled citizens who are between 18 and 59 years who have sufficient medical proof that they are unable to work or do not have resources to support them. The foster child grant is for foster parents who have legal custody of children under the age of 18 years. Care dependency grants are for parents or foster parents of care-dependent children who have severe mental and/or physical disabilities and are between the age of 1 and 18 years (South African Social Security Agency, 2013).

Social grants have assisted in increasing food security for many households, but the importance of sustainable and long-term solutions and strategies to address food insecurity is essential. Food security can also not be viewed in isolation from factors such as household structures, access to water, land, educational or nutritional knowledge or sources of income. The changing and complex nature of these factors has made it difficult for policies to provide tailor-made interventions for the various needs and contexts (Altman et al., 2009).

Besides providing assistance grants, which many households use to obtain food, the South African government created other programmes in an attempt to address food insecurity. The National School Nutrition Programme aims to provide food for school pupils and educate them about nutrition. One such programme is the Integrated Nutrition Strategy which is a combination of different interventions from different sectors to achieve food security and nutrition. This programme recognises that social assistance grants and feeding schemes are not sustainable long-term solutions and acknowledge that factors such as access to suitable land are important to achieve food security as households can use land to produce their own food (Bonti-Ankomah, 2001).

2.4 FOOD SECURITY IN AFRICA

Years of slow economic growth in sub-Saharan Africa has left many areas within the region with poverty and hunger. Historically, economic growth on the continent was among the slowest in the world. The historic slow economic growth and high prices of food and energy made it increasingly difficult for poor people in the region to buy food (Australian Government, 2008).

Where economic growth has improved over the last few years, poverty has also decreased and hunger has only decreased where an increase in agricultural growth has been observed. An increase in agricultural growth improves food security due to an improvement in the amount of food available as well the ability for people to access food that they are able to produce themselves. An increase in agricultural growth also provides income to small-scale farmers and creates jobs for poor people living in rural areas. These factors therefore all contribute towards improving food security (Australian Government, 2008).

A few restrictions to agricultural growth and food security can be observed in Africa, considering that there is often insufficient dedication from countries with economic, political and social partnerships to improve agricultural and rural development. This has led to poor infrastructure such as irrigation and limited financial assistance. From a technology perspective, countries in Africa have grown at a slower rate than other developing countries such as Brazil and China. The developing countries that have improved technology have focused on research and agricultural education. The technology gap between Africa and other developing countries has been made worse on the continent by insufficient biotechnology research, insufficient institutional frameworks agricultural research and an inadequate agricultural education system. Other problems that have negatively impacted on agricultural growth and therefore food security in Africa include insufficient access to resources,

inadequately developed water resources and irrigation systems, gender inequality and the impact of HIV/AIDS (Office of Development Effectiveness, 2008).

Food security in sub-Saharan Africa is also often the result of unpredictable weather conditions, fluctuating food costs and conflict and violence within and between countries. Agricultural productivity is also lower than many regions around the world and many sub-Saharan areas are net food importers and therefore often have to rely heavily on food aid during crises. In areas where there is food, many people experience the problem of not being able to get sufficient food due to long distances to get to shops, poor road conditions and underdeveloped market places (UNDP, 2012).

The Comprehensive Africa Agriculture Development Programme (CAADP) is an African Union initiative aimed at improving policy and capacity problems in the agricultural sector in Africa. The programme is seen as a valuable tool to decrease hunger and poverty. The aim of the programme is to ensure that Africa increases its productivity by 2015 to reach an average annual production growth rate of 6 %. The programme focuses greatly on small-scale female farmers, using environmentally safe production methods and creating sustainable management of natural resources by increasing knowledge, information as well as the application of technology. It also aims to increase farmers' access to markets and to integrate them into the market economy. The programme also aims to create a more equitable distribution of wealth by increasing the income for rural populations because they have greater access to land, resources, knowledge and technology. CAADP is an initiative across the African continent, but each country has to use the framework to suit its country's strategies and investment initiatives (Office of Development Effectiveness, 2008).

Although Africa has historically not had significant economic growth, the continent has experienced more economic growth over the past decade and now has some of the world's

most rapidly growing economies (UNDP, 2012, 2012). In areas where economic growth has improved over the last few years, poverty has also decreased (Office of Development Effectiveness, 2008). Although the economic growth experienced in Africa has brought a decrease in poverty, it has not necessarily created food security for a large number of the population. Many people are still food insecure, suffer from hunger and are malnourished. The diet of numerous African people is mostly made up of cereals with limited access to foods such as fruits, vegetables and animal-source proteins that are rich in micronutrients. Those who may be receiving sufficient calories may not necessarily be receiving sufficient micronutrients. International initiatives to promote nutrition do exist on the continent, but further initiatives need to be encouraged. Current initiatives include the United Nation Renewed Efforts against Child Hunger which aims to support African governments; the US government-sponsored Feed the Future aims to improve financial investments; the Global Alliance for Improved Nutrition focuses on improving partnerships within the private and public sectors; and the Africa Agriculture Development Programme aims to improve agricultural development (UNDP, 2012).

2.5 FOOD SECURITY IN THE EASTERN CAPE

In South Africa it is considered a right to have sufficient access to food (Statutes of the Republic of South Africa, 1996). This right gives the impression that people should be able to produce or receive food by means of farming, processing, fishing or buying food. However, various factors still prevent many South African from gaining sufficient access to food. The government has tried to mitigate some of the negative impact through welfare grants and measures such as feeding schemes and food parcels (Masifunde Education and Development Project Trust, 2010).

It is estimated that around 3.7% of the land that can be used for agriculture has been redistributed in the Eastern Cape. The vast majority of the agricultural land is still primarily

owned by white farmers who use the land for commercial purposes. More commercial farming land has started to be used for game farming which has led to a decrease in employment. People who have lost their jobs have gone back to rural areas where their ability to produce food from their land has become important in ensuring access to food. An attempt has been made by government to improve agricultural development in the Eastern Cape. The Green Revolution Strategy is one such initiative which aims to improve food security, decrease poverty and improve the use of conservation cropping activities (Masifunde Education and Development Project Trust, 2010).

The Eastern Cape has among the highest levels of malnutrition and food insecurity in South Africa with many people living in rural areas. The highest quantities of food consumed in the province are maize, wheat and potatoes (Department of Agriculture, 2002). In an attempt to improve food security in the Eastern Cape, the government created the Siyazondla programme which is aimed at improving the production of food in homesteads in order to increase food security. The programme offered resources such as seeds, fertilisers, irrigation systems, training and skills development. The Siyakha/Massive Maize Production programme was created to assist households with the ability to produce maize and sell it. The households were given money to cover the costs of starting small-scale farming for commercial use. The programme was partly successful in improving food security in the Eastern Cape, however it proved to be expensive and requiring long-term investment for success (Tregurtha, 2009).

Social relief of distress is available as a temporary measure to help people who are not able to meet basic needs for themselves and their families. People who qualify for this assistance are those who need assistance while they are awaiting child grants to be approved; those who are affected by a disaster; those who do not meet the requirements for a grant but are in desperate need of help; those who cannot work for a period of under six months because they are

medically unfit; those who cannot receive maintenance from the parent of their child; those families where breadwinners have passed away; and those families where the breadwinner is serving less than six months in jail. The relief provided can be in the form of a food parcel or a voucher to purchase food and is usually given to people for a period of up to three months, which may in certain instances be extended for an additional three months (South African Government Services, 2013).

2.6 INDIGENOUS FOODS

South Africa is a country rich in indigenous food crops such as grains, wild fruit and leafy vegetables. These food crops are deemed as indigenous because they originate from the country and are able to be produced under a range of weather conditions. The production of indigenous food crops occurs within rural farming areas on a small scale where most of the fertile land is used to produce maize and various exotic crops. Indigenous food crops can provide nutritional and economic benefits, but they have not been used for large scale commercial gain. The South African government and various stakeholders have, however, started to gain interest in indigenous crops in an attempt to improve food security and address climate change (Department of Agriculture, Forestry and Fisheries, 2013).

Indigenous food crops are divided into various categories and are crops with seeds containing protein and starch that can be consumed as food. These food crops are used primarily as flour, dough and rice. These raw products can be used to produce breads, porridges, beverages, snacks, cookies and cakes. A type of grain crop called cowpea can be consumed as a vegetable or used as livestock fodder. Indigenous vegetable crops are crops that have tender leaves and stems and can be cooked and prepared in various ways to create meals such as soup or sauces. Indigenous tubers are used for animal fodder or as an alternative to rice or maize meal. Indigenous fruit crops are fruits that are found in wild areas in the country and

are sweet to taste. These fruits can be used to produce drinks, jams, jellies, dried food, sauces, desserts, animal fodder or used as firewood. Indigenous food crops found in the Eastern Cape include the grain crop grain sorghum; Jews mallow, which is a leafy vegetable; and indigenous fruits such as marula, wild medlar, num-num, Kei apple and monkey orange (Department of Agriculture, Forestry and Fisheries, 2013).

2.7 HOUSEHOLD DIETARY DIVERSITY

Dietary diversity is defined as the amount of different food groups or foods that are consumed over a specific time period (Ruel, 2002). Health professionals such as nutritionists often suggest that a diet diverse in various nutritious foods is an optimal diet. The reason for this is because different foods provide different nutrients since no single food has all the required nutrients for a balanced diet and a range of dietary sources is therefore required (Kennedy, 2004). Increasing the intake in the variety of foods in different food groups is therefore highly recommended. It is also recognised that there are dietary factors linked to the rise in chronic diseases and dietary recommendations therefore also include the reduction in the consumption of certain nutrients such as fat, salt and refined sugars (Ruel, 2002).

2.7.1 DIETARY DIVERSITY INDICATORS FOOD GROUPS

Dietary diversity is commonly measured by using a count of foods or a count of different food groups over a specific time period (Ruel, 2002). Dietary diversity is shown by using a measure that evaluates the food consumption and the household's ability to access a variety of foods (FAO, 2008).

The HDD score is used to show the capability of a household to access and consume different foods. The HDD score is used to provide information on households' economic access to food and therefore foods that need household resources to purchase are included in the score (FAO, 2008). The HDD score recommends a total of 12 food groups. These food groups

include cereals, tubers and roots, vegetables, fruit, meat, poultry, offal, eggs, fish and seafood, legumes, nuts and seeds, milk and milk products, oils and fats, sugar, spices, condiments and beverages. The vegetable food group consists of vegetables that are rich in vitamin A such as tubers and dark leafy vegetables. The fruit group consists of vitamin A rich fruits and other fruits while the meat group consists of organ meat and flesh meat (Swindale & Bilinsky, 2006).

2.7.2 DIETARY DIVERSITY AND FOOD ACCESS

Reliability of food is the usage and consumption of nutritious and safe food. Food distribution refers to the equal provision of food as and when demanded (Department of Agriculture, 2002). Access to food and water is necessary to health and human-development. Access to sufficient food for households has become more dependent on the ability of households to purchase foods from markets as well as the food available in the market places (Altman et al., 2009).

2.7.3 DIETARY DIVERSITY AND VARIETY

Dietary variety is the number of different dietary food groups consumed by individuals taking into consideration the frequency of consumption as well as the amount of food that is consumed (Savy, Martin-Prevel, Sawadogo, Kameli & Delpeuch, 2005). A diet with greater variety of different food groups is more likely to provide adequate calories and proteins. A diet with a greater variety of foods consumed from different food groups provides the most nutrition required for households and individuals (Swindale & Bilinsky, 2006).

2.7.4 DIET DIVERSITY AND DIET QUALITY

Diet quality is an important element of having a nutritious diet. It is recommended that a healthy diet should include nutrients and energy contained in numerous servings of vegetables, fruits and whole grain foods and exclude a high amount of fats, sodium, saturated

fat, cholesterol and refined sugars (Ruel, 2002). A quality diet is not reflected by the number of different foods that one consumes, but rather one where a higher variety of different food groups is consumed (Swindale & Bilinsky, 2006).

2.7.5 MICRONUTRIENT CONSUMPTION

Hunger and under-nutrition both occur as a result of inadequate food consumption. Hunger is caused by not having sufficient quantities of food to eat. Under-nutrition is the lack of sufficient micronutrients which includes important vitamins, iron and zinc. In children, severe malnutrition caused by a lack of micronutrients can cause weight loss and stunted growth. This can then cause poor cognitive development and impaired immune functions (Altman et al., 2009). The consumption of a variety of food groups that contain different micronutrients is therefore vital (Kennedy, 2004).

Since 2002 there has been a decrease in the number of people in South Africa who experience hunger, but under-nutrition is still a problem (Altman et al., 2009). The Eastern Cape, with many people living in rural areas, has among the highest levels of malnutrition and food insecurity in South Africa. The highest quantities of food consumed in the province are maize, wheat and potatoes (Department of Agriculture, 2002). Households that consume a small variety of food groups therefore do not receive the quantity or quality of micronutrients that are required as part of a balanced diet. Different foods provide different nutrients and only consuming one food group does not provide for all the required nutrients (Kennedy, 2004).

2.7.6 DIET DIVERSITY AND SOCIO-ECONOMIC STATUS

There is a link between socio-economic status of households and the diversity of their diet. Poor households tend to consume fewer diverse foods and food groups in comparison to wealthier households. This difference is mostly contributed to the lower intake of poorer households of foods such as meats, dairy and vegetables in comparison to wealthier

households (Ruel, 2002). Rural households tend to have relatively lower food expenditure as they generally have the lowest incomes in society and are more vulnerable to food insecurity and malnutrition (Bonti-Ankomah, 2001)

There has been much emphasis on dietary diversity in developing countries over the past few years. The lack of dietary diversity is prevalent in poor populations in developing countries as the diet of these poor populations mainly consists of starch-rich staple foods that have limited or no animal products and little fresh fruits and vegetable. These types of diets generally tend to have few micronutrients and where there are micronutrients, they often cannot be absorbed easily (Ruel, 2002). A rise in household food expenditure, even in poorer households due to an increased income often also improves the quality and quantity of household diet (Swindale & Bilinsky, 2006). An improvement in dietary diversity is linked to an increase in socio-economic status and food (Kennedy, 2004).

2.7.7 MEASURING DIETARY DIVERSITY SCORE AND INTERPRETATION

The HDD score is used to show the capability of a household to access and consume different food groups. The purpose of the HDD score is to provide an indication of a household's economic ability to access food and to help evaluate the nutritional quality of the diet. The score can be created from the dietary diversity questionnaire and shows the sum of the various food groups consumed (Kennedy, 2004). The score is therefore measured by counting the number of food groups that households consume (FAO, 2008).

The greater the variety of different food groups consumed, the better the quality of the diet. Only knowing the number of different food groups consumed by households would not necessarily imply that the household had adequate dietary diversity. For example, a household that consumes four different food groups shows that the household's diet contains a certain level of diversity in terms of nutrients. But, it is better to use the HDD score to gain

information about the diversity of the food consumed than only knowing that four different foods, perhaps all belonging to one food group such as cereals, are involved (Swindale & Bilinsky, 2006).

2.7.8 CREATING A HOUSEHOLD DIETARY DIVERSITY QUESTIONNAIRE

The household dietary diversity questionnaire can be used to assess both household and individual dietary diversity depending on the aim of the research. The HDD score is calculated by adding up all the food groups the household consumes over a certain period of time. The number attained will indicate the level of the household's diet diversity. There are numerous time periods of dietary diversity that can be evaluated by the HDD score including three or seven days and up to the past month. The Food and Agriculture Organisation of the United Nations uses twenty four hours as a recall period as there is a decreased likelihood for recall error (FAO, 2008).

There is no standardised household diversity questionnaire, but guidelines are provided on what questions can be asked and how dietary diversity scores can then be calculated. The guidelines are not specific to any particular culture, region or population group and therefore the questions would still need to be revised to suit the local context. Questions on what food a particular household or individual ate over a specific period of time can be asked. A table with the twelve food groups, namely (1) cereals; (2) tubers and roots; (3) vegetables; (4) fruit; (5) meat, poultry, offal; (6) eggs; (7) fish and seafood; (8) legumes, nuts and seeds; (9) milk and milk products; (10) oils and fats; (11) sugar; (12) spices, condiments and beverages would then also be included in the questionnaire. The food category of the foods consumed in the household would then be plotted next to the relevant food group on the table. The questionnaire would then also include questions on the households' economic access to food, who is responsible for preparing the food, the number of people living in the household and where food is purchased or attained (Kennedy, 2004).

Factors also to be considered when creating the household diversity questionnaire include the season or events occurring in the area that will be under study. For example, it is not recommended to use the questionnaire on participants' atypical food consumption periods such as national holidays or religious periods such as Ramadan. This will not provide correct information on the typical diet of the population. Before the data collection starts, the questionnaire also needs to be modified to suit the local context. For example, ensuring that the terminology used in the questionnaire has a common meaning within the environment it will be asked. The relevant stakeholders involved in the preparation of the study should all review questions that have been translated before fieldwork to complete the questionnaire begins (Kennedy, 2004).

2.8 CSI FOR FOOD SECURITY

The CSI is used to measure behaviour: the things that people do when they cannot access food (Maxwell & Caldwell, 2008). CSI was used to collect and analyse information about food security and the food aid receipts. The score obtained from the CSI indicates whether a household food security status is deteriorating or improving (Maxwell & Caldwell, 2008). CSI was used in this research as it measures food security of households in the same community and culture. To calculate the CSI score, three things were calculated, namely the raw score, the severity weight, and the relative frequency and weight. The severity weight is the average taken from all the household scores for each strategy (Maxwell & Caldwell, 2008)

2.8.1 FOOD INSECURITY COPING STRATEGIES

Households experience food insecurity when they are not able to access sufficient and nutritious food to sustain a healthy and productive life (Bonti-Ankomah, 2001). Households then have to find ways of dealing with these shortages. Food insecurity coping strategies are the methods that individuals or households use in order to survive when they experience

shortages in food. As households differ in terms of income, different coping strategies are therefore used by different households that experience different degrees of poverty. An example of a coping strategy is the selling of assets in an attempt to receive money to purchase food. Coping strategies require that people make conscious choices to make plans to try to achieve food security (Mjonono, Ngidi & Hendriks, 2009).

2.8.2 CONSUMPTION AND INCOME COPING STRATEGIES

Poor households tend to be more likely to use food insecurity coping strategies because of their inability to receive sufficient income. Rural households also tend to have relatively lower food expenditure as they generally have the lowest incomes in society and are more vulnerable to food insecurity and malnutrition (Bonti-Ankomah, 2001). Income coping strategies attempt to lower the negative impact associated with not having sufficient income by using strategies such as diversifying income or protecting the amount of food they consume buying or attaining food from different sources for example. Consumption coping strategies are strategies that are more precautionary in nature and refer to how households save resources that can be used during difficult times (Mjonono et al., 2009).

2.9 SUMMARY OF LITERATURE REVIEW

Food insecurity is still wide spread in Africa despite the various social, economic and political advances that have taken place over the past few years. Efforts to improve food security and the nutritional intake of people have been made and continue to be a central topic in many governments and organisations that aim to assist people. Where programmes and initiatives such as social assistance grants have been provided to people, there has been an improvement in food security. However, there are still people, particularly those who are economically disadvantaged, who still have to use various food insecurity coping strategies in an attempt to become more food secure.

CHAPTER 3: AIM AND OBJECTIVES

3.1. AIM

The aim of the research is to investigate the food security, food diversity and coping strategies used to access food in households in the Eastern Cape rural village of Timane in Idutywa. The findings of this research will give insight into the current food insecurity situation of the people living in this community. Based on the findings obtained from this research, appropriate recommendations are made to the relevant authorities for intervention.

3.2 OBJECTIVES

The study's objectives are:

- to investigate food access levels and the diet quality of households using the HDD score
- to investigate household food insecurity and coping strategies using the CSI

CHAPTER 4: RESEARCH METHODOLOGY OVERVIEW

4.1 STUDY AREA AND DATA COLLECTION

The Eastern Cape is the second largest province of the nine provinces of South Africa. It also has the third highest population with approximately 6 620 100 people and is among the poorest provinces in the country (Statistics South Africa, 2013).

This study was conducted in the village of Timane in the Munyu Administrative Area which is a deep rural area of Idutywa in Eastern Cape. The Munyu Administrative Area is 10 km from the town of Idutywa which is located in Mbhashe municipality in the south-eastern part of the province between East London and Mthatha. For this study the rural community of Timane was divided into geographical groups from which household were randomly chosen.

The data collection was obtained through face-to-face structured interviews conducted by the researcher visiting households. The interviews were conducted using a fixed questionnaire to solicit information on household composition, sources of income, coping behaviours, types of food consumed and food access were obtained. All information received during the interviews was transcribed onto the questionnaire template. The research was conducted on one randomly selected sample with a total of 60 individuals interviewed.

4.2 RESEARCH INSTRUMENTS

The following instruments were used to carry out the different elements of the research;

- a socio-demographic questionnaire was used to record the social status and living conditions of households
- a standard HDD score questionnaire with 12 food groups was used to determine dietary quality of foods consumed by different households. The instrument was used to measure the different types of food groups consumed by the households. Counting the number of food groups consumed reflects the level of dietary intake of the household. The higher the count, the more nutrient sufficient the household diet (FAO, 2011)
- a CSI was used to document the coping strategies applied by households in times of limited access to food. This instrument was used as it is a simple tool to determine household food security by analysing a numeric score that indicates whether food security of a particular household is increasing or deteriorating. The higher the numeric score, the higher the food insecurity (Maxwell & Caldwell, 2008).

4.3 PROBLEMS ENCOUNTERED DURING FIELD WORK

Some people in the village work in the nearby town of Idutywa during the day and tend to get home in the late afternoon or early evening. It was therefore sometimes difficult to gain access to them. Arrangements had to be made during weekends to see people where it was not possible to ask them the questions during the week.

Timane is a rural village with no tar road or smooth walkways. It was therefore difficult or impossible to visit households to complete the questionnaire on days with heavy rainfall where roads and paths from one house to another were too muddy and slippery.

4.4 FOOD ACCESSIBILITY PROFILE CATEGORIES AND ANALYSIS

4.4.1 FOOD ACCESSIBILITY IN THE EASTERN CAPE AND IDUTYWA

Households in rural areas tend to buy food items in bulk once a month. These food items mainly include cereal-grain staples as well as processed foods. The reason rural households tend to buy food items in bulk once a month is that this decreases the costs of multiple trips to shops in the towns (Human Sciences Research Council, 2010). Numerous rural households in the Eastern Cape and the Idutywa region access their food from subsistence farming. These households produce crops and keep livestock for the own use rather than selling the produce or livestock. The Eastern Cape has the greatest proportion of subsistence farming compared to the other provinces in South Africa (Statistics South Africa National Department of Agriculture, 2000).

4.4.2 FOOD ACCESS AND FOOD PRODUCTION IN THE EASTERN CAPE

The Eastern Cape has more than 70 000 farm workers who work on commercial farms and approximately 436 000 people who participate in small-scale and subsistence farming. The province also has 21% of the country's cattle, 46% of the country's goat and 28% of the country's sheep. The province also produces crops such as pineapples, tomatoes, citrus fruit,

maize and tea. Organic produce including fruit, vegetables and meat is processed in the province. Other food production and processing that takes place in the province include canning and juicing of crops and processing of dried fruit (Eastern Cape Development Corporation, 2013).

4.5 HOUSEHOLD DETERMINATION

In this study, a household was considered to be any form of housing in the rural village where one or more people lived. All the respondents who lived in either a brick house or rondavel on a permanent basis were considered to be members of a household. The households were also considered a place where people prepared or produced food for themselves and people living in the household.

The sample used for this study was a randomly selected group of households in the rural village of Timane in the Eastern Cape. A total of 60 individuals were interviewed to provide information on the dietary diversity and food security of their entire household. The reason simple random sampling was used was to minimise bias and simplify the analysis of results. The sample was chosen independently of other people within the same population.

Within the randomly selected population of 60 individuals, respondents for the coping strategy weighting and the awareness study were then chosen based on the criteria of how they received income. The methods of receiving income observed among the population of 60, included money from social grants provided by government (child grants, old-age pension, disability grants, foster care grants), income from permanent or temporary employment, money from a family member, or income from a small business.

The qualitative data was collected through face-to-face structured interviews and feedback was written on the questionnaire page by the researcher. All 60 interviews were conducted in the same manner to collect information on the socio-demographic, HDD score and CSI. The

social demographic information for the focus group was analysed by grouping the sample into common categories such as age, marital status and income. This data was interpreted by analysing differences and similarities from findings in similar research, The household dietary diversity was attained by counting the number of different food groups consumed by the respondents. The coping strategy index was obtained by adding the number of coping strategies used by each household. The various strategies were then weighted based on severity of the households' reliance on them. The levels of severity were divided into four groups which were ranked by the respondents from the most to the least severe. The weighted scores of all households were determined in order to depict the level of food insecurity based on the use of the most severe to least severe coping behaviours.

The average household dietary diversity scores were calculated in order to obtain the typical number of diverse food groups consumed by this sample. The standard deviation scores were calculated to illustrate how widely spread out various scores were. The Spearman correlation coefficient was used to find and test the strength of a relationship between various sets of data and illustrated whether or not the relationship was significant.

4.6 ETHICAL CONSIDERATION

The chief of the community was visited to get permission for conducting research. The chief was informed on what the research was about. Households were notified prior to the visit of the researcher. The aim and the possible outcomes and the value of the research to the community were explained to respondents. Only respondents who were willing to be interviewed and who gave verbal consent participated in the research. .

The researcher ensured that respondents participated voluntarily, information collected was treated as confidential, understood that they could withdraw from the study at any time

during the study without penalty or negative consequences and that information collected could, on completion, be made available to the community if requested.

The ethical clearance for this research was granted by the ethics committee of the College of Agriculture and Environmental Sciences, University of South Africa.

4.7 LIMITATION OF THE RESEARCH

The study only involved information provided by 60 people representing 60 households in Timane in Idutywa out of a total population of approximately 6 620 100 in the Eastern Cape (Statistics South Africa, 2013). This sample size may not be enough to make inferences from the data that will be applicable to the entire province. It is, however, hoped that the insight provided in this research will provide beneficial information on the topic, especially since research on this topic covering the Eastern Cape is limited.

The study was conducted between July 2012 and March 2013 and there may have been a change in the social grants that people receive from one year to another. This study could have been conducted again within a specific period in order to determine any changes in the food security indicators of this community.

CHAPTER 5: RESEARCH

5.1 DIETARY DIVERSITY AND FOOD ACCESS OF HOUSEHOLDS IN THE TIMANE COMMUNITY OF IDUTYWA, EASTERN CAPE, SOUTH AFRICA

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5.1.1 ABSTRACT

Objective: The objective of this research is to investigate the Household Dietary Diversity (HDD) and food access of the rural community of Timane in Idutywa, Eastern Cape, South Africa.

Design: A cross-sectional survey design was used for this study and the HDD questionnaire was used to gather data by interviewing respondents.

Setting: This study was conducted in the rural community of Timane which was divided into geographical groups from which household were randomly chosen.

Participants: A total of 60 adults representing 60 selected households were interviewed to provide information on household dietary diversity.

Main Outcomes Measures: Data was collected on the socio-biographic and HDD parameters of households.

Analysis: Data was analyzed and presented as correlation, percentages, means and SDs.

Results: Up to 72% of household received state grants and the Spearman's correlation between number of children and HDD score was $r = 0.38$ while that between number of adults in households and HDD score was $r = -0.93$.

Conclusion: Food security in the Timane community largely depends on state grants and HDD increases moderately with the increase in children and decreases with the increase in adults per household.

Key words: Dietary Diversity, food insecurity, coping strategies

5.1.2 INTRODUCTION

Generally, food insecurity may arise from numerous factors such as socio-economic, political, ecological factors as well as climate factors and in South Africa, the socio-economic factors have played a key role in food insecurity (Bonti-Ankomah, 2001). Cases of poverty and unemployment have had an adverse effect on people's food purchasing power, nutritional status and food safety management of those affected (Koch, 2011).

Although South Africa produces enough food at a national level, this has not guaranteed food security for all individual households, with food insecurity being most prevalent sub urban and rural households (Bonti-Ankomah, 2001). In trying to address the problem of food insecurity, the South African government has introduced strategies such as social grants aimed at creating and supporting programmes that allow households access to sufficient food and water (Koch, 2011). The government is aiming to decrease poverty within the country considerably by ensuring household food security (Altman et al., 2003). Although hunger is not widespread in South Africa as in other areas of Southern Africa, household food security persists on the majority of the black South African population (Oldewage-Theron, Dicks & Napier, 2006).

South Africa is one of the countries with the greatest rate of income inequality in the world with high levels of poverty (Altman et al., 2003). According to Statistics South Africa

(2011), the number of people unemployed in the country increased by 1% to 25% between quarters 4 of 2010 and quarter 1 in 2011. Unemployment among women increased by 3.2% and unemployment among men showed a decrease of 4.6% (Statistics South Africa, 2007). Socio-economic conditions play a key role in food security. Households with insufficient or no purchasing power or are unable to grow enough food may experience hunger. Rural households tend to have relatively lower food expenditure as they generally have the lowest incomes in society and are more vulnerable to food insecurity and malnutrition (Bonti-Ankomah, 2001). The consequences of dietary insufficiency will be that the individual will be undernourished.

Currently no studies have been conducted to determine the food security situation of households in the Eastern Cape rural community of Timane in Idutywa. The aim of this research is to investigate the dietary diversity and food access as a way to determine the level of dietary diversity and security of the rural community of Timane in Idutyway, Eastern Cape, South Africa. The finding from this research will also give an indication on the food insecurity of other rural communities with similar profiles

5.1.3 RESEARCH METHODOLOGY

A cross-sectional survey design was used to obtain responses to questionnaires relating to the relating to the dietary diversity and food access in the rural community of Timane which is a sparsely populated deep rural area of Idutywa, Eastern Cape, South Africa. In this study, the total population of Timane was divided into groups by using their geographical distribution. Households with one respondent each were randomly selected from each group. A total of 60 adults representing 60 households were interviewed to provide information on the dietary diversity and food security of their entire household. A standard single 24-hour recall Household Dietary Diversity Score (HDDS) questionnaire with 12 food groups was used to determine dietary quality of foods consumed by different households (FAO, 2011).

Prior to this study, a written permission for the collection of data was obtained from the chief of the community Timane. The ethical clearance for this research was granted by the ethic committee of the College of Agriculture and Environmental Sciences, University of South Africa. Statistical Package for Social Sciences software version 16 (SPSS Inc., Chicago, IL, USA) was used to analyze all data. Descriptive data are presented as percentages, means and SDs.

5.1.4 RESULTS

5.1.4.1 SOCIO-DEMOGRAPHICS OF RESPONDENTS

As shown on Figure 5.1.1, 2% of the respondents were between the ages of 22 and 25, while another 25% of respondents were between the ages of 26 and 35 and 18% of respondents between 36 and 45 years old. Furthermore, 35% of respondents were aged between 46 and 55 while 30% were older than 55. The majority of the respondents (48%) were married, 3% were separated while 26% were single and staying with a partner and another 23% were widowed (Figure 5.1.2). Only 3% of respondents had no formal education (Figure 5.1.3). The majority of the respondents (93%) had lived in Idutywa for more than 25 years (Figure 5.1.5). As shown in table 5.5.1, 25% of the households had members who received salaries and wages and of this, close to 11% and 8% of households receive permanent salaries and temporary salaries respectively. Furthermore, the majority of the households (72%) receive state grants as a source of income of which the majority is in form of old-age pensions 28% and child grants 38%. Close to 98% of the households of respondents have children in which close to 37% had between one and two children, while close to another 37% with between three to four children and 3% between seven and nine children (table 5.1.2). Close to 23% of households did not have adults, while 55% had between one or three adults and 15% between three and four adults (table 5.1.2.2).

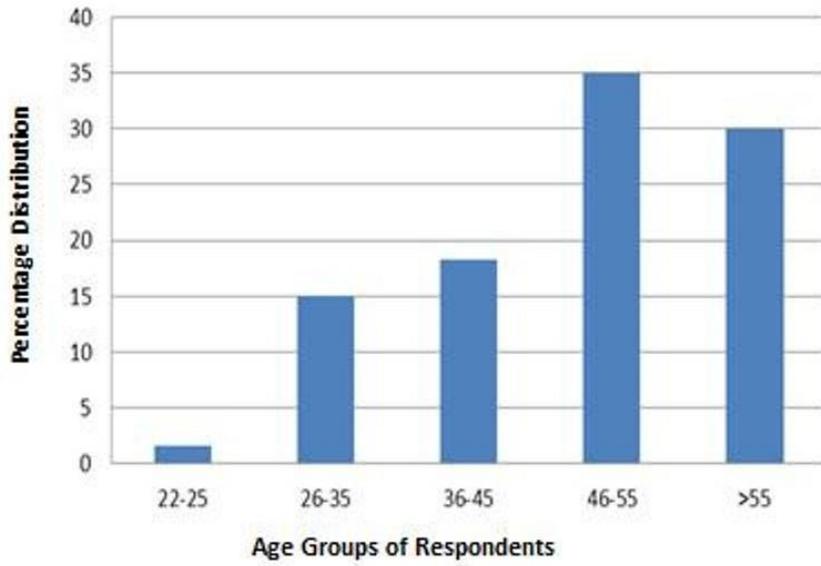


Figure 5.1.1: The age distribution of respondents

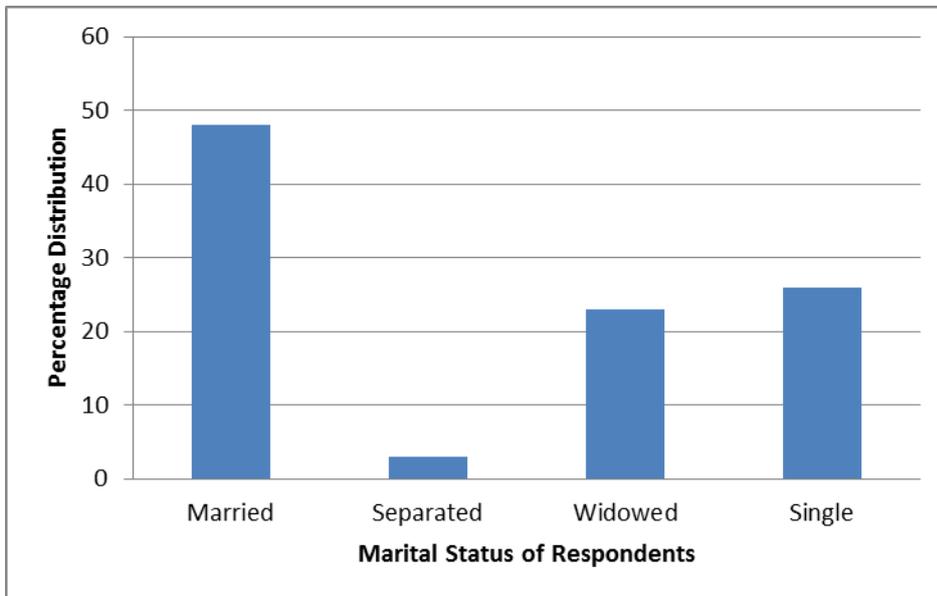


Figure 5.1.2: The marital status distribution of respondents

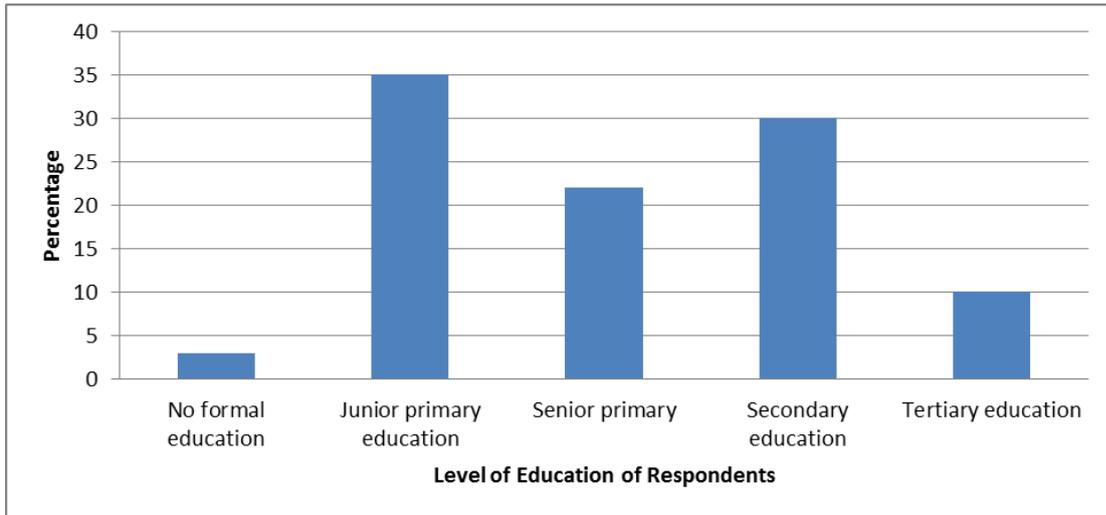


Figure 5.1.3: The highest qualification distribution of respondents

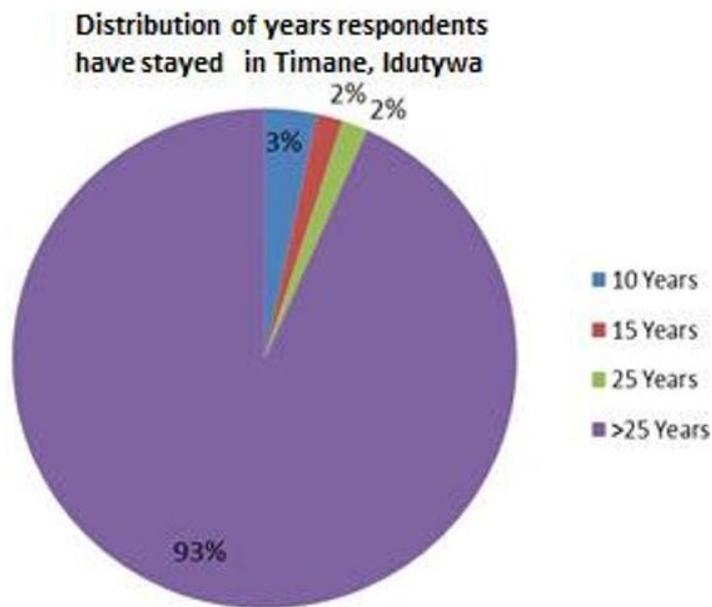


Figure 5.1.4: This distribution of the number of years respondents have lived in Timane, Idutywa

Table 5.1.1: Sources of income and HDDS of households of respondents

Sources of income	^aNumber of Households	HDDS
Salaries and Wages		
Salary- Permanent	7 (11.67 %)	8
Salary- Temporary	5 (8.33 %)	8
Small business	3 (5 %)	6
State Grants		
Old-age pensions	17 (28.33%)	5
Child	23 (38.33 %)	5
Foster care	1 (1.67 %)	9
Disability	2 (3.33 %)	9
Allowance		
Money from husband	2 (3.33 %)	8
Total	60 (100 %)	7
HDDS = Household Dietary Diversity, CSI = Coping Strategy Index, α = percentage of the sample population in brackets		

Table 5.1.2: The distribution of children and adults in the households of respondents

Number of children	Numbers in households	Percentage (%)
0	7	11.7
1 to 2	22	36.7
3 to 4	22	36.7
5 to 6	7	11.7
7 to 9	2	3.3
Total	60	100.0
Number of adults	Number in households	Percentage (%)
0	14	23.3
1 to 2	33	55.0
3 to 4	9	15.0
5 to 6	1	1.7
7 ≥	3	5.0
Total	60	100.0

5.1.4.2 HOUSEHOLD DIETARY DIVERSITY

The average HDD of all households was 7 with a standard deviation of 2.18. Up to 53% of households had HDD score ranging from above the mean while 47 had HDD score below the mean (table 5.1.3).

Most of the food groups were fairly being consumed, with cereals being the most consumed (98%) fruits (20%) and fish and sea food (22%) were the least consumed food groups (table 5). Canned fish was the most consume form of fish (table 5.1.4).

As shown on table 5.1.5, the type of cereal consumed the most by households was maize (82%) and maize and maize products (82%). Similarly, the vegetables consumed the most were cabbage (26%), pumpkin and carrots (19%), and spinach (13%).

The majority of households in this study, 65% (table 5.1.6), did not consume any legumes, nuts and seeds, while 27% of the households did not consume milk and milk products (table 5.1.4).

Most households (75%) consumed fats and oils (table 5.1.6) while 73% of households did not consume eggs (table 5.1.4). Chicken was the most consumed form of meat (50%) while none of the household had consumed goat and besides chicken, pork and mutton were the next most consumed form of meat (table 5.1.5).

As shown on table 5.1.1, the households with the highest average HDD scores were those receiving Foster Grants and Disability Grants, followed by those receiving salaries and wages as a source of income, while those with the lowest average HDD were those that received old-age pensions and child grants.

The Spearman's correlation coefficient between the number of children in households and HDD score was 0.38 at $P=0.0028$ while that between number of adults in households and HDD score was $r = -0.93$ at $p < 0.001$ (table 5.1.7).

Table 5.1.3: The HDDS ranges of households of respondents

Number of households	HDDS range
3 (5%)	0 - 3
26 (43%)	4 - 6
23 (38%)	7 - 9
8 (15%)	10 - 12
HDDS = Household Dietary Diversity Score, n = 60, SD = 2.18 and mean = 7	

Table 5.1.4: The consumption pattern of food groups in households (n=60)

Food groups		Percentage (%)
A	Cereals	98
B	White tubers and roots	50
C	Vegetables	77
D	Fruits	20
E	Meats	63
F	Eggs	27
G	Fish and other sea foods	22
H	Legumes, nuts & seeds	35
I	Milk and milk products	73
J	Oil and fats	75
K	Sweets	82
L	Spice, condiments, beverages	75

Table 5.1.5: The consumption pattern of different cereals, vegetables, meats, fish and fish products in households (n = 60)

Different Cereals	% Consumption
Bread (isonka, amagwinya)	80
Spaghetti, macaroni, noodles etc.	20
Millet, sorghum (isidudu samabele)	33
Maize (isonka sombona,ibhaqolo,amarhewu,ipapa,umngqusho)	82
Biscuits (amaqebengwana)	13
Different vegetables	% Consumption
Pumpkin,carrots (amathanga,iminqathe)	19
Spinach	13
Cabbage	26
Umsobo	3
Irhwabe	6
Unomdlomboyi	2
Imithwane	2
Different fish and fish products	% Consumption
Fresh fish	2
Dried fish	0
Shell fish	2
Canned fish	20
Different meats	% Consumption
Liver (isibindi)	10
Kidney (intso)	2
Heart (intliziyo)	3
Gizzards (amagila)	3
Beef	2
Pork	7
Goat	0
Mutton	7
Chicken	50
Wild game (iintaka zasendle)	3

Table 5.1.6: The consumption patterns of legumes, nuts and seeds in the households of respondents (n=60)

Consumption of Legumes: nuts and seeds (beans (imbotyi-ezimfutshane)	Number of Household	Percentage (%)
Did consume	21	35
Did not consume	39	65
Total	60	100
Consumption of milk and milk products: milk, cheese, yoghurt, sour milk (maas)	No of Household	Percentage (%)
Did consume	44	73
Did not consume	16	27
Total	60	100
consumption of fat and oil: oils, fats for cooking (amafutha), magarine, butter added to butter	No of Household	Percentage (%)
Did consume	45	75
Did not consume	15	25
Total	60	100
Egg consumption	No of Household	Percentage (%)
Did consume	16	27
Did not consume	44	73
Total	60	100

Table 5.1.7: Spearman's Correlation between number of children/adults in households and HDDS

	HDDS correlation coefficient (r)
Number of children	0.38 (P=0.0028)
Number of adults	-0.93 (p < 0.001)
HDDS = Household Dietary Diversity, n = 60, SD ^{HDDS} = 2.18 & Mean ^{HDDS} = 7	

5.1.5 DISCUSSION

5.1.5.1 SOCIO-DEMOGRAPHICS OF RESPONDENTS

This study revealed that the majority of households had adults who were over the age of 46 and that there were very few households with adults younger than 25. The finding that most households had older members was consistent with findings that older people are becoming a significant part of the total population in developing countries (Oldewage-Theron et al., 2006). The high number of adults above the age of 46 and the fewer adults between 18 and 45 may also be attributed to the high HIV/AIDS death rate in South Africa of adults in these age groups in recent years (Birnbaum, Murray & Lozano, 2011). Another possible contributor to the gap between young adults and adults above 46, is that many young adults are moving out of rural areas to live in urban areas (Birnbaum et al., 2011). Young adults are seen to be moving to urban areas for better employment opportunities and improved service delivery. Urban areas are also seen to provide a wider spectrum of opportunities when compared to rural areas which has made moving to urban areas more attractive to young adults and having an overall influence on rural-urban migration (Sommers, 2010).

More than 70% of adults were either married or staying with a partner and about 20% of those not married were widows. Marriage and companionship in African society has been seen as an important milestone in one's life and the starting point of having children who will continue the family name (Dyer, 2007). A possible reason for the 23% of respondents who are staying with a partner but not married is that traditionally, people in the community pay lobola (bride price) to the family of the woman before they can officially marry. People who are mainly unemployed and relying on social grants may not have the money to pay the required lobola and pay for traditional marriage ceremonies that require money (Heeren, Jemmott, Tyler, Tshabe & Ngwane, 2011).

Up to 90% of respondent are literate within which 40% has attended secondary and or tertiary education. This finding is consistent to research that shows that there has been an increase in the number of people receiving formal education in South Africa (Statistics South Africa, 2010).

Close to 90% of all respondents grew up in mid rural and deep rural environment and have lived in Idutywa for more than 25 years. A possible reason why such a large number of respondents had spent so many years in the community is that there are government schools nearby where children could attend free of charge. Furthermore, people living in this area are also allocated pieces of land by the chief at no cost, big enough to build a house and practise subsistence farming on it. People may have also chosen to stay due to stable relationships with spouses as well as with neighbours, family and friends who have also not moved out of the area.

Less than 25% of respondent have a salary or any form of wage and on the other hand, close to 71% of households have state grant; mostly old age pension and child grant as a source of income. The respondents who receive salaries are more likely to receive these salaries from working in nearby towns as the Timane community does not have industries or commercial agricultural farms where people in the community could be employed locally. The high number of people relying on social grants could therefore be because people in the community do not have easy access to a place where formal work is provided on a large scale.

More than 35% of the household of respondents have 3 to 4 kids while more 35 also have 1 to 2 kids. A reason for some households having many children could be that it is also common practice for African households to live with extended families members such as cousins (Bertrand et al., 2003). Up to 23% of the household of respondents have no adults

while 55 and 15 have 1 to 2 and 3 to 4 adults respectively. Households with no adults could be because of the impact of HIV/AIDS which is high in South Africa (Bertrand et al., 2003) as well as the impact of rural to urban migration which has seen many adults leave rural communities (Sommers, 2010).

5.1.5.2 HOUSE HOLD DIETARY DIVERSITY

Looking at the average HDD score (7), SD (2.18) and the fact that 53% of households have average HDD score above 7 it can be determined that there not much variation in the dietary diversity of household and most of the household lie within mean \pm SD. This means that this community in general is able to access and consume a variety of food groups either through growing their own crops, keeping livestock or purchasing from shops. An increase in the average amount of different food groups eaten is seen to show that the households have improved access to food (Swindale & Bilinsky, 2006). The ability of growing a variety of crops and keeping livestock was also linked to greater household dietary diversity in a study conducted in Malawi. Farm production can potentially impact the diversity of diets which is key for a nutritious diet (Jones, Shrinivas, & Bezner-Kerr, 2011).

The households in this study had access to a fair consumption of all the food groups, with fruits, eggs, fish and sea foods being the least consumed. The community may have been better able to get certain food groups from the crops in their own gardens or livestock that they kept as respondents did in some instances keep a variety of livestock and crops. The findings of certain crops and livestock in the community were consistent with research on the vegetation and livestock in the Eastern Cape. The Eastern Cape has the greatest proportion subsistence farming amongst the other provinces in South Africa (Statistics South Africa National-Department of Agriculture, 2000).

Sweets and cereal were amongst the most consumed food groups and this may be because foods in the cereal food group tend to be cheaper to buy as well as easier to grow in different types of terrain with less need to water. The finding of high consumption of sweets is similar to a global study that found that the consumption of sugar products has increased over the last decade, particularly in Asia and Africa. This could be due to the finding that many sugar products are cheap and therefore also affordable to people with low income (Kearney, 2010). This high percentage of cereal consumption could also be attributed to the fact that a significant number of households grew maize which their households could consume. Foods made from maize products are the staple food of many rural across South African (Kearney, 2010). The high percentage of maize can also be attributed to the fact that most of the fertile land in the area is used for the production of maize (Kearney, 2010). Bread, Millet and Sorghum; Spaghetti and Macaroni were also consumed by households. Cereals such as sorghum are produced in the Eastern Cape and are therefore more likely to be accessible and cheaper to the population living in the province. Sorghum is used to make biscuits, porridge, bread, cake and malted beverages (Department of Agriculture, Forestry and Fisheries, 2013). The high consumption of cereals in this region is similar to research that found that the most consumed food group by South Africans was cereals (Labadarios et al., 2013).

The consumption of vegetable by household was clustered around pumpkin, carrots, spinach and cabbage. Carrots and cabbages are common vegetables consumed in Sub-Saharan Africa and vegetables in general are often used in making soups and sauces that can be consumed with staple food made from carbohydrates (Smith & Eyzaguirre, 2007). The high number of households that consumed vegetables as part of their diet could show that more households are aware of the fact that vegetables provide vitamins and nutrients are necessary for the prevention of diseases including cardio vascular diseases and different kinds of cancers (World Health Organization, 2004).

With sugar, oils, spices, caffeine and alcohol being highly consumed by the households, this suggests that the households are not necessarily aware of the health implications that consuming so much food in these food groups may have. The prevalence of drinking alcohol by men and women has increased in South Africa as a whole (Peltze et al., 2011). Sugar and oils consumption has also increased in developing countries such as South Africa as they have become more easily accessible and affordable to people who have low incomes (Kearney, 2010). Milk products were also consumed by most households. A traditional meal consumed in the Eastern Cape is maas which is sour milk usually eaten with mielie meal. This combination is often deemed as a full meal and therefore some meals can have only 2 food groups (cereals and milk products). Households that have cows and goats could also receive their intake of milk from these animals. This finding is aligned to research that shows that there has been growth in the consumption of dairy products globally (Geros & Skoet, 2012).

More than 60% of households also consumed meat as part of their diet which they could either buy from shops or from the livestock that they kept. This finding is aligned to research on the amounts of meat consumed by South Africa on a regular basis (Poonyth, Hassan & Kirsten, 2001). Half of respondents had access to and consumed tubers and roots. Some households grew their potatoes which could be where some households accessed foods in this food group. Eggs, legumes, nuts and seeds were also consumed by a few households. Nuts and various are considered to be some of the indigenous foods that are found in the Eastern Cape, which could explain the better accessibility of the households in this study to these foods (Department of Agriculture, Forestry and Fisheries 2013). The least consumed food group was fruits. This implies that a significant number of households are not getting important nutrients received from fruits.

The consumption of fish is very low with canned fish being the most consumed form of fish. This could be because Timane is a land locked community with no large rivers close by. The price of fish would therefore most likely be more and less accessible. Canned fish rather than fresh fish would be more easily accessible in the area. The finding of low consumption of fish is consistent with research that shows that fish consumption Sub-Saharan Africa has declined (Béné & Heck, 2005).

73% did consume milk and milk products while up to 65% of house hold did not consume legumes, nuts, and seed. Households that had access to livestock such as cattle and goat would be able to attain milk from the livestock and get their dairy intake. Milk is also produced in numerous production systems around sub-Saharan Africa and therefore easily accessible to many people to consume fresh or in a sour state (Davis K, nd).

Most household (75%) in this study consumed fat and oil and research shows that there has been a steady increase in the supply of and intake of fats by people in developing countries. More people are buying and consuming fast foods which tend to have high quantities of fat (Misra, Singhal & Khurana, 2010).

The consumption of meat was mostly in the form of Chicken and to lower extend liver (isibindi). Chickens were the most kept animal in the households which could explain that this would be the meat most easily available to consume. Although the most consumed meat was chicken, most of the households in this study did not consume eggs. This may be because the only eggs consumed by households would be the eggs they shared from a hen, which would mean that the households would only get eggs occasionally and in limited numbers. The Eastern Cape also has a low overall egg production of 5% as opposed to provinces such as Guateng, Free State and Western Cape whose egg production is 24%, 17% and 19% respectively (Department of Agriculture, Forestry and Fisheries, 2011).

The HDD of households with different number of children were close, ranging from 5 to 7 with a Spearman's correlation for number of children and HDD of 0.38. The correlation value of 0.38 implies a small but significant positive correlation between number of children and HDD of households at $p \leq 0.05$. This means that generally, as the number of children in a household increase, so increases the HDD score. In this study, households with more children tend to have more access to and able to consume a larger variety of different food groups. This could be because households with children could be receiving Child Grants per child. Therefore, the more children in a household, the more income received from child grants and the more likely the household would be to afford and consume a greater number of food groups. This finding is consistent to research on the use of child grants which has been to allow households with children relying on these grants to access food that is nutritious and varied in order to reach children's growth needs. Early and regular access to child grants is seen to be a necessity for effective and sustainable impact on child nutrition (Department of Social Development, 2008).

There was a significant negative correlation between the number of adults in a household and the HDD score at $p \leq 0.05$. The Spearman correlation coefficient for number of adults per household and HDD score was -0.93. As the number of adults in a household increase, the HDD score of the household tends to decrease. As the number of adults in a household decrease, the HDD score of the household tends to increase. This finding is similar to research conducted in various provinces in South Africa that found that the dietary diversity of adults in the Eastern Cape is amongst the lowest in the country with 59.6% of adults believed not to be consuming a varied diet (Labadarios et al., 2011). This could possibly be due to that fact that the increasing number of adults in the household may not all be employed or qualify for social grants. Therefore a large number of adults in one household may not be able to contribute financially to obtain a variety of different food groups. For example, Old

age pensions would only be received by adults over the age of 60. While disability grants would only be received by disabled adults who are unable to work. Therefore, adults who were simply unemployed, not disabled and under the age of 60, would possibly not receive any income if they were unemployed (South African Government Services, 2013). Households would therefore have to use money to get staple foods as opposed to a varied diet. Adults who are poor because of unemployment often cannot access diverse food groups (Labadarios, 2011).

Households with the highest average HDD scores were those receiving Foster Grants and Disability Grants. The average HDD scores for both these households receiving these types of grants was 9. The lowest average HDD scores (5) goes to households that received Old Age Pensions and Child grants. Receivers of foster grants receive R800 per month and receivers of disability grants receive R800. Child grants receivers only get R290 per month and old age grant receivers get R1260 (South African Government Services, 2013). This could mean that more respondents in this study got foster grants and disability grants per household and could therefore afford to buy foods in different food groups. Households receiving income from permanent salaries, temporary salaries and money from husbands all had an average HDD score of 8. These households probably received more money per month than those relying on social grants..

5.1.6 CONCLUSIONS: IMPLICATIONS FOR RESEARCH AND PRACTICE

The food consumption of households with varied socio-economic demographics was evaluated. It is found that the households have a diverse diet with an average of five different food groups being consumed. However there is a high intake of fats, oils, sugar, caffeine and alcohol and low intake of fruits in the population. Household Dietary Diversity moderately but significantly with the increase in number of children per household but decreases immensely and significantly with the increase of adults in the household most likely

attributed to households receiving child grants which could be used to buy a diverse range of foods and adult unemployment in rural communities respectively. The household food security in this community depends on state grants.

**5.2 FOOD SECURITY AND COPING STRATEGIES OF HOUSEHOLDS IN THE
TIMANE COMMUNITY OF IDUTYWA, EASTERN CAPE, SOUTH AFRICA**

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5.2.1 ABSTRACT

Background

This study looked at the coping strategies of households in the rural community of Timane in times of hardship.

Methods

A cross-sectional survey design was used in which a Coping Strategy Index questionnaire designed by Maxwell and Caldwell (2008) was used to gather data. Respondents were randomly selected from selected households from designated areas in the community.

Results

The majority of the households (72%) received state grants as a source of income within which old-age pensions constitute 28% and child grants 38%. The Spearman's correlation coefficient between the number of children in households of respondents and CSI was 0.78 ($P < 001$) while that between the number of adults in households and CSIS was 0.2 ($P < 001$).

Conclusion

Household in the rural community of Timane community were found to be food insecure and this gets severe with the increase in the number of children in households.

5.2.2 INTRODUCTION

Households are food secure when they have access to the quantity and variety of food they need throughout the year in order to live an active and healthy life. Healthy, well-nourished people are the result of successful social and economic development (FAO, 2010). South Africa was found to be food secure at national level in that it produces its main staple foods, exports surplus and imports what it requires to meet the demand of its growing population (Department of Agriculture, Republic of South Africa, 2002). However, although South Africa produces enough food at national level, this has not guaranteed food security for all individual households, with food insecurity being most prevalent in suburban and rural households (Bonti-Ankomah, 2001). In trying to address the problem of food insecurity, the South African government has introduced strategies such as social grants with the aim of creating and supporting programmes that allow households access to sufficient food and water (Koch, 2011). While there has been a decrease in the experience of hunger since 2002, under-nutrition is still a problem in the country considering that many households are food insecure in that they lack adequate quantities of food, and therefore are more likely to be malnourished (Oldewage-Theron et al., 2006).

The Coping Strategies Index (CSI) is a tool developed in Ghana, Kenya and Uganda and used in many other African countries, Asia and the Middle East for early food insecurity warning monitoring and assessment (Maxwell & Caldwell, 2008). The CSI measures what people do when they are unable to obtain enough food; this tool is easy to administer and yields information that is simple to analyse, and because it is quick to administer, it can yield information in real time (Corbett, 1988). One way to identify food insecure households or regions is to determine the coping strategies they use to offset threats to food and economic resources in the event of hardship, and the frequency with which they have recourse to them (Corbett, 1988). A study conducted in Malaysia in a low-income rural area, showed that

households in which more children went to school decreased their expenditure on education in an attempt to decrease their overall household expenditure so as to obtain more food (Shariff & Khor, 2008). Furthermore, households were found to borrow money in order to buy food, obtain food from family and neighbours, and reduce the number of meals in order to decrease food insecurity (Shariff & Khor, 2008). Similarly, in a study conducted in Ethiopia, a positive relationship was found between household size/number of children/ and the number of coping strategies used (Regassa, 2011).

A study conducted in the Vaal Triangle in South Africa indicated that coping strategies used by households during times of food insecurity also had an impact on their nutrition. These strategies included decreasing the variety of foods consumed, decreasing portions size of food and skipping certain meals (Oldewage-Theron et al., 2006). Increased food prices globally have also been seen to influence the need for coping strategies in households (D'Souza & Jolliffe, 2012). It is important to study the coping strategies of any region, as this allows researchers to measure the benefits of food aid programmes, if there are any, and also provides information on whether a food crisis is approaching (Maxwell & Caldwell, 2008). Currently no studies have been conducted to determine the food insecurity situation of households in the community of Timane in Idutywa, Eastern Cape, South Africa.

There is value in conducting a study of the household coping strategies of this community and using this as a proxy to evaluate the level of food insecurity and coping strategies employed by the community in the event of hardship. The aim of the research reported on here is to investigate the, coping strategies of this community so as to determine the level of food insecurity. Findings of this research will provide insight into the current food insecurity situation and the coping strategies employed by the inhabitants of this community, which could constitute the basis for intervention by administrative authorities and NGOs.

5.2.3 RESEARCH METHODOLOGY

A cross-sectional survey design was used to obtain responses to questionnaires about the coping strategies of households in the rural community of Timane, which is a sparsely populated area in deep rural Idutywa, Eastern Cape, South Africa. In this study the total population of Timane was divided into groups according to geographical distribution. Households, represented by one respondent each, were randomly selected from each group. 60 adults, representing 60 households, were interviewed in 2013 to provide information on the dietary diversity and food security of their entire household. A standard 30 day-recall CSI questionnaire was used to gather data on the coping strategies of households in times of limited access to food (Maxwell & Caldwell, 2008). 8 focus groups, each consisting of respondents from diverse socio-economic backgrounds across the entire community of Timane, were used to conduct a mini study during which the nature of the various coping strategies was ascertained; coping strategies were classified as either extreme, less extreme, moderate or least extreme. Prior to the study, a written permission for the collection of data was obtained from the chief of the community. Ethical clearance for this research was granted by the ethics committee of the College of Agriculture and Environmental Sciences, University of South Africa. Statistical Package for Social Sciences software version 16 (SPSS Inc., Chicago, IL, USA) was used to analyse all data. Descriptive data are presented as percentages, means and SDs.

5.2.4 RESULTS

5.2.4.1 Socio-biographic information of respondents

The majority of the respondents were aged 55 and above, and 27% were 35 or younger (table 5.2.1). 70% of respondents were cohabiting with spouses, and of these 48% were legally married; 24% of the respondents were widowed (table 5.2.1). Only 3% of respondents had no formal education (table 5.2.1). The majority of the respondents (93%) had lived in Idutywa for more than 25 years (table 5.2.1). Households used various sources of energy to prepare food with the most utilised being paraffin, gas and dried cow dung and conversely, electricity was the least utilised domestic source of energy (3%) (table 5.2.2)

The majority of the respondents (65%) were 36 years old and above while only 27% were 35 years old or younger (table 5.2.1). Up to 70% of respondent were cohabiting with spouses within which 48% were legally married and 24% of the respondents were in widowhood (table 5.2.1). Only 3% of respondents had no formal education (table 5.2.1). The majority of the respondents (93%) had lived in Idutywa for more than 25 years (table 5.2.1). Households used various sources of energy to prepare food with most utilised being paraffin, gas and dried cow dung and conversely, electricity was the least utilised domestic source of energy (3%) (table 5.2.1)

Table 5.2.1: The socio-biographic details of respondents (n=60)

Age group	Number of households	Percentage (%)
22- 25	1	2
26-35	15	25
36-45	11	18
46-55	21	35
56 and above	12	20
Marital status	Number of households	Percentage (%)
Married	29	48
Separated	2	3
Single staying with partner	15	25
Widowhood	14	24
Highest level of education	Number of households	Percentage (%)
No formal education	2	3
Junior primary education	21	35
Senior primary	13	22
Secondary education	18	30
Tertiary education	6	10
Number of years lived in Idutywa	Number of households	Percentage (%)
10 years	2	3
15 years	1	2
25 years	1	2
26 years or more	56	93

Table 5.2.2: Household domestic energy sources of respondents (n=60)

Sources of energy	Number of households	Percentage
Paraffin	7	20%
Paraffin and dried cow dung	5	17%
Dried cow dung	3	12%
Gas	17	8%
Paraffin and gas	23	20%
Wood and dried cow dung	1	5%
Electricity	2	3%
Wood	2	2%
Wood and paraffin	5	8%
Wood, paraffin and dried cow dung	1	2%
Wood, paraffin and gas	2	3%

As shown in table 5.2.4, 25% of the households included members who received salaries and wages and of this group, close to 12% of households included members earning a permanent salary and 8% included members earning temporary salaries respectively. Furthermore, the majority of the households (72%) contain members who received state grants; of these, 28% were old-age pensions and 38% were child grants (table 5.2.4).

Close to 98% of the households represented in the study contained children; of these, roughly 37% included 1 or 2 children, 37% included 3 or 4 children, and 3% included 7 to 9 children (table 5.2.5). There were no adults in close to 23% of the households sampled, whereas 55% included 1 or 2 adults, and 15% included 3 or 4 adults (table 5.2.5).

5.2.4.2 Household coping strategies

The four most frequently used coping strategies, arranged in order starting with the most frequently employed, were: (1) Restrict consumption by adults in order for small children to eat, (2) Rely on less preferred and less expensive foods, (3) Borrow food, or rely on help from a friend or relative, (4) Ration the money you have and buy prepared food (table 5.2.3).

As shown in table 5.2.3, 9 of the 13 coping strategies were never used by 60% or more households of respondents. Starting with the least utilised, these were: (1) Skip meals for an entire day, (2) Purchase food on credit, (3) Gather wild food, hunt, or harvest immature crops, (4) Consume seed stock held for next season (5) Send household members to eat elsewhere, (6) Feed working members of the household at the expense of non-working members, (7) Ration the money you have and buy prepared food, (8) Send household members to beg, (9) Restrict consumption by adults in order for small children to eat (table 5.2.3).

Table 5.2.3: Percentage utilisation of the different coping strategies by households in the preceding 30 days

Coping strategies	Percentage utilisation at different Frequencies (%)				
	All the time (every day)	Fairly often (3-6 weeks)	Once in a while (1-2 weeks)	Hardly at all (less than a week)	Never
a) Rely on less preferred and less expensive foods	17	5	53	10	15
b) Borrow food, or rely on help from a friend or relative	12	8	43	10	27
c) Purchase food on credit?	0	0	5	0	95
d) Gather wild food, hunt, or harvest immature crops	2	2	10	0	87
e) Consume seed stock held for next season	0	0	12	3	85
f) Send household members to eat elsewhere	7	2	8	0%	83
g) Send household members to beg	8	3	15	5%	68
h) Limit portion sizes at mealtimes	8	5	60	7%	20
i) Restrict consumption by adults in order for small children to eat	20	0	12	2%	67
j) Feed working members of household at the expense of non-working members	7	3	10	2%	78
k) Ration the money you have and buy prepared food?	10	7	12	2%	70
l) Reduce number of meals eaten in a day	0	2	45	3%	50
m) Skip meal for an entire day without eating	2	0	5	2%	92
α = coping strategies used in the past 30 days by respondents, n = 60					

Table 5.2.4: Sources of income and CSI of households of respondents

Sources of Income	^aNumber of Households	CSI
Salaries and wages		
Salary - Permanent	7 (11.67 %)	26
Salary - Temporary	5 (8.33 %)	27
Small business	3 (5 %)	10
State grants		
Old-age pensions	17 (28.33%)	31
Child	23 (38.33 %)	39
Foster care	1 (1.67 %)	24
Disability	2 (3.33 %)	18
Allowance		
Money from husband	2 (3.33 %)	17
Total	60 (100 %)	189
α = percentage of the sample population in brackets, CSI = Coping Strategy Index, SD=29.18 and Mean=52		

Table 5.2.5: The distribution of children and adults in the households of respondents and their coping strategy

Number of children	Numbers of households members	CSI
0	7 (11.7)	30
1 to 2	22(36.7)	35
3 to 4	22(36.7)	46
5 to 6	7(11.7)	15
>7	2(3.3)	18
Total	60 (100.0)	-
Number of adults	Numbers of households members	CSI
0	14 (23.3)	23
1 to 2	33(55.0)	28
3 to 4	9(15.0)	60
5 to 6	1(1.7)	20
>7	3(5.0)	38
Total	60(100.0)	-

The CSI of the majority of households (74%) was below the mean (51); of this group, 68% had a CSI below 30, with a standard deviation of 32 (table 5.2.6).

Based on source of income, the 4 groups of households with the highest CSI, starting with the highest, were (table 5.2.4): (1) Households of respondents receiving a child grant, (2) Households of respondents receiving an old-age pension, (3) Households of respondents earning a temporary salary, and (4) Households of respondents earning a permanent salary. The Spearman correlation coefficient between the number of children in respondents' households and CSI was 0.775 at $P < 001$. Similarly, the Spearman correlation coefficient between the number of adults per household and CSIS was 0.2 at $P < 001$ (table 5.2.7). As shown in table 5.2.5, the households with 3 to 4 children had the highest CSI (46) followed by households with 1 to 2 children (35) and households with no child (30). On the other hand, households with more than 4 children (15% of total households) had a CSI ranging from 15 to 18. Households with 3 to 4 adults had the highest CSI (60) while the rest had a CSI ranging from 20 to 38 (table 5.2.5).

Table 5.2.6: The CSI ranges of households of respondents

Number of households	CSI range
41 (68%)	0 - 30
4 (7%)	31 - 50
19 (18%)	51 - 80
4 (7%)	≥81
Total = 60	
CSI = Coping Strategy Index, SD=32.3 and Mean=50.6, n = 60	

Table 5.2.7: Spearman's correlation between number of children/adults in households and CSI

Household habitation	CSI correlation coefficient (r)
Number of children	0.775 (P<0.001)
Number of adults	0.2 (p < 0.001)
CSI= Coping Strategy Index n = 60, SD ^{CSI} = 32.3 & Mean ^{CSI} = 50.6	

5.2.5 DISCUSSION

5.2.5.1 Socio-demographics of respondents

The study revealed that the majority of households included adults who were over the age of 45, with only a few including adults younger than 25. The finding that most households included older members was consistent with findings that older people are becoming a significant part of the total population in developing countries (Oldewage-Theron & Kruger, 2009). The high number of adults over the age of 45 may also be attributed to the high HIV/Aids death rate in South Africa among adults in the younger age groups (Birnbaum et al., 2011). Another possible contributor to the gap between young adults and adults over the age of 45 is the exodus of young adults from rural areas in favour of life in urban areas (Statistics South Africa, 2011) in order to take advantage of better employment opportunities and improved service delivery. Urban areas are perceived to provide a wider spectrum of opportunities than rural areas, which has made moving to urban areas more attractive to young adults, and has had an overall influence on rural–urban migration (Sommers, 2010).

The fact that 70% of adults were either married or staying with a partner is attributable to the fact that marriage and companionship in African society is considered an important milestone in one's life and the starting point of having children who will continue the family name (Dyer, 2007). A possible reason why 22% of respondents stayed with a partner but were not married is the fact that traditionally, people in the community pay lobola (bride price) to the family of the woman before the couple can officially marry. People who are unemployed and reliant on social grants may not have the money to pay the required lobola and for traditional marriage ceremonies that require money (Heeren et al., 2011).

Up to 90% of respondents were literate; of these, 40% had attended secondary and/ or tertiary education institutions. This finding is consistent with research that shows that there has been

an increase in the number of people receiving formal education in South Africa (Statistics South Africa, 2010). In the rural community of Timane, there are three government schools within walking distances of households. This could explain the high level of literacy within the community, as people have easy access to schools where they can receive free education from the beginning of junior school to the end of high school.

The fact that less than 25% of households included no salary- or wage-earners can be attributed to the fact that rural livelihood is characterised by a combinations of land-based entitlements, informal farming and non-farming economic activities, state social assistance and practices of social reciprocity (Neves & Du Toit, 2013). The fact that 60% of the households represented by respondents received state grants, most of which took the form of old-age pensions and child grants, indicates that South Africa's social security system is achieving its main objectives of reducing poverty among groups who are not expected to participate fully in the labour market, and therefore earn a low income: the elderly, those with disabilities, and children (Samson, MacQuene & Niekerk, 2006). The fact that so many people rely on social grants could be attributable to the lack of easy access to a place where formal work is provided on a large scale..

The relatively large number of children in some households is common in African communities because of the high prevalence of extended families (Bertrand et al., 2003).

The domestic sources of household energy identified bears out the findings of a study conducted in five rural villages in South Africa in which the majority of households were found to use paraffin alongside other energy sources other than electricity (Madubansi & Shackleton, 2006). The cost of electricity has been found to limit the number of users among low-income households because of their low purchasing power (Kabede, Bekele & Kedir, 2002). The number of years respondents had lived in Idutywa is in line with the socio-

economic profile of people in rural areas who qualify for state grants (Neves & Du Toit, 2013).

5.2.5.2 Household coping strategy

A high CSI score generally means that a household is unable to access enough food, and therefore has to rely on a number of coping strategies; conversely, the lower the CSI score, the fewer the coping strategies harnessed (Maxwell & Caldwell, 2008).

The fact that the majority of households (74%) had a CSI below the mean (51), and that of these 68% had a CSI below 30, simply means that according to the community standard the majority of households were at the better end of the food insecurity spectrum. However, a standard deviation (SD) of 32 is indicative of the range of coping strategies employed by households, given that households employ different coping strategies for different reasons (Rozanne, 2008). Similar results were obtained during a study involving households in informal urban settlements and rural areas in South Africa; it was shown that households with high CSI scores applied the largest number of strategies to improve food security (Kruger et al., 2008)

Household were found to employ all the various categories of coping strategies with ‘Rationing, or managing the shortfall’, being the most utilised, followed by ‘Dietary change’ and ‘Short-term measures to increase household food availability’ (Maxwell & Caldwell, 2008). Because households employed a range of coping strategies to alleviate food stress, they can be considered to be food insecure (Kruger et al., 2008)

The households with 3 or 4 children had the highest mean CSI, with a value of 46, followed by the households with 1 or 2 children and the households with no children, with a mean CSI of 35 and 30 respectively. The higher number of coping strategies used by households with 3 or 4 children might have arisen from the fact that there were more children per household

who required adequate and nutritious food for their continued growth. When these households anticipated problems relating to food consumption, they tended to use more coping strategies in an effort to avoid these (Maxwell & Caldwell, 2008). The households with no children also had a fairly high CSI score, which could be attributed to the presence of more adults who were not working and who did not earn a child grant or qualify for any social grant, and therefore, did not have the means to buy adequate food (Samson et al., 2006).

The Spearman's correlation coefficient between the number of children per household and CSI showed a strong positive monotonic relationship ($r = 0.78$ at $p \leq 0.01$). This strong positive correlation coefficient indicates that when the number of children in households increased, the coping strategies used by the households generally increased, hence a reduction in the food insecurity with the increase in the number of children in a household. This finding is in line with a similar study conducted among low-income communities in Malaysia, who were found to be more food insecure, and as a result to employ more coping strategies such as borrowing money to buy food, receiving food from family members, relatives and neighbours and reducing the number of meals (Shariff & Kohr, 2008:29). The fact that households with no children had a fairly high CSI can also be attributed to the non-receipt of child grant income, and therefore greater food insecurity (DSD, SASSA and UNICEF, 2012).

Similarly, the Spearman correlation coefficient for the number of adults per household and CSI showed a weak positive monotonic relationship ($r = 0.20$ at $p \leq 0.01$), indicating that when the number of adults in households increased, the coping strategies used by the households did not change much. This finding supports the fact that food insecure households were likely to include more children than adults (Shariff & Kohr, 2008).

Households of which members earned salaries from small business had the lowest CSI; this finding is consistent to with the finding of a study conducted in Malawi, in which the households of owners of small businesses were found to be more food secure (Anderson, 1998). It has also been found through research that households with more employed members are better able to purchase adequate food supplies; employment plays an important role in food security and in decreasing the need to change behaviours to access food (FAO, 2012).

The fact that households with members who receive a child grant as their scored a high CSI compared to with households with other sources of income could be attributed to the fact that child support grants provide the least amount of money per month when compared with other social grants (South African Social Security Agency, 2013).

5.2.6 CONCLUSIONS

Households in the rural community of Timane in Idutywa are food insecure. The level of food insecurity is linked to the type of income that households receive, with those deriving their income from the child grant being the most food insecure. The CSI of households increases proportionately to the increase in the number of children in households, but does not differ much proportionately to the number of adults in households.

CHAPTER 6: GENERAL DISCUSSION

6.1 SOCIO-DEMOGRAPHICS OF RESPONDENTS

This study revealed that the majority of households had adults who were over the age of 46 and that there were very few households with adults younger than 25. The finding that most households had older members was consistent with findings that older people are becoming a significant part of the total population in developing countries (Oldewage-Theron et al., 2009). The high number of adults above the age of 46 and the smaller number of adults between 18 and 45 may also be attributed to the high HIV/AIDS death rate in South Africa of adults in these age groups (Birnbaum et al., 2011). Another possible contributor to the gap between young adults and adults above 46, is that many young adults are moving out of rural areas to live in urban areas (Statistics South Africa, 2006). Young adults are seen to be moving to urban areas for better employment opportunities and improved service delivery. Urban areas are also seen to provide a wider spectrum of opportunities when compared to rural areas which has made moving to urban areas more attractive to young adults and having an overall influence on rural-urban migration (Sommers, 2010).

More than 70% of adults were either married or staying with a partner and about 20 of those not married were widows. In African society, marriage and companionship are considered important milestones in a person's life and the starting point of having children who will continue the family name (Dyer, 2007). A possible reason for the 23% of respondents staying with a partner but not married is that traditionally, people in the community pay lobola to the family of the woman before they can officially marry. People who are mainly unemployed and relying on social grants may not have the money to pay the required lobola and pay for traditional marriage ceremonies that require money (Heeren et al., 2011).

Up to 90% of respondent are literate, of whom 40% attended secondary and or tertiary institutions. This finding is consistent with research that shows that there has been an increase in the number of people receiving formal education in South Africa (Statistics South Africa, 2010). The rural community of Timane has three government schools within walking distances of the households. This could explain the high level of literacy within the community as people have easy access to free schools where they can be educated from the beginning of junior school to the end of high school.

Close to 90% of all respondents grew up in a mid-rural and deep rural environment and close to 90% have lived in Idutywa for more than 25 years. A possible reason why such a large number of respondents have spent so many years in the community could be the benefit of having free government schools where their children and families could attend free of charge within close proximity. People living in this area are also allocated land by the chief. The land is given at no cost and is big enough to build a house and to do some subsistence farming. People may also have chosen to stay because they enjoyed stable relationships with spouses as well as having neighbours, family and friends who have also not moved out of the area.

Fewer than 25% of the respondents have a salary or form of wage and more than 60% of the households of respondents receive state grants; mostly old-age pensions and child grants as a source of income. The respondents who receive salaries are more likely to receive these salaries from working in nearby towns as the Timane community does not have industrial or agricultural land where people in the community could be employed locally. The high number of people relying on social grants could therefore be because people in the community do not have easy access to a place where formal work is provided on a large scale.

Houses in rural South Africa generally tend to either be brick houses or rondavels made of mud or grass (Naude, 2007). The type of structure in which most respondents in this study lived was brick houses or mud or grass rondavels. People living in this area often have more than one type of building in a yard, for example a brick house with a few rooms as well as a traditional mud/grass rondavel. Having more than one house in one yard, allows for more people to be able to live in the household. Mud and grass houses are traditional forms of houses in rural Eastern Cape and are also cheaper to build as resources to build can be found freely and in abundance within the rural landscape (Naude, 2007).

The reason for some households having many children could be that it is also common practice for African households to live with extended families members such as cousins (Bertrand, Mullainathan & Miller, 2003). Households with no adults could be attributed to the impact of HIV/AIDS which is high in South Africa (Birnbaum et al., 2011) as well as the impact of rural-urban migration which has seen many adults leave rural communities (Sommers, 2010).

Up to 84% of the respondents receive water from the river and rain tanks as the area does not have running tap water in houses provided by the government. The only available running water can be obtained from communal taps which respondents can access by walking some distance from their homes. Rain tanks are kept next to houses and therefore a shorter distance is travelled to attain water. Taps within households have not been provided by the government. This explains why close to 92% collect water using buckets and wheel barrows. Households in this area therefore are still having to walk long distances to get water or relying in rain taps to collect water when it rains. Households in the study also used different sources of water to ensure that they had sufficient water for the entire household. Due to the

distances that households need to travel in order to get water, most use wheelbarrow or donkeys to collect water in their buckets, whilst others also carry these buckets on their heads or shoulders. As most respondents have been living in the area for more than 10 years, this has been the only way of life they have known as the area has never had running water for households. The long distances that have to be travelled by households to get water implies that some effort is required to get adequate water.

The rural area of Timane does not have electricity supplied by government and households with electricity have received the electricity by using their own money to get electricity lines drawn to their homes or use electricity generators powered by diesel. Most households in this study therefore prepare their food by using paraffin, dried cow dung, gas and wood as forms of energy. Only 2.3% had electricity to prepare their food as they either used a generator or had paid to bring electricity lines to their homes. Cow dung and wood is found in the surrounding terrain, but paraffin and gas have to be bought either from the town which is 10 kilometres away or the local spaza shops. The houses with electricity also use the electricity for radios, televisions and refrigerators. Although South Africa has increased its electricity supply, the focus has mainly been on increasing the supply to urban areas. Some rural areas, such as Timane, are still without electricity supply (Dusabe, Munda & Jomoh, 2007).

The study showed that nearly 80% of households bought their food on a monthly basis in bulk while the remaining households bought their food on a weekly basis. Those who were able to buy their food on a weekly basis are more likely to be those who had the means or necessity of getting to and from the nearest town on a more regular basis. These means could include having more money to travel to town, having access to a vehicle or being employed in the town and therefore in the town more frequently. Food is predominantly bought from the nearest town of Idutywa which is 10 kilometres away. Few households bought their food from spaza shops which are within walking distance from their home. This is most likely

because food is cheaper in the town than convenient spaza shops close by. Buying in bulk is generally also cheaper than buying in small quantities. The 10 kilometre distance and travel costs to get to the nearest town could also be the reason households shop in bulk on a monthly basis. This would imply that the type of bulk food bought by households would have to be non-perishable items that can last without being stored in the refrigerator as most people do not have electricity to maintain refrigerators.

Keeping livestock was also a popular traditional practice in the area that many households still undertook. Rural households in the Eastern Cape are known to keep livestock such as cattle, sheep, chickens, pigs and goats. These animals can then either be consumed by the households or sold for additional income (Statistics South Africa, 2007). Most households in this study had chickens whilst others owned cows, sheep and goats. Not many households owned ducks, pigs and horses. Due the land allocation for each household, there is sufficient space in the area for individual households to grow certain vegetables. Most households grow maize whilst some grow pumpkins and cabbage with very few households growing spinach and potatoes. The livestock and vegetables grown by some households could either be consumed by the families themselves, or sold for additional income. These households keep a variety of livestock and grow vegetables grown. This would imply that some households have a greater variety of foods that they produce themselves. This may be because certain households are better able to afford a greater variety of seeds that yield different vegetables. The variety of vegetables grown could also be influenced by the households accessibility to water to keep various plants hydrated. Long distances to get water from rivers may influence people's ability to grow a variety of crops.

6.2 HOUSEHOLD DIETARY DIVERSITY

The HDD mean of households of 7 and a standard deviation of 2.18 and the fact that the HDD of 43% and 38% of households lie between 4 and 9 and 7 and 9 respectively, imply that there is not much variation in the dietary diversity. This means that this community is able to access and consume a variety of food groups either through growing their own crops, keeping livestock or purchasing from shops. An increase in the average amount of different food groups eaten is seen to show that the households have improved access to food (Swindale & Bilinsky, 2006). The ability to grow a variety of crops and keep livestock was also linked to greater dietary diversity in a study conducted in Malawi. Farm production can potentially impact the diversity of diets which is key to a nutritious diet (Jones, Shrinivas Bezner-Kerr, 2011).

The respondents in this study had access to a fair consumption of all the food groups, with fruits, eggs, fish and sea foods being the least consumed. The community may have been better able to get certain food groups from the crops in their own gardens or the livestock that they kept as respondents did in some instances keep a variety of livestock and crops. Finding certain crops and livestock in the community was consistent with research on the vegetation and livestock in the Eastern Cape. The Eastern Cape has the greatest proportion of subsistence farming of all the provinces in South Africa (Statistics South Africa National Department of Agriculture, 2000).

Sweets and cereal were among the most consumed food groups which may be because these foods tend to be relatively cheap to buy. Cereal food grows easily in different types of terrain and does not require huge volumes of water. This high percentage of cereal consumption could also be attributed to the fact that a significant number of households grow maize which their households could consume. Foods made from maize products are the staple food of many rural people across South African (Department of Agriculture, 2003). The high

percentage of maize consumption can also be attributed to the fact that most of the fertile land in the area is used for the production of maize (Department of Agriculture, Forestry and Fisheries, 2013). The high consumption of sweets corresponds to a global study which found that the consumption of sugar products has increased over the last decade, particularly in Asia and Africa. This could be attributed to the fact that many sugar products are cheap and therefore affordable for people with low incomes (Kearney, 2010). Bread, millet and sorghum and pastas, such as spaghetti and macaroni were also consumed by households. Cereals such as sorghum are produced in the Eastern Cape and are therefore more likely to be accessible and cheaper for the population living in the province. Sorghum is used to make biscuits, porridge, bread, cake and malted beverages (Department of Agriculture, Forestry and Fisheries, 2013). The high consumption of cereals in this region is similar to research that found that the most consumed food group by South Africans was cereals (Labadarios et al., 2011).

Households' consumption of vegetables was clustered around pumpkin, carrots, spinach and cabbage. Carrots and cabbages are common vegetables consumed in sub-Saharan Africa and vegetables in general are often used in soups and sauces that can be consumed with staple food consisting of carbohydrates (Smith & Eyzaguirre, 2007).

With sugar, oils, spices, caffeine and alcohol being highly consumed by the households, this suggests that the households are not necessarily aware of the health implications that consuming so much food in these food groups may have. The prevalence of drinking alcohol among both men and women has increased in South Africa as a whole (Peltze, Davids & Njuho, 2011). Sugar and oil consumption has also increased in developing countries such as South Africa as they have become more easily accessible and affordable to people who have

low incomes (Kearney, 2010). Milk products are also consumed by most households. A traditional meal consumed in the Eastern Cape is maas (sour milk) eaten with maize. This combination is often deemed as a full meal even though it consists of only two food groups (cereal and milk products). Households that have cows and goats could also receive their intake of milk from these animals. This finding is aligned to research that shows that there has been growth in the consumption of dairy products globally (Geros & Skoet, 2012).

More than 60% of households also consumed meat as part of their diet which they could either buy from shops or obtain from the livestock that they keep. This finding is aligned to research on the amounts of meat consumed by South Africa on a regular basis (Poonyth, Hassan & Kirsten, 2001). Half of the respondents had access to and consumed tubers and roots. Some households grew their own potatoes which could be how some households accessed this food group. Eggs, legumes, nuts and seeds were also consumed by a few households. Nuts and various are considered to be some of the indigenous foods that are found in the Eastern Cape, which could explain the better accessibility of the households in this study to these foods (Department of Agriculture, Forestry and Fisheries, 2013). The least consumed food group was fruits. This implies that a significant number of households are not getting important nutrients contained in fruit.

The consumption of fish is very low with canned fish being the most consumed form of fish. This could be because Timane is a land-locked community with no large rivers close by, restricting the availability of fish. Canned fish rather than fresh fish would be more easily accessible in the area, but at a high price. The finding that fish is not greatly consumed is consistent with research that shows that fish consumption in sub-Saharan Africa has declined (Bene & Heck, 2005).

A total of 73% did consume milk and milk products while up to 65% of households did not consume legumes, nuts and seed. Households that had access to livestock such as cattle and goat, would be able to attain milk from the livestock and get their dairy intake. Milk is also produced in numerous production systems around sub-Saharan Africa and therefore easily accessible to many people to consume fresh or in a sour state (Davis, 2012).

Most household (75%) in this study consumed fat and oil and research shows that there has been a steady increase in the supply of and intake of fats by people in developing countries. More people are buying and consuming fast foods which tend to have a high fat content (Misra, Singhal & Khurana, 2010).

The consumption of meat was mostly in the form of chicken and to a lesser extent liver (isibindi). Chickens were the most kept animal in the households which could explain that this would be the meat most easily available to consume. Although the most consumed meat was chicken, most of the households in this study did not consume eggs. This may be because the only eggs consumed by households would be the eggs they shared from a hen, which would mean that the households would only get eggs occasionally and in limited numbers. The Eastern Cape also has a low overall egg production of 5% as opposed to provinces such as Gauteng, Free State and Western Cape whose egg production is 24%, 17% and 19% respectively (Department of Agriculture, Forestry and Fishery, 2011).

The HDD of households with varying number of children were close, ranging from 5 to 7 with a Spearman correlation for number of children and HDD of 0.38. The correlation value of 0.38 implies a small but significant positive correlation between the number of children and the HDD of households at $p \leq 0.05$. This means that generally, as the number of children in a household increase, the HDD score increases. In this study, households with more children tend to have more access to different food groups and are able to consume a larger

variety of different food groups. This could be because households with children could be receiving child grants. Therefore, the more children in a household, the more income received from child grants and the more likely the household would be to afford and consume a greater number of food groups. This finding is consistent with research on the use of child grants which has been to enable households who receive these grants to access food that is nutritious and varied in order to satisfy children's growth needs. Early and regular access to child grants is seen to be a necessity for effective and sustainable impact on child nutrition (Department of Social Development, 2008).

The study revealed a significant negative correlation between the number of adults in a household and the HDD score at $p \leq 0.05$. The Spearman correlation coefficient for the number of adults per household and HDD score was -0.93. As the number of adults in a household increases, the HDD score of the household tends to decrease. As the number of adults in a household decreases, the HDD score of the household tends to increase. This finding is similar to research conducted in various provinces in South Africa which found that the dietary diversity of adults in the Eastern Cape is among the lowest in the country with 59.6% of adults believed not to be consuming a varied diet (Labadarios et al., 2011). This could possibly be because the increasing number of adults in the household may not all be employed or in a position to qualify for social grants. Therefore a large number of adults in one household may not be able to contribute financially to obtain a variety of different food groups. For example, old-age pensions would only be received by adults over the age of 60; while disability grants would only be received by disabled adults who are unable to work. Therefore, adults who were simply unemployed, not disabled and under the age of 60, would possibly not receive any income (South African Government Services, 2013). Households would therefore have to use money to get staple foods as opposed to a varied diet. Adults

who are poor because of unemployment often cannot access diverse food groups (Labadarios, Steyn & Nel, 2011).

Households with the highest average HDD scores were those receiving foster grants and disability grants. The average HDD scores for both these households receiving these types of grants was 9. The lowest average HDD scores were 5 and these were scores for households that received old-age pensions and child grants. Receivers of foster grants receive R800 per month and receivers of disability grants receive R800. Receivers of child grants only get R290 per month and old-age grant receivers get R1260 (South African Government Services, 2013). This could mean that more respondents in this study got foster grants and disability grants per household and could therefore afford to buy foods in different food groups. Households receiving income from permanent salaries, temporary salaries and money from husbands all had an average HDD score of 8. These households probably received more money per month than those relying on social grants.

6.3 HOUSEHOLD COPING STRATEGY

To conduct a survey on the household coping strategies used by 60 households, a CSI tool was used which consisted of a set of coping strategies that the households identified. The household coping strategy survey also took into consideration the frequency in which respondents were forced to rely on the coping strategies or behaviours.

The CSI tool counts the various coping strategies used by households that are unequal in severity. In this study, various coping strategies were weighted based on how severe households relying on the strategies perceived them to be. The levels of severity were divided into four groups, namely very severe, severe, moderate and least severe which were then ranked by the groups from the most to the least severe. The frequency response was

then multiplied by the weight that illustrated the severity of each behaviour and the totals were then added up.

The CSI was used to evaluate the behaviour changes when people cannot access enough food. The CSI was the best tool to use for this study because the results received can determine the impact of food aid programmes on household food insecurity and determine households who are in greater need of such programmes (Maxwell, 2003). As recommended by previous literature, CSI scores of households were viewed in conjunction with other household CSI results to allow for cross-sectional analysis in this particular community. There is no pre-defined cut-off point in a CSI scale below which it can be said that a household is “food secure” and above which it would be considered “food insecure”. CSI scales must be analysed based on the environment or community under evaluation. A cross-sectional analysis was therefore also used in this study in order to determine which households were better or worse off in terms of accessing food. A high CSI score generally means that a household was unable to access enough food and therefore had to find numerous strategies to access food. The lower the CSI score, the fewer coping strategies used with food shortage possibly not being too severe (Maxwell & Caldwell, 2008).

Up to 30% of households have CSI values ranging from 41 to a maximum of 100, with the mean and SD values of 50.6 and 32.3 respectively. This generally means that 30% of households in this study had not had access to enough food over the 30-day period and therefore had to rely on coping strategies to manage their food shortage. The relatively large standard deviation (32.3) a mean (50.6) showed that the CSI scores in this study were widely spread out from the mean. This reflects a large amount in variation in coping strategies used by this group in this study which indicates that some households have extremely high CSI scores while others have very low CSI scores. Households in this population vary substantially in their ability to get enough food with some households not changing their

behaviours for attaining food, while others used many different strategies to attain food. A third of household in this study have CSI values above the mean which means most households have had to rely on numerous coping strategies in order to manage food shortages. This was similar to results obtained in a study conducted in the Umbumbulu district of KwaZulu-Natal where households with high CSI scores applied most of the consumption strategies to improve food security (Hendriks, 2008).

The households with 3 to 4 children have the highest mean CSI with a value of 46, followed by the households with 1 to 2 children and the households with no children with mean CSI of 35 and 30 respectively. The higher number of coping strategies used by households with 3 to 4 children may be because there were more children per household who required adequate and nutritious food for their continued growth. When these households anticipated problems in their food consumption, they tended to use more coping strategies in an attempt to avoid the problem (Maxwell, 2008). The households with no children also had a fairly high CSI score which could be attributed to the fact that more adults in the households who were not working and who do not earn a child grant, did not have the means to buy adequate food. There was a very small sequential increase in the mean coping strategy of households with an average of 1 child to 9 children per household. This can be ascribed to the fact that the increase in the number of children did not seem to bring a corresponding increase in the CSI.

The Spearman correlation coefficient for the number of children per household and CSI score was 0.78. The positive correlation coefficient for the number of children per household and CSI score was significant at $p \leq 0.01$ and showed that when the number of children in households increased, the coping strategies used by the households generally increased which on its turn increased food insecurity. Although the CSI score of households with 5 to 6 children decreased, the score increased again in households with 7 to 9 children which was consistent to the finding of a positive correlation coefficient. This can be attributed to the

increase in child grant income and also explains why households with no children also had a fairly high CSI score and experienced more food insecurity.

Households with the highest CSI score were those with between 3 to 4 adults and 7 and above adults with CSI of 60 and 38 respectively. Households with the lowest CSI were those with 5 to 6 children and no adults with CSI scores of 20 and 23 respectively. The low CSI in households with no adults could mean there was no chance of the household having unemployed adults and therefore the money received by each child from child social grants would all be used towards improving food security for each child in the house instead of trying to feed additional adults. This finding is contrary to other research findings where the junior-headed households were more food insecure and experienced greater hunger. A study conducted in north-central Namibia found that junior-headed households were food insecure and made use of coping strategies such as receiving hand-outs from neighbours, relatives and church for food and financial support (Kuhanene, Shemeikka, Notkola & Nghixulifwa, 2008). Another study in South Africa found that households with no adults due to HIV/Aids mortality were more food insecure (Twine & Hunter, 2009).

The Spearman correlation coefficient for the number of adults per household and CSI score was 0.2. Similarly, the weak positive correlation coefficient for the number of adults per households and the CSI score significant at $p \leq 0.001$ meant that when the number of adults in households increased, the coping strategies used by the households increased slightly, hence an increase in food insecurity is not extremely affected by the increase in adults in households. From this finding, it appears that households with more adults had less ability to attain food, possibly due to unemployment or not being able to receive social grants, or, had to rely on coping strategies due to the large number of people per household where food would have to be shared among more people. This finding was similar to a finding in

Pakistan, where the greater the family size, the more food insecure households were (Bashir & Schilizzi, 2013).

Households with salaries from small business have the lowest CSI, namely a value of 10. This finding is consistent to research in Malawi which showed that small business increased food security in households (Anderson, 1998). Research has also found that households with more employed members are better able to purchase adequate food supplies. Having adequate food would mean that there is less need to use coping strategies as there is generally enough food to eat and less need to change behaviours in an effort to attain food. Employment plays an important role in addressing food security and decreasing the need of changing behaviours to access food (FAO, 2012).

Households that were most food insecure with the highest CSI were those receiving child social grants. This could be attributed to the fact that child support grants provide the least amount of money per month when compared to other social grants. People who qualify for child support grants receive R300 per month, while people who qualify for old-age, disability grants and foster care child grant receive R1260, R1260 and R800 per month respectively (South African Social Security Agency, 2013).

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

The study looks into the HDD, coping strategies and food access of households in Timane in the Eastern Cape. The food consumption of households with varied socio-economic and demographics profiles were also studied.

The finding is that the households follow diverse diets with an average of five different food groups being consumed. However, the diets of the population under scrutiny include a high intake of fats, oils, sugar, caffeine and alcohol and a low intake of fruits.

Household dietary diversity improves significantly with the increase in the number of children per household but decreases significantly with the increase of adults in the household. This can most likely be attributed to the fact that households with children receive child grants which could be used to buy a diverse range of foods.

The use of coping strategies is closely linked to the type of income the households receive. Households whose main source of income is from state grants and money from husbands are the most food insecure. The food insecurity does not increase with an increase in the number of children or adults per household in this community.

7.2 RECOMMENDATIONS

Based on the findings of this study, it is recommended that government creates more awareness of the existence of food parcels so that people know that they are there to assist them during times of distress as opposed to only during election periods. It would be beneficial for government to regularly evaluate the CSI per household in order to ascertain who is in need. This will allow them to distribute food parcels in regions where the need is

the greatest. Electricity could also help people to preserve food for longer in refrigerators as most respondents tend to buy food in bulk once a month.

There is also a need to educate people on the importance of having a diverse diet and the negative impact of a diet full of fats, sugars, caffeine and alcohol. The creation of more jobs would allow people to be less dependent on social grants and help them to possibly receive more income which will enable them to buy foods from diverse food groups and use fewer coping strategies. The government can also promote the use of indigenous foods that households can grow themselves. Most of the households in this region have sufficient land to keep some form of livestock and plant vegetation. Being educated in improving crop growth and keeping animals would allow people to produce more in order to sell or consume.

Special attention should be placed on households with no adults or no children as they are most likely to be food insecure

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APPENDIX A: CONSENT FORM

CONSENT FORM

TITLE OF RESEARCH PROJECT

**DIETARY DIVERSITY AND FOOD ACCESS OF DEEP- RURAL HOUSEHOLDS
OF DUTYWA, EASTERN CAPE: THE IMPACT OF FOOD PARCELS**

Dear Mr/Mrs/Miss/Ms _____ Date...../...../20.....

NATURE AND PURPOSE OF THE STUDY

The aim of this project is to investigate the dietary diversity and coping strategy of households in the Dutywa community. The awareness and attitude of focus groups towards food access and food aid programs will also be investigated..

RESEARCH PROCESS

The researcher will interview women aged 22-50 years who prepare food in their respective household. Questionnaires will be given to participants and they will be asked a series of questions relating to food procurement, preparation and consumption. Your demographic information such as age, cell number, occupation and will be recorded.

NOTIFICATION THAT TAPE RECORDINGS WILL BE REQUIRED

Tape recording may be used when deep necessary by the researcher.

CONFIDENTIALITY

Your ratings and assessments of any of the research instruments as well as your opinions are viewed as strictly confidential, and only members of the research team will have access to the information. No data published in dissertations and journals will contain any information by means of which you may be identified. Your anonymity is therefore ensured.

WITHDRAWAL CLAUSE

I understand that I may withdraw from the study at any time. I therefore participate voluntarily until such time as I request otherwise.

POTENTIAL BENEFITS OF THE STUDY

The findings of this research will give an insight to the current food insecurity situation of the people living in this community. Base on these findings, appropriate recommendations will be made to the relevant authorities for possible intervention.

INFORMATION (contact information of your supervisor)

If there is any question concerning this study contact DR Frederick Tabit, 0114712080, Department of Life and Consumer Sciences, UNISA.

CONSENT

I, the undersigned, (full name) have read the above information relating to the project and have also heard the verbal version, and declare that I understand it. I have been afforded the opportunity to discuss relevant aspects of the project with the project leader, and hereby declare that I agree voluntarily to participate in the project.

I indemnify the university and any employee or student of the university against any liability that I may incur during the course of the project.

I further undertake to make no claim against the university in respect of damages to my person or reputation that may be incurred as a result of the project/trial or through the fault of other participants, unless resulting from negligence on the part of the university, its employees or students.

I have received a signed copy of this consent form.

Signature of participant:

Signed at on

WITNESSES

1

2

APPENDIX B: PERMISSION REQUEST LETTER

PO. Box 291

Idutywa

5000

15 July 2012

0824253461

Dear Mr Danti

I am a student of the University of South Africa and I am currently studying a Master's Degree in Human Ecology. I am writing this letter to ask for your approval to conduct a research with regards to Dietary diversity and food access of the people of Timane.

This research will be conducted by using a questionnaire which will require sensitive information from the community. However, the results will not expose the participants' private and confidential information as names will not be referenced in the research. I have been granted an ethical clearance for this research by the ethic committee of the College of Agriculture and Environmental Sciences at the University of South Africa and will therefore act within the appropriate and ethical manner when handling and interpreting the results.

Thank you in advance.

Yours Faithfully,

Miss Dlamini

Student Number: 3523 948 4

**APPENDIX C: HOUSEHOLD DIETARY DIVERSITY (HDD) SCORE
QUESTIONNAIRE**

Question number	Food group	Examples	Yes= 1 No =0
1	CEREALS	Bread (isonka, amagwinya)	
		Spaghetti, Macaroni, Noodles e.t.c.	
		Millet, sorghum (isidudu samabele)	
		Maize (isonka sombona, ibhaqolo, amarhewu, ipapa, umngqusho)	
		Biscuits (amaqebengwana)	
2	VITAMIN A RICH VEGETABLES AND TUBERS	Pumpkin, carrots (amathanga, iminqathe)	
3	WHITE TUBERS AND ROOTS	White potatoes (iitapile)	
4	DARK GREEN LEAFY VEGETABLES	Spinach	
		Cabbage	
5	OTHER VEGETABLES (including wild vegetables)	Umsobo	
		Irhwabe	
		Unomdlomboyi	
		Imithwane	
6	VITAMIN A RICH FRUITS	Ripe mangoes	
		Pawpaw	
		Watermelon (ivatala)	
7	OTHER FRUITS (including wild fruits)		

8	ORGAN MEAT (IRON-RICH)	Liver (isibindi)		
		Kidney (intso)		
		Heart (intliziyo)		
		Gizzards (amagila)		
9	FLESH MEATS	Beef		
		Pork		
		Goat		
		Mutton		
		Chicken		
		Wild game (iintaka zasendle)		
10	EGGS	Amaqanda eenkukhu		
11	FISH	Fresh fish		
		Dried fish		
		Shellfish		
		Canned fish		
12	LEGUMES, NUTS AND SEEDS	Beans (iimbotyi-ezimfutshane)		
13	MILK AND MILK PRODUCTS	Milk, cheese, yoghurt, sour milk (maas)		
14	FATS AND OILS	Oils, fats for cooking (amafutha), magarine, butter added to food		
15	SWEETS	Sugar, honey, chocolates (iilekese)		
16	SPICES AND CAFFEINE OR ALCOHOL BEVERAGES	Spices, coffee, tea, alcoholic beverages or umqomboti		
Household level only	Did you or anyone in your household eat anything (meal or snack) outside of the home yesterday?			

Source of questionnaire: Version of May, 2007 by Food Agricultural Organization (FAO)/Nutrition and Consumer Protection Division from the FANTA Household Dietary Diversity Score.

APPENDIX D: COPING STRATEGIES INDEX QUESTIONNAIRE

In the past 30 days, if there have been times when you did not have enough food or money to buy food, how often has your household had to:	Relative Frequency				
	All the time (every day)	Fairly often (3- 6 weeks)	Once in a while (1-2 weeks)	Hardly at all (less than a week)	Never
Coping strategies					
a. Rely on less preferred and less expensive foods?					
b. Borrow food, or rely on help from a friend or relative?					
c. Purchase food on credit?					
d. Gather wild food, hunt, or harvest immature crops?					
e. Consume seed stock held for next season?					
f. send household members to eat elsewhere?					
g. Send household members to beg/					
h. Limit portion size at mealtimes?					
i. Restrict consumption by adults in order for small children to eat?					
j. Feed working members of HH at the expense of non-working members?					
k. Ration the money you have and buy prepared food?					
l. Reduce number of meals eaten in a day?					
m. Skip entire days without eating?					

Adopted from Maxwell & Caldwell, 2008