DETERMINING THE FOOD SECURITY STATUS OF HOUSEHOLDS IN A SOUTH AFICAN TOWNSHIP

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DECLARATION

I, declare that

DETERMING THE FOOD SECURITY STATUS OF HOUSEHOLDS IN A SOUTH AFRICAN TOWNSHIP

is my own work and that all the resources used or quoted herein have been duly acknowledged by means of complete references, and that I have not previously submitted the dissertation for a degree at another university.

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Fumane Pontso Ndobo

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ABSTRACT

The purpose of the study was to determine the food security status of households in a South African township of Kwakwatsi. The research methodology was undertaken in two stages; firstly, a literature review was undertaken in order to provide a theoretical perspective on household food security. Secondly, an empirical study comprising of a household survey was undertaken. The household survey was conducted among 225 participants of Kwakwatsi Township in the Free State province (South Africa). Data was collected using a self-administrated-questionnaire.

The attainment of household food security is a major concern facing the world at large, including South Africa. South Africa is classified as a middle income country with large inequalities and absolute poverty. Although South Africa is nationally self-sufficient in food supply, many households are vulnerable to food insecurity. Natural disasters, population growth, low agricultural development, food prices, income inequalities, poverty and health issues are the main causes of household food insecurity in the world.

The method of data analysis was two-fold: firstly, the Household Food Insecurity Access scale (HFIAS) developed by the USAID was used to determine the food security status of households in Kwakwatsi. Secondly, a logit regression model was used to estimate the socio-economic and demographic variables that determine the food security status of households. According to the HFIAS classification measure, approximately 51.1% of households were categorised as food secure, 8.9% as mildly food insecure and 10.7% as moderately food insecure and 29.3% as severely food insecure. Food insecurity was mostly associated with female-headed households than male-headed households.

The results of the regression analysis suggest that gender, household size, marital status and household income influence household food security. The probability of food security decreases if household is headed by a female. Larger household sizes experience less food security because they consume more food with fewer resources. Households headed by people who are not married have a higher chance of being food secure than those of married couples, this is because married couples have larger household sizes compared to unmarried household heads. Household

income was the most significant predictor of household food security and was found to be positively related to household food security.

The study recommends that agricultural education be promoted in the study area to encourage people to engage in farming/gardening as a source of generating extra income, especially in female-headed households.

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LIST OF ABBREVIATIONS

AfDB	:	African Development Bank
AIDS	:	Acquired Immune Deficiency Syndrome
COMESA	:	Common Market for Eastern and Southern Africa
CPI	:	Coping Strategy Index
EC	:	European Commission
EU	:	European Union
FAO	:	Food and Agriculture Organisation
FANTA	:	Food and Nutrition Technical Assistance
FDI	:	Future Directions International
FHH	:	Female-Headed Household
GDP	:	Gross Domestic Product
HDD	:	Household Dietary Diversity
HFIAP	:	Household Food Insecurity (Access) Prevalence
HFIAS	:	Household Food Insecurity Access Scale
HIV	:	Human Immuno-deficiency Virus
IFSS	:	Integrated Food Security Strategy
IICA	:	Inter-American Institute for Cooperation on Agriculture
MDG	:	Millennium Development Goal
MHH	:	Male-Headed Household
OECD	:	Organisation for Economic Co-Operation and Development
POSTNOTE	:	Parliamentary Office of Science and Technology
RSA	:	Republic of South Africa
SAIRR	:	South African Institute of Race Relation
SPII	:	Studies in Poverty and Inequality Institute
STATS SA	:	Statistics South Africa

UN	:	United Nations
UNEP	:	United Nations Environment Programme
UNICEF	:	United Nations International Children's Emergency Fund
USAID	:	United State Agency for International Development
WFP	:	World Food Programme
WHO	:	World Health Organisation

CHAPTER 1: THE PROBLEM AND ITS SETTING

1.1 INTRODUCTION

Food security is a concept that has developed considerably over the years. It is a complex issue that characterises the current world economy (Mohapatra *et al*., 2010:32). The United Nations defines food security as a condition in which all people at all times have access to enough food needed to live an active and healthy life (FAO, 2010:4). Food insecurity includes aspects such as limited access to food intake, hunger and vulnerability (Devereux, 2000:1). Research (FAO, 2010; Richardson, 2010:1) indicates that food insecurity has been increasing throughout the world, and that; hunger and malnutrition remains a serious problem especially in developing countries. The Food and Agriculture Organisation (FAO) (2010:2) reported that in 2010 almost one billion people in the world were undernourished, which is 40% higher than the preceding two decades. Increased incidents of chronic hunger are mainly in developing countries (Goodall, 2009:4).

Food insecurity and poor nutrition have been found to be prevalent amongst the rural and urban poor. The cause of food insecurity is found to be the lack of nutritional balance because households cannot afford to consume a healthy diet (Tounkar & Omotor, 2010:1). The issue of food security relates to the problem of poverty evident in many parts of the world. The World Bank (2011) estimated that worldwide, one in five people live in a condition of poverty, with an income of US$1/day or less. An empirical study conducted by Mwaniki (2011:1) found that in developing nations the cause of food insecurity is closely related to the inability of households to access sufficient and adequate food due to absolute poverty, and this in turn resulted in major health issues and loss of human potential.

Africa is regarded as the most food-insecure continent in the world, and for decades hunger has always been a serious problem in the continent (Bwalya, 2013). The United Nations' Human Development Report (UN, 2012:1) reported that one in four households in Sub-Saharan Africa cannot access adequate food. Achieving food security is therefore still a major challenge as the Sub-Saharan region might not be able to reach the Millennium Development Goals of halving the percentage of hunger by 2015, despite various reported policy implementations and improvements in

economic development (Bremner, 2012:2). The challenge of food security is exacerbated by the rapid rise in the population resulting in a need for increased quantities of food to feed millions of households. The rise in the cost of food is another risk factor to household food insecurity because the majority of the Sub-Saharan countries import food as agricultural development is still relatively low due to scarce resources (United Nations, 2012:2). The importance of research in untangling this issue can never be understated.

A number of studies have been conducted in an effort to measure food security in different countries. A study by Knueppel *et al*. (2009:364) in Tanzania indicated that lower levels of educational attainment are directly linked with high food insecurity. Of the sampled population, 48.1 % were found to be severely food insecure. A similar study by Rudolph *et al*. (2012:23) in Johannesburg revealed that there is a strong relationship between employment, income and food insecurity. The study concluded that members of a household who hold full-time jobs were more likely to be food secure than those with part-time jobs. Mjonono *et al*. (2009:1) attempted to understand the coping strategies of food insecure households in rural Kwazulu-Natal, South Africa. The main conclusion of this study was that the majority of households resorted to a number of means to cope with the burden of lack of access to food. Amongst these strategies were buying small quantities of food, rationing of meals and dependence on neighbours for assistance during difficult times.

Hendriks (2005) cites that South Africa is nationally food secure but suggests that between 58.5 and 73 percent of South African households experience food insecurity. Jacobs (2009) observed that on average; about 80% of households are not able to consume a nutritional basket of food amounting to R262 per person in one month, this is based on 2005 food prices. Altman *et al*. (2010: 349) indicate that it is currently not possible to monitor progress towards greater food security. This is because food insecurity is not seen as a failure of food production at the national level but as a livelihood failure (Joala, 2013). Hendricks (2005: 104) notes a shift towards more household-focused food security measurement methodologies in this regard.

1.2 PROBLEM STATEMENT

South Africa as a middle income country is characterised by large income inequalities and absolute poverty (Altman *et al*., 2009:7). Almost two decades after the political transition in 1994, more than 14% of the people in the country still experience food insecurity both in rural and urban areas. The country's persistent social and economic inequalities have reduced access to food for the poor (Vella, 2012:2). Although it is estimated that the hunger rates have declined from 24% in 2002 to 12% in 2011, statistics indicates that one in five households cannot access sufficient food (Stats SA, 2011). Furthermore, almost a half of households in rural areas experience inadequate access to food as compared to urban households. The biggest problem of food security has been identified as limited 'access to food' (Department of Agriculture, 2012:6).

The rise in the cost of food is one of the contributing factors to food insecurity in South Africa. Since 2008 the average price of food items has been rising faster than the economy's consumer inflation level (Ackerman, 2012). Limited affordability due to price increase is said to be one of the main contributors to households' food insecurity rather than a shortage of supply and distribution (Vella, 2012:3). Several factors that have an effect on 'access to food' are at times misunderstood, and this has an adverse impact on the ability to identify appropriate polices to improve access to food (Alman *et al*., 2009: 346). This is due to the multidimensional nature of the concept of food security. This at times leads to conflicting views about what being food insecure entails. Another challenge is that the measurement of food security is based on assessments and behaviour and this requires identifying suitable methods, which might be difficult to find at times (Mohapatra *et al*., 2010:33).

Food security is central to Section 27 1 (b) of the bill of rights in South Africa. The Constitution notes that every citizen has a right to access sufficient food and water (RSA, 1996). In 1994 the government developed the Reconstruction and Development Programme and acknowledged food security as one of its top priority in its policy objectives. The government further implemented the Integrated Food Security Strategy in 2002, however much still needs to be done to improve the level of household food security. (Department of Agriculture, 2012:3).

Von Braun *et al*. (1992) allude that household surveys provide an adequate measure for understanding the problem. Moreover, socio-economic and demographic factors are crucial for assessing changes in household food security. Several studies have been undertaken in order to understand household food security. The effects of socio-economic and demographic variables of households are also considered in food security studies, in order to understand the factors that determine the food security status of households. Food security studies are also conducted with an attempt to see how the socio-economic and demographic variables affect the chances of a household being food secure. Arene (2008) found that household income and the age of the head are significant determinants of household food security. Bashir *et al*. (2012) observed that educational attainment of the household head and household income affects household food security positively, while the household size influences household food security negatively.

The African Food Security Urban Network (AFSUN) conducted a food security survey of 11 Southern African cities. The study reported that the high levels of food insecurity are mostly rooted from urban poverty (Crush *et al*., 2012). These studies demonstrate a need to untangle the problem of food security from different perspectives. This study extends on these findings by determining the food security status of households in Kwakwatsi township in the Free State province, South Africa. The study went a step further by analysing the impact of socio-economic and demographic variables of households in its food security status. It is hoped that the results of this study can be used as a reference source when setting programmes relating to poor urban residents in a township setting in South Africa.

The township of Kwakwatsi is the geographical area that is being covered in this study. The township is located approximately 180 km south of Johannesburg and 280 km north of Bloemfontein, Free State province in South Africa. The area has little economic activity and it is therefore classified as a semi-rural township. Sasolburg is the nearest industrial township which is 70 km away. According to the demarcation of the municipality, the area falls under the Ngwathe local municipality in the Fezile Dabi District (Ngwathe Municipality, 2009). A study by Sekhampu (2012) in Kwakwatsi found increased incidents of poverty in the area. The study further revealed that about 50% of the sampled households where found to be poor.

From a policy perspective, developing an economy involves efforts that seek to improve the economic wellbeing and quality of life of all its inhabitants. This study therefore provides fertile ground for research on the intricacies of these households.

1.3 OBJECTIVES OF THE STUDY

The primary objective of the study was to determine the food security status of households in Kwakwatsi township. In addition, the study aimed to analyse the impact of socio-economic and demographic variables on the food security status of a household.

1.3.1 Theoretical objectives

In order to achieve the primary objectives, the following theoretical objectives were formulated:

- Review the literature on food security;
- Review the empirical literature on factors that determine household food security status with special emphasis on South Africa; and
- Review policies and programmes available in South Africa to improve household food security.

1.3.2 Empirical objectives

In accordance with the primary objective of the study, the following empirical objectives were formulated:

- Determine the food security status of households in Kwakwatsi township;
- Analyse the impact of socio-economic and demographic variables on the food security status of households; and
- Determine the gender dynamics of food security, by comparing female-headed households to their male counterparts.

1.4 RESEARCH DESIGN AND METHODOLOGY

The study followed a literature review and an empirical study. A quantitative research method was employed and a questionnaire survey method was used in order to obtain the information needed.

1.4.1 Literature Review

A literature review on food security was conducted from sources such as journals, articles, books, government publications, the Internet, previous research studies, conference papers and other sources that were relevant to the study. Books were also reviewed to provide a theoretical perspective on food security.

1.4.2 Empirical Study

The empirical portion of this study comprises the following methodology dimensions:

1.4.3 Target population

The target population are residents from Kwakwatsi township. The following aspects define the approach followed:

- Element: Includes all households in Kwakwatsi Township;
- Sampling unit: Households in Kwakwatsi Township, and
- Extent: Free State province, South Africa.

1.4.4 Sample

A random sampling technique was used to collect the data. A questionnaire was designed for obtaining the desired information. A total of 225 survey questionnaires were randomly administrated to households in the area. The sample size was considered to be relevant for data analysis as similar studies (Sekhampu 2004:44 and Slabbert, 2003) used similar samples in their studies.

1.4.5 The measurement of food security

A self-administered and self-structured questionnaire was used to gather the required data for this study. The questionnaire included existing scales used in previously published research. The Household Food Insecurity Access Scale (HFIAS) developed by the USAID was used to measure food security.

There are two sub questions to the questionnaire, the first group of questions are called the nine occurrence questions and there are two response option available to the respondent 'yes' or 'no' (where no = 0 and yes =1). The second group of questions refer to the nine frequency-of-occurrence questions; these types of questions are asked with the intentions of making a follow-up to the occurrence questions and to establish whether the condition (food insecurity) ever occurred. Next to the 'no' response option there is a skip code, meaning the interviewer can avoid the related frequency-of-occurrence follow-up question if the participant answers 'no' to the occurrence question (Coates *et al*., 2007:2).

The HFIAS score was calculated using the answers based on the nine frequency-of-occurrence questions. Participants whose scores were 'never', 'sometimes' and 'often' received a score of 1, 2, and 3 respectively. Therefore when adding them together the lowest score was 0 and the highest was 27, meaning that the higher the score the higher the probability of a household being vulnerable to food insecurity (Coates *et al*., 2007:18). According to the scheme recommended by the HFIAS indicator guide, the continuous score was divided into four categories, represented by food secure, mildly food insecure, moderately food insecure and severely food insecure (Knueppel *et al*., 2009:363).

1.4.6 Logit model for the determinants of food security

As stated above, the Household food Insecurity Access Scale (HFIAS) was used to measure the food security status of households. In order to establish the impact of socio-economic and demographic variables on households' food security status a logistic regression model was estimated. Baddeley and Barrowclough (2009:121) emphasise that a logistic regression model is used when the dependent variable is not continuous but instead has only two possible outcomes, zero or one. Food security was analysed using the bid value of 1 and 0. Verbeek (2004:190) notes that

the variance of the error term is not constant but dependent upon the explanatory variable. The binary variable y_i is defined as follows:

Where y_i = food security status (represented by 0, 1)

- y_i = 1 if household i is food secure;
- y_i= 0 if household i is food insecure.

The regression model is defined as follows:

$$y_t = \beta_1 + \beta_2 GENDER_i + \beta_3 AGE_i + \beta_4 HHSIZE_i + \beta_5 MSHH_i + \beta_6 EDU_i + \beta_7 ESHH_i + \beta_8 INCOME_i + \beta_9 LABOUR_i + \varepsilon_t \quad \text{..... (1)}$$

The following are the explanatory variable for the study:

- $GENDER_i$ = Gender of household head (Male = 0; female = 1).
- AGE_i = Age of household head (Expressed in numerical value).
- $HHSIZE_i$ = Household size (Number of people in a household).
- $MSHH_i$ = Marital status of household head (Married = 1; otherwise = 0).
- EDU_i = Level of education of household head (Education will be categorised according to the highest educational level of the household head).
- $ESHH_i$= Employment status of household head (Employed = 1; unemployed = 0).
- $INCOME_i$ = Total monthly household income (Expressed in Rand value).
- $LABOUR_i$= The labour force (Represents the number of people in a household who are willing and able to work).
- ε_t = The error term

1.5 ETHICAL CONSIDERATIONS

The study was in line with ethical standards as required by academic research. Information was mainly obtained from the breadwinner or the spouse. Information obtained from the participants was kept in strict confidence and the participants were not required to write their names on the questionnaire.

1.6 CHAPTER OUTLAY

Chapter 1: The problem and its setting: The purpose of this chapter is to introduce the dissertation, by providing a brief description of the research to be conducted. The problem statement, objectives of the study and the methodology adopted.

Chapter 2: Literature review: The chapter is a theoretical overview of the concept of food security; the focus here is to discuss food security by defining it and providing different methods of its measurement. The chapter also reviews the history of food security globally and in South Africa.

Chapter 3: Research methodology: The purpose of this chapter is to provide a brief background and structure of Kwakwatsi Township, and demographics of households. A detailed analysis of the methodology is discussed in this chapter.

Chapter 4: Food security status of households in Kwakwatsi: The chapter provides a detailed analysis of the food security status of households and continues to study the determinants of food security.

Chapter 5: Summary and Conclusion: This chapter provides a summary of the study, and draws some conclusions and gives relevant recommendations based on the findings of the study.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

Food security has different interpretations and meanings and, over the years it has been regarded as a flexible concept (FAO, 2003). The importance of investigating food security has been accentuated by the recent financial crises (Mcdonald, 2010:7). Over the years, the rise in the cost of food prices, natural disasters and poverty are factors that have contributed to household food insecurity particularly in developing countries (Shonika, 2011). This chapter aims to provide a detailed literature on food security, by identifying the causes and challenges associated with the concept. It briefly outlines the history of the concept and reviews the empirical literature on the determinants of food security at a household level. The definitions of food security and the types of measurements used in this study are also discussed.

2.2 HISTORICAL PERSPECTIVE ON FOOD SECURITY

The term food security was established in 1960s in the international development literature (Osman, 2002). Maxwell (1996b) identified three overlapping paradigm shifts in thinking about the concept of food security. These shifts are: (1) from the global and national level to the household and individual level, (2) from a food first perspective to a livelihood perspective and (3) from objective indicators to subjective perspective.

2.2.1 From global and national level to household and individual level

The development of domestic and global food security increased during the world oil and food crises in 1972 to 1974. During this period an international delegation gathered in Rome to discuss the issue of global food security. In 1975 the committee of global food security was developed at the United Nations food security conference. The purpose of the committee was to manage developments in food security (FAO, 2003:5). Efforts to understand and tackle food insecurity where organised under the auspices of the Food and Agricultural Organisation (FAO) of the United Nations. During this period, the international conference defined food security as the ‘availability at all times of adequate supplies of basic food stuffs to sustain a steady expansion of food security to offset fluctuations in production and prices’

(FAO, 2003:5). Abdulla (2007:18) notes that in the 1970s the demand for food was not an issue but rather the supply and distribution of food was the main concern for food insecurity. The primary focus in this regard was on national food security by ensuring that there was adequate production and distribution of food throughout the world.

During the 1980s FAO (1983) acknowledged that there was a need to balance the supply and demand side of food. The food crisis in Africa during the early 1980s brought to the fore that the availability of sufficient food at a national level did not imply food security at a household level (Frankenberger, 2001). In the early 1980s Sen (1981) developed a paradigm shift that emphasised the importance of access and entitlement to food. Sen (1981) observed that many people throughout the world were food insecure because of limited access rather than the availability of food at a national level. Further developments in the understanding of food security resulted in the expansion of the concept of food security by FAO (1983), by incorporating food secure access for vulnerable people to available supplies. This implied that there had to be a balance between the demand and supply side of the food security equation. The focus was that there should be assurance for all people at all times by ensuring both physical and economic access to the basic food that they needed (FAO, 1983).

2.2.2 From a food first perspective to a livelihood perspective

The second shift mainly occurred after 1985 due to the lessons from the African famine of 1984/85. This famine mainly occurred in countries such as Ethiopia, Kenya, Angola, Lesotho, Somali and Zimbabwe (McCarthy, 1986). Food security was viewed as a primary need and as such categorised as a psychological need in Maslow's hierarchy of needs (Maxwell, 2000a:18). A study conducted by De Waal (1991:8) in Darfur, Sudan, about famine during the period of 1984 to 1985, revealed that people were able to carry the heavy burden of preserving seeds for planting, cultivate their own fields or rather avoid having to sell an animal. The World Bank (1986) report on 'poverty and hunger' reveled that attention should be given to causes of temporary food insecurity at a household level. During this period food insecurity was worsening worldwide and there was a need to implement various strategies and effective polices to achieve food security (World Bank, 1986).

Almost half of low-income countries in Africa and Asia were faced with the challenge of hunger because of increased world food prices (Van Zyl & Kristen, 1992:2). Research by Maxwell and Smith (1992) during the 1990s revealed that the food security status of households was the main indicator that showed whether a household was poor or not. The quality and quantity of food purchased by households determined the decisions that were taken by poor households. Oshaug (1985:5) emphasised that 'a society which can be said to enjoy food security is not only the one which has reached a food norm but rather the one which has also developed the internal structures that will enable it to sustain the norm in the face of crisis threatening to lower the achieved level of consumption'. Oshaug (1985) further identified three types of households which vary in terms of attaining their livelihood sufficiency: (i) Enduring households – which have the ability to maintain household food security on consistence basis, (ii) Resilient households – which are households that suffer from shocks but are able to recover rapidly and (iii) Fragile households – which are households that become increasingly food insure and vulnerable to any type of shocks.

2.2.3 From objective indicators to subjective perception

The purpose behind the shift from objective indicators to subjective perception is that during the 1960s to mid-80s, many food security discussions in terms of the conventional approaches to food security relied on objective measurements, such as targeting the level of consumption (Simwalla & Valdes, 1890). Reardon and Malton (1989) noted that the targets of consumption had to be less than 80% of WHO (World Health Organisation) average required daily calorie intake, or more generally, food supply had to be nutritious and adequate (Staatz, 1990). However, explaining food security using these terms had two main restrictions: firstly, nutritional adequacy was affected by socio-economic factors such as age, health, work and the environment (Payne & Lipton, 1994) Secondly, the qualitative factors relating to food quality, cultural acceptability and human dignity were excluded in quantitative technique measurements (Bryceson, 1990; Oshaug, 1985).

These two major restrictions implied that the nutritional adequacy was needed, but it was not an adequate condition for food security. Maxwell (1988) argued that 'quantity' to food entitlement was not the only important factor that mattered, 'quality'

to food entitlement was also vital. Maxwell (1988) further purports that food security is a subjective concept and used the following working definition: “a country and people are food secure when their food system operates in such a way as to remove the anxiety that there will not be enough to eat.”

2.3 DEFINITION OF FOOD AND FOOD SECURITY

Food is defined as a nutritious substance which is solid in form, and can be taken by humans, animals and into plants to maintain life and growth (Allen, 1990:456). Food is regarded as the most important basis for human and economic development (Smith *et al*., 2006:1). It is one of the basic physical needs for human survival. Food is a critical determinant for health, because the quality and quantity of food that is consumed has an effect on health (Ostry, 2010:2). Food is vital because it helps to improve wellness in terms of physical, mental and social health. Without food, people cannot carry out various activities and in turn lowers productivity. An individual can attain food by producing, consuming and obtaining it through food aid (Madziakapita, 2008:13).

The concept of food security was brought to light by the early stages of increasing food supply in order to reduce famine and hunger throughout the world. (Wiggns, 2004:7). Since the World Food Conference of 1974, definitions have changed from viewpoints that ranged from national food security or an increase in supply to those emphasising improved access to food in the 1980s (FAO, 1983). Hoddinott (2001) cites that relevant literature provides about 200 definitions of food security. During the 1970s the United Nations defined food security in terms of sufficient production and supply of food at the global and national level (Clover, 2007:7). Food security was regarded as a primary need. The most common definition today was adopted by the World Food Summit in 1996 and this has become a general understanding of what food security entails (FAO, 1996a). The definition states that; ‘at the individual, household, national, regional and global level, food security is achieved when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life’ (FAO, 1996a). Four fundamental elements (food access, availability, utilisation and stability) are identified from the definition.

2.3.1 Food access

Food access suggests that every individual should have sufficient access to sufficient resources in order to have appropriate food to live a healthy life. Food accessibility by households can be obtained through consumption, production and receiving gifts from other households (FANTA, 2006:1). The extent to which each member of a household has access to sufficient food depends on several factors such as gender, age and the employment status (Benson, 2004:8). The purchasing power of households is the most critical determinant for food access. The purchasing power depends on various pricing policies and market conditions (WFP, 2007:2). Access to food is closely associated with poverty because poor people usually do not have sufficient resources to attain access to the right amount of quantities (Lado, 2001). Households that are food insecure lack the necessary resources to pay the price for imports and access sufficient supply of food (Boussard *et al.,* 2006:13). In rural areas households are unable to access sufficient food because they live far from supermarkets and do not have appropriate transportation (Nord *et al*., 2009:1).

Food access incorporates both physical and economic access. Physical access involves a place where food is attainable and available, while economic access relates to entitlement to food (Staatz *et al.,* 2009:158). Sen (1981:2) explained entitlement to food access by using four key components: (i) trade-based entitlement which entails that a person has the ability to trade something through consumption and purchase for food from individuals who are willing to trade, (ii) production-based entitlement which implies that a person is entitled to grow and produce food by using their own resources or by obtaining resources from people who are willing to trade through the medium of exchange by agreeing to the terms of trade, (iii) own-labour entitlement which means that an individual is entitled to sell his own labour skills and experiences, therefore both the trade-based and production-based entitlements are associated with an individual's labour skills and experience, and (iv) inheritance and transfer entitlement which implies that an individual is entitled to have access to resources that are provided by the government or any member of the community in a form of social transfers.

2.3.2 Food availability

Food availability implies that sufficient quantity of food should be available, and every individual must have access to food (FAO, 2006). Supply of food should be distributed through domestic and international production. Kannan (2000) argue that food supply is very essential and that the government of any particular country should not depend entirely on international markets for food supply. Goodall (2009:2) maintains that the availability of food is interpreted differently across countries; it could simply mean the availability of food to survive or to sustain a healthy life by having enough nutrients. Food availability does not guarantee food access; this is because several factors such as institutional structures, government policies, business and the market have an influence on food security at a household level, which in turn is accomplished through empirical analysis (Page & Redclif, 2002; Hadley, 2011). The challenges associated with food supply in a country include several factors such as political instability, war and riots, the shortage of effective transportation and inefficient market structure (Benson, 2004:8). A food balance sheet provides relevant information about food availability among nations, regions and sub-regions (Babu & Sanyal, 2009:8).

2.3.3 Food Utilisation and Stability

Utilisation of food involves the preparation of sufficient food with clean water, sanitation and special health care (Richardson, 2010:1). This ensures that the well-being of individuals' psychological needs are met efficiently (IICA, 2009). Food utilisation implies that the amount of nutritional food intake by an individual should be safe, of the right quality and be sufficient for a diet that provides adequate energy and vital nutrients (WFP, 2007:4). A person's body must be able to extract and use the nutrients from consuming food; this is according to the meaning of an 'active and health life' in the definition of food security. The preparation of food and health status of a person has a direct influence on food security (Staatz *et al.,* 2009:159). Food utilisation is limited by several factors such as loss of nutrients during food processing, inadequate sanitation, lack of proper care. This in turn might have an adverse effect on other members of a household. Food utility entails food usage, therefore throughout the year food utility changes with seasonal variation and food

availability when there is food production and consumption domestically (Yin *et al.,* 2008).

Food stability emphasises that every individual should have access to sufficient food at all times. Unexpected economic shocks should not be a risk factor to food access when needed (IICA, 2009). Stability also relates to the loss in resources due to income shocks and insufficient reserves. The loss in resources may either be temporal or permanent (Schmidhuber & Tubiello, 2007:1). The concept of stability is interrelated with the elements of both access and stability (FAO, 2006:1).

2.3.4 Levels of food security

The global food security comprises of various concepts such as ecological, social, economic and political aspects that help to recognise the choices and problems that determine whether people have enough resources to consume the food they need and desire (McDonald, 2010:4). Global food security is associated with food systems that are characterised by the food chain activities of production, processing, distribution and consumption among different regions (Misselhorn *et al.*, 2010:24). Global food security entails that globally sufficient food is produced to make it possible for national and sub-nationals to have access to sufficient food worldwide (Smith *et al*., 1992: 139). It focuses on issues which affect the supply and distribution of food both domestically and internationally (Ecker & Breisinger, 2012).

National food security is defined within the context of national food self-reliance. It entails that a country is able to produce and distribute adequate food that is needed by all its citizens (Smith *et al*., 1992:140). National food security can be estimated by using the equal balance between food demand and food supply at an acceptable price. The unequal distribution of food demand and supply does not necessarily imply that all households within a country are food insecure; it simply means that a household is food insecure because they have limited entitlement to food due to inadequate resources (Thomson & Metz, 1999:3). Reddy (1999:2) explained that food security at a national level does not guarantee food security at a household level because food security is no longer viewed as a problem of food supply but rather as a livelihood failure because of inadequate access to acquire food (Devereux & Maxwell, 2001).

Although there is improvement in global food availability, food insecurity and undernourishment remain relatively high throughout the world (Fan, 2012:2). Economic growth related to poverty alleviation and equal distribution of income among the population is important for the accomplishment of national food security (Babu & Sanyal, 2009:13). Ames *et al*. (2001) argue that although economic growth does not guarantee poverty alleviation and food supply, the government must implement policies for improving the unequal distribution of income and resources, through land reform and better access to financial markets for low-income households. Community food security involves a situation where all community residents have access to sufficient and nutritious food obtained through sustainable food systems. (Gottlieb, 2002:183). Anderson and Cook (1999) also added that in order to ensure community food security, food systems should be operated efficiently and with sustainable environments. Policy makers within a community are responsible for the quality of nutritional food for its society (Allen, 2004:46). When the issue of food security is addressed; social justice, self-reliance and community economic development should be emphasised among all local and regional leaders (Babu & Sanyal, 2009:13).

A household is food secure when all members of its household have access to sufficient food needed to sustain them and live a healthy life (Tonukar & Omotor, 2010:1). Households are food secure when they have access to the amount of safe food needed by all members of the household. At the household level, food security refers to the ability to secure sufficient food by either producing or purchasing food for all members of the households (FAO 2010). Andersen (2009:6) provides two reasons why households food security does not guarantee food security for all its members; the ability to attain sufficient food is not transformed into actual food attainment; and the intra-household distribution of the food does not meet the needs of each individual member of a household.

2.4 FOOD INSECURITY

The Food and Agricultural Organisation (FAO, 2002) defines food insecurity as a situation where there is limited availability of safe and nutritious food needed to live an active and healthy life. This condition also involves being worried about not having sufficient food to eat or not having money to buy food when it runs out (Burns, 2004:6). People found to be food insecure generally cannot consume or grow enough food due to limited resources (Boussard *et al.,* 2006:9). Other instances of food insecurity are found amongst those who have been victims of wars, the urban poor and low-income households, especially in underdeveloped countries. Moreover, women residing in low-income households are mostly vulnerable to food insecurity. This is because women usually spend a large share of their income on children's needs. They are also responsible for producing or preparing the food they purchase (FAO, 2011; European Commission, 2009:9). Von Braun *et al*., (1992) note that theory differentiates two types of food insecurity, chronic and transitory food insecurity:

2.4.1 Chronic food insecurity

Chronic food insecurity occurs when the shortage of food lasts for long periods of time and it is usually caused by lack of productive and financial resources due to poverty (FAO, 2008:9). It persistently affects individuals that are not able to meet necessary requirements to purchase or produce enough food (European Commission, 2006:1). Chronic food insecurity breeds conducive conditions for vulnerability - which is defined as continual susceptibility to food insecurity (Devereux, 2006:3). Chronic food insecurity is regarded as mild or moderate food insecurity and it usually dominates when there is consistent market or structural failure within a nation (Misselhorn *et al.*, 2010). Chronic food insecurity has an effect on almost one billion people in each year (Staatz *et al*., 2009:159). Cathie (2006:100) argued that the minimum daily food intake and nutritional policy measures are essential policy recommendations to alleviate the challenges related to chronic food insecurity.

2.4.2 Transitory food insecurity

Transitory food insecurity is a temporal shortfall of food and last for short periods of time. It is rooted from several factors such as short-term shocks and lack of food availability due to fluctuations in food prices (FAO, 2008:9). The condition of transitory food insecurity happens when there is an unexpected change in the ability to purchase or produce sufficient food to maintain a healthy lifestyle. Transitory food insecurity is regarded as the most serious manifestation of household food insecurity because it causes hunger and famine, even though the condition occurs in the short-term. (Staatz *et al.,* 2009:159). Inappropriate government policy may lead to transitory food insecurity due to the destabilisation of food consumption trends (Cathie, 2006:100).

Chronic and transitory food insecurity is interrelated because chronic food insecurity is rooted in one or more incidences of transitory shocks (Misselhorn *et al.,* 2010). Coping strategies employed by households outlines a clear indication of the relationship between the two concepts. A household is likely to sell off its assets in an attempt to cope with transitory food insecurity, thus this sacrifices their ability to attain food or income, which in turn leads to chronic food insecurity. This whole process is called a poverty trap (Staatz *et al.*, 2009:160).

2.5 MEASUREMENT OF FOOD SECURITY

Anderson (1990) observed that national food security is measured differently as compared to household food security. There are two methods that can be used to measure the food security status of a nation, namely, (i) the measurement of projected food supplies, calculated by using GDP over a particular period of time and it includes farming and commercial imports minus non-food uses. The second measure is the measurement of nutritious food supply- it is calculated by differentiating between the projected food supplies and the amount of food needed within a country for those individuals who cannot afford to consume enough food because they earn low income (Labadarios *et al.,* 2009:9). The different categorisation of food in/security require different means to measure the existence of each condition. Attention to global food insecurity versus national versus household

will require tailored measurement methods informed by a common understanding of what the problem entails.

The importance of measuring food security at a household level provides an understanding on how individual households are affected by the condition of food insecurity and how they react to the circumstances related to food insecurity (Qureshi 2007:5). Faridi and Wadood, (2010:101) note that measuring food insecurity at household level is indirect and is founded on three components; which are the balance sheet, national income distribution and consumer expenditure data. Furthermore, these measures are applied when hunger and inadequate food intake are linked, in order to ensure that food security is measured in terms of availability and consumption of staple foods or energy intake.

Identifying appropriate measures for food security is important for distinguishing households who are food secure from the food insecure households and characterising the nature of the cause of food insecurity (Hoddinott & Yohannes 2002:1). The measurement of household food security is needed so that public officials, policy makers and service providers can implement effective policies and programmes for assessing the changing needs of food security (Bickel *et al*., 2000:13). There are different methods used to measure food security. Due to the fact that this study is based on understanding household food security, the discussion below will look at common measures applicable to understanding household food in/security. Hoddinott (1999:4) identified three broad approaches to measuring household food security. These are tabled and discussed below.

2.5.1 Household Dietary diversity (HDD)

Dietary diversity refers to the number of different types of food or food groups consumed over a given reference period (Hodditt & Yohannes, 2002:11). The dietary diversity score is measured by adding the number of food and food groups consumed over a given reference period (Ruel, 2002:3). The dietary diversity questionnaire is based on a set of food group questions and can be used to find a household's dietary diversity score by categorising different types of food based on nutrients they comprise (Swindale & Bilinsky, 2006). The reference period is within the range of one to three days, it can also range up to seven days. The household

dietary diversity score shows whether a household has the ability to consume a variety of foods. A rise in the dietary diversity increases the chances of a household becoming food secure (FAO, 2007:3). The reasoning is that a household is more likely to have both economic and physical access when on average; it consumes six or a number of various food groups within many food groups (Swindale, 2007). In both developed and developing countries, a number of studies have showed a positive relationship between household dietary diversity and improved nutritional intake (Throne-Lyman, 2009:2).

The measure of the dietary diversity is based on surveys and monitoring activities. Savy *et al*. (2006) explain that this measure is much more effective when utilised at the end of the period of food-scarcity in order to identify households that are more affected by food insecurity. Several authors have criticised the effectiveness of this method. Hoddinott (1999:10) contends that it is not applicable to ask individual households about the frequency of the amount of food consumed and as such inadequate diets cannot be estimated. The dietary indicator is most likely to become an effective tool only in households that consume most common foods such as cereal (Swindale, 2007). There is no simplicity with regards to the number of food groups that will indicate adequate clarification on the quality of a diet (FAO, 2008).

2.5.2 Household coping strategies index (CSI)

The coping strategy index is a group of questions that are asked in a household to find out how they manage to cope with the shortage of consuming enough food. The coping strategy index is estimated by measuring behavior, such as the things individual household do when they cannot acquire sufficient food (Maxwell *et al*., 2003:3). The coping strategies are often identified by the person who is responsible for preparing or consuming the food. Thus the coping strategies observed are usually linked to food practices in the short-term (Maxwell, 1995:8). Several studies have used the coping strategy index to measure the extent of household food insecurity. Maxwell (1996a:295) observed that the most common short-term coping strategies employed by households are: eating foods that are less preferred, limiting portion size, borrowing food or money to buy food and skipping meals. A study conducted by Oldwage-Theron *et al.* (2006:800) in Gauteng (Vaal triangle) revealed that the majority of female-headed households experienced incidences of money

shortfall in their quest to consume food during the month preceding the study. The coping strategies employed by these households were cooking limited variety of foods during the previous month and limiting portion sizes.

2.5.3 The household food insecurity access scale (HFIAS)

The HFIAS is a continuous measure for investigating the incidents of household food insecurity in the previous month (Coates *et al*., 2007). The scale is based on the premise that the prevalence of food insecurity can be established, quantified and analysed by classifying individual households' using the food insecurity level (Swindale & Bilinsky, 2006: 1450). According to Deitechelr *et al.* (2011) the HFIAS highlights three broad aspects of household food insecurity access; which involve, worrying about the likelihood of food insecurity, inadequate quality and inadequate food supplies. A study by Mohammadi *et al.* (2011:152) indicated that the HFIAS method produces accurate results because of its internal consistency, criterion validity and reliability for analysing household food insecurity.

2.6 GLOBAL FOOD SECURITY CHALLENGES

The Food and Agriculture Organisation (FAO) was developed with the goal of ensuring that all people throughout the world have access to food they need to live and maintain a healthy life (McDonald, 2010:5). The World Food Summit committed to half the percentage of global undernourishment by 2015. While in 2000 the Millennium Development Goal (MDG) sought to reduce the number of people suffering from hunger (European Commission, 2005:22). In order to achieve this goal it has always been crucial to achieve household food security throughout the world. However, food insecurity remains a major global problem. The FAO (2002) reported that about 800 million people in the word were undernourished between the period of 1998 to 2000, and out of this figure about 771 million were said to be from developing countries. A further study by FAO (2006) concluded that in 2003, 854 million people worldwide were vulnerable to food insecurity; out of this number about 95% lived in developing countries and only 5% lived in developed countries.

Global food security continues to be a cause for concern and is still a major problem facing the world. Many people around the world do not have enough and safe nutritious food and this has had a negative effect on their livelihood (McDonald,

2010:5). The problem of food security is more prevalent in developing countries (FAO, 2010). In this regard, according to FAO (2006:7) the Sub-Saharan region has the highest incidents of malnutrition and food insecurity as compared to other regions in the developing world. Thompson (2012:3) estimated that about 200 million African children are undernourished; 126 million of them are chronically undernourished while 5 million die every year due to hunger. Clover (2003) estimated that almost 30 million people receive food aid every year in Africa. A large number of people living within the regions of East Africa and Southern Africa are not able to consume an average daily calorie intake of 2100 kcal (Boussarad *et al.,* 2006:6). Table 2.1 shows a global breakdown of food insecurity.

Table 2.1: Trends in undernourishment in developing regions (%)

Developing regions	1990–92	1999–2001	2004–06	2007–09	2010–12
Northern Africa	3.80	3.30	3.10	2.70	2.70
Sub-Saharan Africa	32.80	30.00	27.20	26.50	26.80
Western Asia	6.60	8.00	8.80	9.40	10.10
Southern Asia	26.80	21.20	20.40	18.80	17.60
Central Asia	12.80	15.80	9.90	9.20	7.40
Eastern Asia	20.80	14.40	13.20	11.80	11.50
South-Eastern Asia	29.60	20.00	15.80	13.20	10.90
Latin America	13.60	11.00	9.00	8.10	7.70
Caribbean	28.50	21.40	20.90	18.60	17.80

Source: FAO (2012:9)

There has been different transition of undernourishment in developing regions between the period 1990-92 and 2010-12. Within the African region, Northern Africa has been showing positive results because the number of undernourished people has been declining from 3.80% in 1990-92 to 2.70% in 2010-12. On the other hand, there has been a rapid decline in the vast majority of undernourished people in the South-Eastern Asia and Eastern Asia from 29.60% to 10.90% and from 20.80% to 11.50% respectively. The Table further shows a significant reduction in incidents of undernourishment in Latin America and the Caribbean from 13.60% to 7.70% and from 28% to 17.80% respectively. During the period 2007 to 2010 the extensive rise in food insecurity was associated with the rise in global food prices due to the global financial crisis (FAO, 2012:10).

2.7 FOOD SECURITY IN SOUTH AFRICA

Since the early 1990s food security in South Africa has always been a topic of interest particularly in the light of occurrence of the droughts on the sub-continent (Van Zyl & Kristen 1992:2). Since the political transition in 1994, the country has been self-sufficient in the supply and distribution of adequate food, however the situation at a household level has left much to be desired (Department of Agriculture, 2012). The main challenge relating to household food security in South Africa has been identified as access to food. This is because food access is determined by demand and purchasing power (Bonti-Ankomah, 2001:3). Income inequality has played a major role in increasing household food insecurity among the African population thereby making access to resources and, by extension the purchasing of inadequate food (Van Braun, 2007:3). The other problem has been slow job creation and the increasing number of unemployed people, thus limiting access to the means to purchase food (Adubu-Raheem & Worth, 2011:2).

South Africa's political history has played a major role to the challenges of poverty and food insecurity, and these factors are still common among the African society. The African majority was not given equal opportunities in terms of education and self-recognition as compared to their white counterparts thereby contributing to household food insecurity. South African farmers were forced to work under poor conditions in developing commodity markets because they had low production and weak government support (Department of Agriculture, 2002:18). Farming by the African section of the population was reduced overtime and this in turn resulted in major losses to agricultural production and capital. Earl (2011:31) notes that hunger and malnutrition are still prevalent in South Africa and that this relates to inequalities in accessing productive land and the current urbanisation patterns. Several studies have indicated that in South Africa a large proportion of households both in rural and urban areas are vulnerable to the incidences of food insecurity (Hendricks, 2005; Altman *et al*., 2009 and De Cock, 2012). The importance of agriculture, social assistance and the Integrated Food Security Strategy (IFSS) are some of the factors affecting household food insecurity. These factors are discussed below.

2.7.1 Importance of agriculture

Agriculture in South Africa is divided along racial lines with a small number of white farmers who manage the commercial operations while a large number of black farmers operate in small scale subsistence farming, therefore challenges and choices faced by both differ from each society (OCED, 2006:10). The importance of agriculture in the country has been highlighted in both commercial and small scale subsistence farming. A large proportion of the country's net exports are from agricultural products, thus agriculture makes a meaningful contribution to the country's Gross Domestic Product (GDP) (COMESA, 2013). Baiphethi and Jacobs, (2009:15) reported that almost four million people in South Africa are involved in smallholder agriculture and for several reasons; most of these households are in the former homeland areas. Machethe (2004) observed that smallholder farming is the main source of income for many households in rural areas; he concluded that it consists of over 40% of the total household income. There is no clarity with regard to the statistics that show the condition of household food insecurity situation particularly in rural areas (Department of agriculture, 2012).

The relationship between agricultural production and household food security can be outlined in two forms; firstly, it is agricultural production through the spectrum of farming types in the country. This method includes the supply chains that bring inputs to the farm gate and the food processing, distribution and retail actives that are associated with the products that are going to be moved to the point of final consumption. Secondly, it is the amount of money that farmers get for what they produced and what consumers pay for food (Vink & Van Rooyen, 2009:33).

Agriculture is vital for ensuring food security throughout the world, especially in Africa (FAO, 2004). Van Braun (2007:4) notes that agricultural production reduces food prices, creates employment and has the ability to improve income and wages for farm workers; this in turn contributes to poverty alleviation. To ensure that agriculture is effective, it must be a vital policy approach to food insecurity reduction and enhance economic growth (FAO, 2004). In Sub-Saharan region where hunger is extensive, agricultural production is essential for attaining nourishment and ensuring economic stability (FAO, 2006:8). Motivating households to produce their own food through subsistence agriculture has the potential to enhance nourishment and can

be a source for additional income to those vulnerable to food insecurity (Department of Agriculture, 2012:14). This is more important to females who continue to play an essential role in food subsistence agriculture in many developing countries (Saad, 1999:2). Women are usually responsible for taking care of the household duties, including the preparation of meals for all members of the household. According to Thompson (2012:2) it must be noted that women remain responsible for producing the food consumed by their families through agricultural labour; however they are most likely to be vulnerable to food insecurity and hunger.

2.7.2 Social security reforms

There are five main social security grants in South Africa, namely, the State Old Age Pension, the Disability Grant, the Child Support Grant, the Foster Child Grant and the Care Dependency Grant. (Samson *et al*., 2006:1). Research indicates that social grants continue to improve the wellbeing of many recipients in the country, providing minimal standard of living and a source of income for many people (Gertler & Boyce, 2001; Neves *et al,* 2009; SPII, 2012). Over the years social transfers have been associated with better quantity and quality of food consumption, enhancement nutritional development and the lowering of morbidity and stunting effects, particularly for children (Devereux & Maxwell, 2001). There has also been an increase in the number of people benefitting from the expansion of the social grants system over the years (see table 2.2).

Table 2.2: Number of beneficiaries per social grant: 2009/2010-2011/2012 (thousands)

Type of grant	2009/2010	2010/2011	2011/2012
Old age	2 491	2 648	2 711
Disability	1 299	1 212	1 172
Foster care	489	490	518
Care dependency	119	121	122
Child support	9 381	10 154	10 675
Total	**13 779**	**14 625**	**15 198**

Source: National Treasury (2013)

Table 2.2 indicates the number of beneficiaries receiving social assistance, per type of grant. The child support grant has the highest number of beneficiaries due to the rise in eligibility age of a child to his/her 18th birthday. National spending for social grants increased from R70.7 billion in 2008/09 to R97.1 billion in 2011/12. This is due to the rise in the number of beneficiaries receiving social grants (National Treasury, 2013:10). Government spending on social grants accounts to 3.4% of Gross Domestic Product (GDP). According to National Treasury (2013:85) as of January 2013, the number of grant recipients was estimated to be more than 15 million beneficiaries. Saunders (2013) mentioned that on average social assistance expenditure has increased by 11% per year and will reach close to R120 billion in the 2014/15 financial years.

Social grants recipients spend a large share of their income on food as compared to other grocery items. This indicates the importance of food as an item to households (Neves *et al*., 2009:37). A study by Samson *et al*. (2004:78) concluded that social grants positively affect the share of household food expenditure through the improvement of household nutrition. Moreover every year there is a 1.5% rise in the share of household expenditure on all food items for child support grant beneficiaries (Samson *et al*., 2004:79). Since 1994 social grants have played a vital role in reducing poverty and inequality throughout the country (Appel 2008). However the demand for social assistance will continue to grow, given the prevalence of structural problems such as high unemployment and poverty (Steele, 2006). This in turn has raised concerns about the sustainability of the system as to whether the government will be able to provide social assistance in years to come (Van der Berg *et al*., 2010).

2.7.3 Integrated Food Security Strategy (IFSS)

The Integrated Food Security Strategy (IFSS) for South Africa was adopted in 2002 with the aim of ensuring that all South Africans have the ability to attain universal physical, social and economic access to sufficient, safe and nutritious food at all times for an active and healthy life. The goal was to alleviate hunger, malnutrition and food insecurity by 2015 (Department of Agriculture, 2002:17). The strategy adopted the following strategic objectives to enhance its goal and vision:

- Ensure a rise in household production and trade;

- The improvement of income of future generation and enabling job creation opportunities;
- Better nutrition and food security at a household level;
- Increased safety nets and food emergency management systems;
- Improvement of analysis and information management system;
- Provision of capacity building, and
- Hold stakeholder dialogue.

The IFSS focused on a broader perspective on developmental approach to food security instead of the agricultural approach. The main concern was on the food security status of households, as a large proportion of households were regarded as food insecure. The IFSS implemented strategic objectives for institutional reform and effective coordination for addressing the issues of food security. These include initiatives such as the improvement of inter-governmental relations, enhancing coordination among regional, national, provincial and local governments assistance for food security goals (Drimie & Ruysenaar, 2010:232). Several authors (Hart, 2009; Koch, 2011 and Van der Merwe, 2011) have noted some shortcomings stemming from the objectives of the strategy as well as a potential for success. Some of the challenges include difficulties relating to resources and capacity constraints for policy makers and intra-development conflicts (Hart, 2009).

There are still incidents of households that do not have adequate and appropriate food supply because of low incomes and inability to grow their own food. Van der Merwe (2011:4) notes that the challenges of food insecurity remain present because many people both in rural and urban areas are not able to access enough food because of limited resources; therefore it is vital that the government and policy makers deal with this issue on a consistent basis.

2.8 CAUSES OF FOOD INSECURITY

This section will discuss the major causes of food insecurity. Emphasis is placed on the global experiences of this phenomenon, with some application to the African context.

2.8.1 Natural disasters

Natural disasters are said to have a negative influence on the livelihood of many people around the world. The way in which an affected population copes with the condition of natural disasters is usually a basis for long-term food crisis (Zahn, 2012:1). Natural disasters have major effects on the economy and food security, particularly for low-income households (Abdulla, 2007:21). This is because these households usually reside in areas that are most vulnerable to natural hazards due to low levels of human development. During the period of 1980 and 2000 about 75% of the global population were reported to have been affected by earthquake, tropical cyclone or persistent drought. The report further revealed that throughout the world, about 184 people died every day during their period of analysis as a result of natural disasters (FAO, 2005).

De Haen and Hemrich (2006:7) explained three reasons why poor households are affected more by natural disasters. Firstly, low-income households usually reside in areas that are likely to be exposed to high risk of natural disasters including the effect of climate change. Secondly, poor households are impacted by structural problems and social factors such as race, class, gender and ethnicity. The poor cannot afford to reside in areas that have low risk from disasters as they usually live in informal housing, and therefore are not protected from storms and earthquakes. Women and children are most vulnerable to natural disasters thereby bearing the brunt of food insecurity and malnutrition. Lastly, there are large income inequalities between developed and developing countries; government and policy makers in poorer countries cannot afford to implement strategies that can ameliorate the poor from the consequences of natural disasters.

The majority of people who live in rural areas are dependent on agricultural production for survival. However there are limited resources to grow enough food because farming is affected by natural hazards and impacted by climate change (De

Haen, 2008:27). One of the major factors that influenced the crisis of food in Africa was the problem of floods and droughts. Many people in Africa are vulnerable to natural disasters because they do not have adequate housing, effective infrastructure, and suffer most when disaster strike because they do not have sufficient resources to cope with the effect (Clover, 2003:5). A Study by Danilo and Briones (2012) indicated that within the South-East Asian region, the Philippines are mostly vulnerable to natural hazards, especially floods and droughts. This is because the country has increased incidents of poverty and low infrastructural development. The study further concluded that the agricultural sector is mostly affected by natural disasters contributing to food insecurity for low-income households.

2.8.2 Population growth and urbanisation

The world population has been growing rapidly over the past few decades, growing from 1.7 billion in 1900 to just over six billion in 2000 (McDonald, 2010:55). The United Nations (2012) estimated that global population will reach about 9.3 billion by 2050; much of the global population growth is estimated to take place in developing countries, with more than half of the world's population now living in urban areas. The population growth is expected to come from regions such as Africa, Asia and Latin America. The rise in the population, increases the burden to meet the demand for food production to feed millions of people worldwide (Cargill, 2012:3).

Over the past two decades urbanisation has manifested in regions such as Africa and Asia, and urban food insecurity and malnutrition has been a serious cause of concern in these regions. A study by Ruel *et al.* (1998) indicated that in Sub-Saharan Africa, food insecurity affects the urban poor more than the rural poor. This is because they are likely to rely on the market for their food supply while people who live in the rural areas are able to grow their own food and generate income from natural resources (Pendleton *et al*., 2012). According to FAO (2006:5) urban food insecurity becomes mostly prevalent when people migrate to cities in an effort to escape deficiencies in the rural areas; this however further prohibits resources and developments in rural areas and leads to population growth in urban areas (UNICEF, 2010:2).

The rapid increase in population amongst developing nations result in them becoming net food importers. The cost associated with importing food is very high and certain persistent constraints results in household food insecurity in many parts of the population, especially for the people who live in urban areas and are poor (Olagunju, 2012:4). Since the early 1990s urban food security has been found to be a serious problem. Maxwell (1999:1940) suggested several reasons for this; firstly, in urban areas the issue of food insecurity for government managers is not an important priority due to competing structural problems such as unemployment, overpopulation, and poor infrastructure. Secondly, urban food security is viewed by national policy makers as being inexistences and invisible. Thirdly, for more than 20 years food insecurity and poverty have been said to be a rural problem.

In South Africa, and since the political transition, the number of people who live in urban areas has increased substantially over the years. National Statistics indicated that the percentage of people living in urban areas increased from 52% in 1990 to 62% in 2011 (SAIRR, 2011:1). The cause of this rise is because people believe that there are better opportunities to sustain a set standard of living in the urban areas compared to rural areas (Puoane *et al*., 2006:1). The challenges of urban food insecurity are associated with several factors such as lack of housing, poor sanitation, lack of access to clean water and high rates of crime and corruption (Van der Merwe, 2011:1).

2.8.3 Low agricultural production

The major problem of food security in Africa is associated with the poor agricultural sector that is hampered by several factors such as low fertility soil, environmental degradation and production loss of both pre-and post-harvest. Food security in Africa has been worsening since the early 1960s as indicated in the reduction of per capita food production (Maxwell, 2000a:32). However in other developing regions food production increased significantly during the same period, indicating that Africa was still the only region suffering from low per capita output due to low agricultural development (Salih, 1994:26). Agricultural production within the Sub-Saharan region is relatively low due to lack of natural resources, the production of low food prices, and competition of cheap food imports (European Union, 2012:11 and FAO, 2006:1).

Agricultural land represents a large share of total wealth for many people in developing countries (Erickson & Vollrath, 2007:3). The distribution of land within the African region is very unequal, and land reform is regarded as an important indicator for alleviating poverty and food insecurity. Notably, food production also depends on land (Clover, 2003:10). Agricultural productivity is important for improving household food security particularly within the Sub-Saharan region. Investment in agricultural infrastructure is also important for food production particularly in Africa, for low-income households (Ababa, 2011:5).

2.8.4 Food prices

The cost of food prices affects the food security status of households and also affects the production and supply at a national level. During the period of 2008 to 2009, the rise in the cost of food prices has resulted in unrest throughout the world and the number of individual households who do not have the necessary means to sustain an adequate nutrition has risen sharply as compared to the period of 2006 to 2007 (McDonald, 2010:1). The effect of high food prices usually varies significantly from the effect of other prices such as fuel, electricity and transportation prices. When the cost of food prices rise, this affects poor households because they usually spend a large share of their income on food. This reduces spending on other basic items to compensate for the rise in the cost of food prices. Women are more likely to be affected by the rise in food prices because they sacrifice their own spending to allow other members of the household to have more food (Kumar & Quisumbing, 2011:3).

In Africa the major reasons for rising food prices are related to structural problems within the agricultural sector due to lack of productive capacity and weak market development. The rise in domestic food prices is linked with the effects of trade liberalisation and increased demand for imports (FAO, 2010:2) Therefore, incidents of food insecurity are prevalent when the demand for imports are high, which might be caused by the international commodity markets (AfDB, 2011:11). The rise in the global food prices during the 2008 financial crises has worsened the food insecurity problem worldwide and has affected the living standards of many people more so in developing countries (Chang & Hsu, 2011:4). During the last quarter of 2008 staple foods prices continued to be relatively high, this was 17% higher as compared to the

previous two years, for the majority of developing countries. The FAO estimated that in 2009 there were more than 1 billion people who did not have enough food in the world, which is 85 million more than 2008, and was the highest number since the late 1970s (FAO, 2008). The consequences of the crisis were that it resulted in household food insecurity for the majority of low income countries. Developing countries became vulnerable to changes in international markets because food commodity prices in the world market remained very high. (Chang & Hsu, 2011:7). South Africa did not escape the brunt of the global crises and the decline in prices has been far too less than those in the world markets (Prain, 2010:5).

Thompson (2012:2) highlights that during the second quarter of 2008, global food security was affected by several factors such as the decline in international commodity prices caused by the global financial crisis. Global food prices, particularly of crop and maize are likely to remain the same up until 2015 because of high cost of fuel and energy (Swinnen & Van Herch, 2010:2).The United Nations (2009:12) reported that after the global food crisis there was a reduction in food stocks and extensive rise in food prices, particularly of staples such as wheat, rice and soya beans. The import bills of many countries increased since 2008; in Africa the import bill for food was higher in 2008 as compared to 2002, from $ 6.5 billion to $14.6 billion.

2.8.5 Income inequality

Income inequality has been increasing significantly in most countries, particularly in developing countries (Jaumotte *et al*., 2008:3). In low-income countries, poor households usually spend close to 70% of their income on food as compared to wealthier households. The poor's real income depends on the cost of food prices and this has limited their access to food (Staatz *et al*., 2009: 158). South Africa has the highest prevalence of income inequality and this even exists in the post-apartheid era (Leibbrandt *et al*., 2010). Some of the country's social indicators are similar to those of least developed countries, largely due to unequal distribution of resources and opportunities (Van der Berg, 2010). The UNEP (2012:2) observed that in developing countries the average food intake per person is far lower than in developed countries. This in turn causes chronic hunger and malnutrition, and mostly affects women and children. In most developing countries food consumption

contains a large share of household income. Poor households are unable to consume sufficient food because they are usually unemployed, have low income and inadequate social transfer mechanisms (European Union, 2012:11). A report by POSTNOTE (2006:2) noted that inadequate infrastructure, lack of safe water, health care, educational opportunities have a direct effect on food consumption by households, thus adequate food at a national level does not guarantee adequate food for all its citizens.

2.8.6 Poverty

Poverty incorporates different aspects of historical, economic, social, cultural, psychological, spatial, national, international and environmental issues. It leads to malnutrition, hunger, starvation, illiteracy and reduces life expectancy, noted (Isliamia, 2004:1). The World Bank (2011) estimated that a large proportion of the world's population live on less than US$1 a day; this situation dominates in developing countries. Burns (2004:17) suggested that the link between food insecurity and poverty is complex, and that there are no appropriate measures of poverty and food insecurity. Households that are living with the condition of poverty are most likely to be food insecure. In South Africa poverty remains the most critical factor to household food insecurity. The high rate of unemployment in the country has an adverse effect on poverty; this in turn results in household food insecurity (Bonti-Ankomah, 2001:3). Poverty further worsens the state of household food insecurity and can also be a consequence of food insecurity through national networks (Swift & Hamilton, 2000:67). Clover (2003:9) found that when poverty deteriorates, food becomes very important, showing that undernourishment is rooted in the existence of poverty at a household level.

2.8.7 Health issues

Disease and infections such as malaria, tuberculosis and HIV/AIDS continue to threaten the livelihood of many people around the world. These diseases have a direct effect on the labour market by reducing the opportunity cost of many people not working. This situation further contributes to agricultural production and household food attainment, by increasing the cost of household food insecurity (Mwaniki, 2011:4). HIV is regarded as the biggest challenge to household food

security, among other diseases, because it affects economically active adults, thus this reduces the ability of members of a household to work and grow or consume food. Children are the most affected in this regard because most of them end up being orphans and with no proper care and little support systems from the government (POSTNOTE, 2006:2). Haile *et al*. (2005) reported that HIV/AIDS increases household food insecurity and vulnerability because within the agricultural sector, this can cause a decline in production of food and loss in productivity, leading to food insecurity. De Waal and Whiteside (2003) cited four main factors that characterise households affected by HIV/AIDS epidemic, namely, (i) decrease in economically active people, (ii) lack of assets and skills due to adult mortality, (iii) the burden to care for families who are infected by the disease, and (iv) the effect of malnutrition, HIV infections and progression. The negative influence of these factors may result in long-term vulnerability to food insecurity.

2.8.8 Political instability and poor management

The implementation of vital polices and strategies have not been effective in most developing countries, therefore this in turn has had a major influence on food security. The main challenge is that policy makers and governments do not enhance polices, structures and institutions towards their society at large, rather the focus is on their best self-interests (Mwaniki, 2011:5). Rosen and Shapour (2001) noted that within the Sub-Saharan Africa, Rwanda has faced several conflicts of war between other countries and for the past decade income and per capita food consumption has been deteriorating at a fast rate. Hunger and food insecurity is said to be affected by issues of politics particularly in poor nations. Limited political influence by those affected by food insecurity, contributes to chronic hunger. This in turn shows that the government in poor nations cannot easily solve the problem of food insecurity although there is provision of food aid (Mukherjee, 2008:1).

In low income countries the government is usually unable to address the issues of household food insecurity due to inadequate strategies and policy development (Maxwell, 2012:7). The majority of developing countries are affected by conflicts; this in turn prohibits civil society and national unity. In countries such as Ethiopia and Somalia were famine is high, political instability has a major effect on livelihoods and food security. (Bakker, 2011:121). A study in Zimbabwe indicated the correlation

between food insecurity and political instability is very complex, and conflict within government is regarded as the most significant factor that affects food security at a household level (Maxwell, 2012:7).

2.9 THE CONSEQUENCES OF FOOD INSECURITY

There are three main consequences of food insecurity, namely, hunger, vulnerability and malnutrition. These are discussed in details below.

2.9.1 Hunger

Hunger is defined as 'the uneasy or painful sensation caused by lack of food or the recurrent and involuntary lack of access to food (Hamilton *et al*., 1997). The FAO (2010) estimated that during the period of 1950 to 2005 about 800 million people went to bed hungry every day worldwide, and since 2005 the number of people who are vulnerable to hunger rose by almost one billion. The long term consequences of food insecurity is said to be hunger. Hunger is a social problem because it may produce malnutrition overtime. When food is insufficient because of limited resources; this leads to discomfort, a sensation that is caused by hunger (Cook & Jeng, 2009:9). Hunger has a direct effect on the labour market because when workers are hungry it leads to low labour productivity thereby inhibiting economic growth. It further causes the majority of diseases and is a risk factor for many sicknesses around the world (POSTNOTE, 2006:2). Hunger is the most serious harm for human survival than the deficiency of land, income and capital (Shephard, 2012:199). Hunger affects about one billion people in rural areas, because the rural poor are the most affected by food insecurity, they struggle to gain adequate access to financial and productive resources (European Commission, 2009:9).

2.9.2 Vulnerability

According to Chambers (1989) vulnerability is defined as exposure to contingencies and stress, and difficulty in coping with them. There are two types of Vulnerability: an external side of risks, shocks, and stress to which an individual or household is subject: and an internal side which is defenselessness, meaning a lack of means to cope without damaging loss. Food insecurity and vulnerability both play a critical role in household exposure to stress and anxiety, and in their ability to cope with these

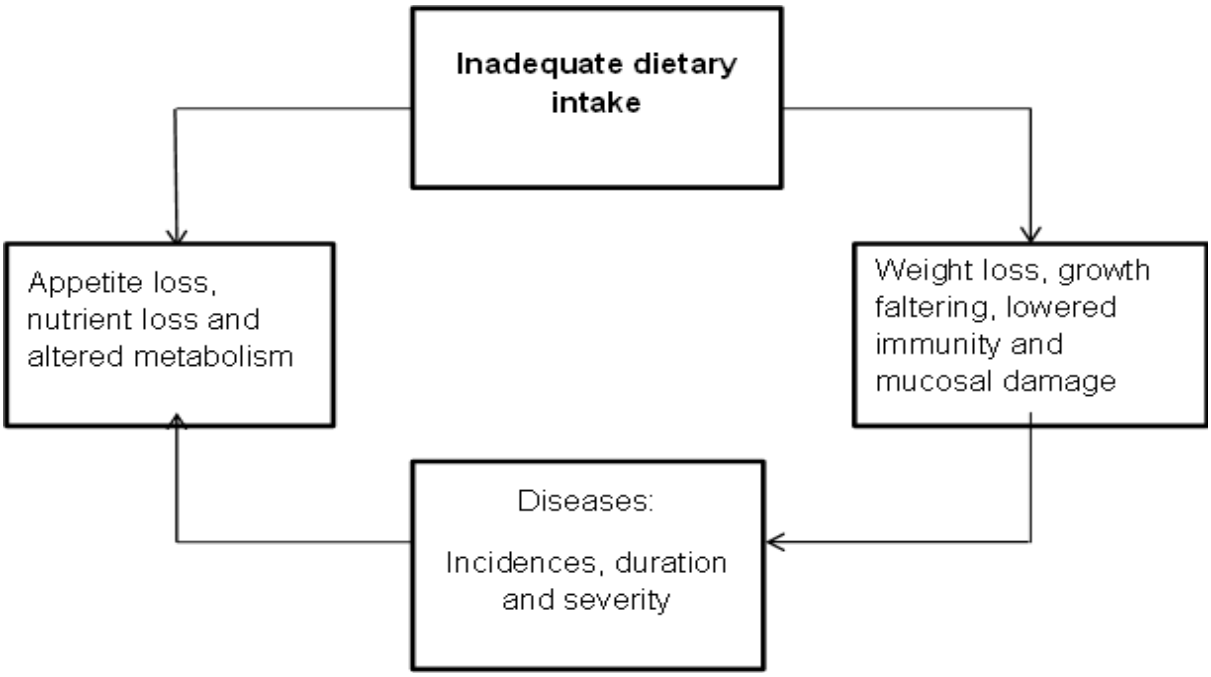
predicaments, this is a major concern. A study by Hamelin *et al.* (1999:2) showed that stress is one of the social consequences of food insecurity. The lack of sufficient food in the long term causes stress, and this in turn reduces the desire to have food and nourishment, resulting in loss of interest in cooking. (Hart, 2009:376). Vulnerability to food insecurity' implies that both concepts are similar in nature because food insecurity does not only cover the current prevalence of limited food intake; it also includes potential future risk of food insecurity (European Commission, 2006:7).

2.9.3 Malnutrition

Malnutrition incorporates issues such as the general deficiency that is caused by lack of sufficient minerals such as vitamins and iron. Individuals' intake of calories and protein are limited to maintain growth and wellbeing (Folaranmia, 2012). Malnutrition is a condition which is mostly prevalent among poor households particularly in developing countries. Malnutrition mostly affects children and women (Yegammia, 2002:1010). Several literatures reveal that there is a strong correlation between food insecurity and malnutrition because it is believed that sufficient intake of nutritional food does not ensure sufficient nutritional status for an individual, and inadequate intake of nutritional food does not always mean that deficiency exists (Yegammia, 2002:1010). Food insecurity at a household level has an effect on food consumption; this in turn might have an influence on dietary variety and nutritional status of individual households (Osei *et al*., 2010:484).

Malnutrition has an adverse effect on human wellness because it causes poor growth and mental health issues for human development. Malnutrition is rooted from absolute poverty (Bello, 2009:2). The World Development Report (2008:95) showed that malnutrition has economic consequences because it leads to productivity loss of about 10% of lifetime earnings and there are Gross Domestic Product (GDP) loses of about 2% to 3%. The European Commission (2009:11) suggests two forms of malnutrition: chronic malnutrition - which mostly affects children and usually happens when a diet of a child is chronically inappropriate and affects a child's future development and acute malnutrition - which dominates when a child is underweight for his age and usually, leads to high mortality risk. Figure 2.1 shows the malnutrition infection cycle.

Figure 2.1: The malnutrition infection cycle



Source: Tomkins and Watson, 1989

The diagram above shows that there is a strong correlation between health and nutrition disease, which leads to malnutrition overtime (Tomkins and Watson, 1989:1). The inadequate dietary intake involves both Macronutrients (Fat and Protein and Micronutrients (Vitamins and minerals). The inadequate macronutrients may lead to serious health issues such as weight loss and growth faltering while inadequate micronutrients might affect the immune system and damage mucosal in the body, which in turn leads to chronic disease. A further insufficient nutritional intake by a person's body results in appetite loss, nutrient loss and altered metabolism (Kotona & Kotona-Apte, 2008:1583).

2.10 EMPIRICAL LITERATURE REVIEW OF DETERMINANTS OF HOUSEHOLD FOOD IN/ SECURITY

Several studies have indicated the following to be the main determinants of household food security status throughout the world.

2.10.1 Household size

Household size is measured by the number of members within a household (Feleke *et al*., 2005:355). Households with many members are expected to consume more food than small households (Jacobs, 2009). A study conducted by Olayemi (2012:138) found that household size and food security are negatively correlated; this is because as household size increases food security decreases. Aidoo *et al.* (2013:519) observed that an increase in one additional member of a household generally reduces income per head, expenditure per head and per capita food consumption. This is because larger household sizes demand more food. Moreover household size matters because food consumption increases with a rise in household members. The higher the number of inactive individuals in households the higher the burden for active individuals in the provision of food, which in turn increases the likelihood of food insecurity (Amaza *et al*., 2009:11).

2.10.2 Household income

Household income is the total monthly income of households from all sources. Household income is regarded as the most critical determinant of household food security status. Low income households are more likely to suffer from food insecurity as compared to middle income and wealthier households (Jacob, 2009). A study by Bashir *et al.* (2012:4) in Pakistan used logistic regression to determine whether income had an effect on household food security status. The study concluded that income was positively significant, meaning that there was a positive relationship between the food security status and monthly income. A rise in income of Rs1000 (Rupees) was found to increase the probability of being food secure by 10.5% (Bashir *et al.*, 2012:6). Research by Carter *et al.* (2005:5) reported that disposable income had a direct influence on food security. The study further showed that there was a negative correlation between income and food insecurity by four times the odds of becoming food insecure for lowest income households as compared to the

highest income households. Low income households are found to depend on social welfare transfer and food aid to consume food. There have been instances were low income households end up in debt because of insufficient income to consume food (Omonona *et al*., 2007:404).

2.10.3 Gender of Household head and age

Several studies (De Cock, 2012:38; D'Haese *et al*., 2011:66, and Olagunji *et al.,* 2012:119) have argued that female-headed households are more likely to be vulnerable to food insecurity and poverty as compared to their male counterparts (Kassie *et al.*, 2012:5). Carter *et al*. (2010:3) found that incidents of food insecurity are much higher for female-headed households compared to male-headed households. Females are most likely to take care of their extended families, and will usually sacrifice their food intake to feed other members of their household when threatened by food insecurity and moreover they are most likely to be single parents than their male counterparts. A study conducted by Kassie *et al.* (2012:14) in Kenya observed that the change in chronic food insecurity between female-headed households and male-headed households is statistically significant. The study found that almost 53% of male-headed households were food secure compared to 42% of female-headed households. Franye *et al*. (2009:16) found that among the three biggest cities is South Africa, female-headed households were hit the hardest by the incidents of food insecurity as compared to male-headed households.

Bashir *et al*. (2012:7) reported that there is a negative relationship between the age of household head and food insecurity in Pakistan. A rise in the age of the household head in a year was associated with a 4.5% decrease in the likelihood of being food secure. Young people are economically active than old people and can operate in challenging jobs within the labour market. Households with older heads are exposed to chances of food insecurity because they might have more retired and older members to feed. A study by Omonona *et al*. (2007:403) in Nigeria showed that the prevalence of household food insecurity increases with age, household heads above the age of 60 are usually retired, with large household size and low income, thus this increases their likelihood of food insecurity.

2.10.4 Educational level

Shumiye (2007) reported that the educational attainment of the head of the household has positive effects on household food security. Bashir *et al.* (2012:7) observed a negative relationship between the levels of educational attainment of household in Nigeria; meaning the higher the level of education the lower the likelihood of food insecurity in the household. This situation is likely to happen because these households have improved opportunities to sustain active life styles for their members. For rural/ farming communities, educational attainment of the head of the household is mostly likely to have a positive effect of improving the agricultural production of the household through technological inputs, because they will have a better understanding on how to do their work, thereby increasing household income (Haile *et al.*, 2005).

It has been argued that educated household heads have the likelihood of attaining improved financial resources, which in turn raises their productive capacity (Pankomera *et al*., 2009:3). Education enhances better job opportunities especially for farm workers who live in rural areas (Heidhues, 2009). Bogale and Shimelis (2009:1917) showed that an educated person has the ability to think critically with regards to maintaining a certain standard of living because they have the necessary knowledge and information. Household heads that have attained a minimum of primary education have an advantage with agricultural production than those with no formal education (Bogale & Shimelis, 2009:1917).

2.11 SUMMARY AND CONCLUSION

The concept of food security comes from the knowledge of identifying the suitable phenomena of what lack of sufficient food means. The history of thinking about food security since the 1970s has been influenced by a variety of developments. Over the past four decades food security was defined in terms of the global and national context of production and supply. The most cited definition today implies that all individuals should have physical and economic access to food they need and desire to maintain an active and healthy life. Several authors have agreed that the definition should involve access, availability, utilisation and stability.

People who are food insecure generally cannot consume or grow enough food due to limited resources. The condition of food insecurity also involves being worried about not having sufficient food to eat or not having money to buy food when it runs out. Globally it has been found that women and children are mostly affected by the incidences of food insecurity. Food insecurity can be explained from a chronic and transitory perspective. Chronic food insecurity, the prevalence of food insecurity is long-term and transitory food insecurity is a temporal shortfall of food.

The national food security is measured differently to household food security. GDP is an important indicator for measuring national food security. There are various methods used to measure household food security. This study explained three household measures: Household Dietary Diversity Score (HDDS), Coping Strategies Index (CSI) and Household Food Insecurity Access Scale (HFIAS). The HDDS measures the number of food groups consumed over a given reference period. The CSI is based on a group of questions that are asked in a household to find out how they cope with the incidence of food shortage. The HFIAS is based on a concept that the prevalence of food insecurity in a household can be established, quantified and analysed.

Global food insecurity remains a serious problem throughout the world. A large share of the world's population suffers from hunger and vulnerability due to inadequate means to attain the right quality and quantity of nutritious food. Food insecurity is mostly prevalent in developing countries. The Sub-Saharan region is the worst affected by hunger and malnutrition as compared to other regions. The majority of Sub-Saharan countries depend on the agricultural sector for economic growth; therefore increased agricultural production is vital to enhance household food security. In South Africa a large proportion of households suffer from chronic food insecurity both in rural and urban areas. Since post-apartheid era, the country has been able to supply and distribute sufficient food through domestic production and imports. Agricultural production in the country is important for providing an extra source of income for food consumption particularly for households in rural areas. Several authors have argued that social grants assistance is one of the effective tools available for poverty alleviation. Social grants recipients spend a large share of their income on food. Since the implementation of the integrated Food Security

Strategy (IFSS) by government, the challenges of household food insecurity have not been fully addressed.

There are many causes of food insecurity, incorporating structural factors both in the short-term and long-term. In the study, general causes affecting the world at large were discussed. Two main causes were found to have major effects on food insecurity: Natural disasters and food prices. Natural disasters affect poor households because they live in areas exposed to natural hazards, thereby they cannot afford to change living conditions due to lack of sufficient means. The rise in the cost of global food prices in recent years has increased food insecurity in both developing and developed countries. Women are the worst affected in this regard because they sacrifice buying other basic items for food.

The consequences of food insecurity explained in these studies include hunger, vulnerability and malnutrition. Chronic food insecurity causes hunger overtime. Hunger has a direct impact on the labour market because it leads to low productivity from workers. People who are vulnerable to food insecurity become stressed about how to cope with the condition of food insecurity. Several authors have agreed that malnutrition is linked to food insecurity. People who are generally food insecure are unable to consume nutritious food leading to multiple sicknesses overtime. The review on the empirical literature suggested that income was the most important critical source for ensuring household food security.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research is generally described as a thorough and useful search for knowledge and insights on social and physical phenomena (Kumar, 2008:1). Conducting research begins with identifying a question based on a structured problem in any situation (Bhattacharyya, 2006:12). Research is done for two main reasons; to understand the study of something and to obtain accurate and truthful facts about a certain phenomenon (Taflinger, 1996). A research methodology explains the scientific value behind the research project. (Khan, 2008:5).

There are various types of research methods that can be used when conducting research. The research methods related to this study involve descriptive and analytical research. The main idea behind descriptive research is to outline an appropriate description of an issue or characteristics of a particular situation (Kothari, 2004:11). Johnson and Christensen (2012:366) note that a descriptive research involves choosing a sample randomly from a well-defined population and stating the characteristics of the sampled population. Analytical research provides a depth of evaluation and hypotheses of the cause and effect of the issue at hand; it therefore tests and verifies the problem (Monsen & Van Horn, 2008).

In this study descriptive research was used to discover facts about the current state of the study area, by identifying the socio-economic and demographic characteristics of households. Analytical research was used to explain issues relating to food security by examining the socio-economic and demographic variables in order to determine the current condition of households' food security. The purpose of this chapter is to provide a detailed examination of the research methodology. It starts with a description of the research design and an outline of the empirical research conducted. This chapter then provides a description of the models used in data analysis. It further proceeds with a brief overview of the study area and an outline of demographic characteristics. This chapter ends with a summary and concluding remark on the methodology.

3.2 RESEARCH DESIGN

A research design refers to the procedure of collecting and analysing data with the aim of understanding the importance of a research project. A research design is a basis for collection, measurement and analysis of data (Monsen & Van Horn, 2008). Kothari (2004:31) explained several reasons for compiling a research design. Firstly, a research design is important because it enables the researcher to have a clear understanding of various research operations. Secondly, it represents a clear plan of methods used for the collection of relevant data and techniques during data analysis. Thirdly, a research design allows for early detection of errors and inadequacies. In this study a quantitative research method was employed to achieve the objectives of the study. Kothari (2004:4) contends that a quantitative research method aims to measure the quantity of a particular situation in a research study. Thus the quantitative technique, in a form of a self-administered questionnaire was used to capture and analyse data collected.

3.3 DEFINITION OF POPULATION

A research population involves a group of individuals or elements sharing similar characteristics (Landry, 2010). The study population included residents of Kwakwatsi township, suited in the Free State Province. Neelankavil (2007:237) describes a target population as the total number of elements chosen from a specific population. Thus the target population constituted of all households heads in Kwakwatsi. The area is a former black residential township located approximately 180 km south of Johannesburg and 280 km north of Bloemfontein in the Free State province of South Africa. Kwakwatsi is part of the Ngwathe Local Municipality, with its head office in Parys (Ngwathe Municipality, 2009). The area could be classified as a semi-rural township, with little economic activity.

3.4 THE SAMPLING PROCESS

Sampling is said to be a plan of action used to select an element from a population (Dattalo, 2008:3). The main purpose for sampling is to help a researcher assume unknown characteristics (Neelankavil, 2007:227). It might be generally difficult for a researcher to obtain data from a large population thus samples provide a proficient means to collect data (Durheim, 1999). There are two major classifications for

sampling methods, namely, the non-probability method and the probability method (Maree & Pietersen, 2010:172). The non-probability method does not include a random selection of the population elements. There are three-main types of non-probability sampling; the convenience sampling, quota sampling and snowball sampling. The probability method refers to the selection process in which elements are randomly selected from the sample frame and has a non-zero probability of being selected. The probability method includes the random sampling, systematic sampling, stratified sampling and cluster sampling. In this study a random sampling technique was used for data collection (Wiid & Diggins, 2009:199).

According to Maree and Pietersen (2008:172) a random sampling method is used to ensure that each population element included in the sample is labelled individually. Each element in the sample has an equal and independent chance of being chosen for sampling (Ellison *et al*., 2009:191). For this study, a random sampling framework was undertaken. This sampling method was selected because data gathered was generalised from the sample to the whole population (Mertens, 2003:278). Among a number of advantages for employing a random sampling technique, two stand out. Firstly, biases are cancelled out and statistical means are assessed for sampling errors (Bailey, 1994:90). Secondly, a random sampling technique is relatively easy to implement, and cheaper to use. Hall (2008:189) and Mertens (2003:278) argue that the major challenge associated with this method is that large sampled population raises concerns about the feasibility of the random sampling technique. However this challenge did not cause any problems in the study because the geographical area covered was simple to attain and a relatively small area.

In the study, Kwakwatsi township was identified from a map, which was obtained at the Ngwathe local municipality. Thus households in the area were selected randomly and questionnaires were distributed by trained fieldworkers.

3.4.1 Sample size

A sample size in this study refers to the number of participants included in the completion of the survey process. A sample is usually drawn from a subset of a population (Neelankavil, 2007:227). Dattalo (2008:3) argues that the determination of a sample size is essential and often difficult when conducting an empirical study.

Effendi and Hamber (2006:134) maintain that an effective sample size must be similar to the restrictions of the selected population. The sample size in this study was 225 households selected randomly. A similar sample size was used by Sekhampu (2013) in Kwakwatsi. Kotler *et al.* (2008:193) argue that the minimum sample size for a random sample, based on the rule of thumb method, is 200. Thus, a sample of 225 households, selected in this study, was above the minimum sample size.

3.5 DATA COLLECTION TOOLS

The collection of data provides a statistical importance of a research study (Pennerselvam, 2004:14). Data collected can be in a form of primary and secondary research. This study employed both primary and secondary research. Secondary research is gathered from secondary data. It contains sources of information collected and published by other institutions or organisations. The main advantage of using secondary data is that it provides quick access to information and it is relatively cheaper to conduct as compared to primary research (Stewart & Kamins, 1993:1). The disadvantage of using secondary data is that information gathered might be unreliable because of various viewpoints from authors (Housden, 2005:91; Jugenheimer *et al*. 2010:31).

In this study, secondary research was conducted to gather the information that is relevant to chapter 1 and 2 of the study. This was meant to aid the understanding of the conceptualisation of food security and its associated challenges. A detailed literature review included journal articles, books, government publications, the Internet, previous research studies, conference papers and any other sources. Books were reviewed to provide a theoretical perspective on food security. Government publications included regulations and policy briefs on the state of household food security in South Africa.

Primary research refers to the collection of new data for a particular research project. It means that a researcher collects information for the first time, through various research methods (Gratton & Jones, 2010:8). Primary research is also known as academic research and primary data. According to Wiid and Diggines (2009:84) primary data comprises of both qualitative and quantitative research methods.

Quantitative research methods may involve questionnaire surveys, observations and experiments. Qualitative research methods may comprise of focus groups and in-depths interviews. Morgan and Summers (2005:110) emphasise that with primary research, one might be able to address the research question efficiently, and be able to find reliable and accurate results about the research topic. Mooi and Sarstedt (2011:29) observed that a major challenge associated with primary research is that it might be relatively expensive to collect data when conducting a thorough investigation.

In this study, a household survey was undertaken to gather information on the food security status of individual households. Household survey was carried out in the community of Kwakwatsi through a self-administered questionnaire.

3.5.1 Questionnaire design

A structured questionnaire is a list of formal questions outlined in order to attain truths and facts about a particular topic (Beri, 2010:16). In order to have an effective questionnaire, it is essential to distinguish between open-ended and closed-ended questions (Mitchell & Jolley, 2013:300). Closed-ended-questions have small set of response options. In open-ended questions the participants have multiple response options to choose from (Brace, 2008:46).

The study used closed-ended questions. The questionnaire comprised of two main sections which included variables relating to social, demographic, and economic characteristics of households. All the questionnaires were distributed and individual households were interviewed face-to-face by trained field workers. The aim of conducting the face-to-face interview technique was to obtain higher response rates. The first section of the questionnaire was on socio-demographic information of the participants. This section was constructed to include the social status of households in terms of gender, age household size, employment and marital status. The second part of the questionnaire relates to information needed to calculate the food security status of the sample. The questions were based on the HFIAS scale developed by USAID (Coates *et al*., 2007). The HFIAS questionnaire is a standardised international measure used to indicate the incidences of household food (in) security.

The HFIAS questionnaire is outlined into two sub-related questions. These are the nine occurrence questions and nine frequency-of- occurrence questions linked with the incidents of food insecurity that occurred in the previous month.

3.6 METHODS OF DATA ANALYSIS

The two methods were used to analyse household food security. These methods include: the Household Food Insecurity Access Scale (HFIAS) and the logit regression model. The HFIAS examines the food security status of households. The logit regression model establishes the socio-economic and demographic variables that determine household food security.

3.6.1 Household food insecurity access scale

The Household Food Insecurity Access Scale developed by the United States Agency for International Development (USAID) was used to measure household food security status in Kwakwatsi. The method is based on the idea that the incident of household food insecurity leads to predictable reactions and responses that can be captured and quantified through a survey and summarised in a scale. The HFIAS score was calculated using the answers based on the nine frequency-of-occurrence questions. In the study, the head of each household was asked if the condition presented in each question had ever occurred in the previous month. If the condition occurred they were asked to indicate the frequency-of-occurrence: which included; rarely, sometimes or often. Participants were then scored as follows: ‘never’, ‘sometimes’ and ‘often’ received a score of 1, 2, and 3 respectively. Therefore when adding the score for each sampled household, the lowest score was 0 and the highest was 21, meaning that the higher the score the higher the probability of a household being vulnerable to food insecurity (Coates *et al*., 2007:8).

According to the scheme recommended by the HFIAS indicator guide, the continuous score was divided into four categories, represented by food secure, mildly food insecure, moderately food insecure and severely food insecure (Knueppel *et al*., 2009:363). The second stage of the analysis involved a regression analysis to determine the socioeconomic and demographic factors associated with food security.

3.6.2 Logistic regression model

Regression analysis studies the relationship between the dependent variable and one or more independent or explanatory variables (Gujarati & Porter, 2010:21). In a regression, the dependent variable is represented by (Y) and the independent by (X). The variable (Y) is said to have a probability distribution, assuming that it is random or stochastic. The variable (X) is assumed to be fixed meaning values are continual in samples (Brooks, 2002:42). However a regression does not necessarily mean that a link arises between the two variables, because the link must be justified from the theory that explains the phenomenon that is empirically studied (Gujarati & Porter, 2010:22). Regression analysis is frequently used as a statistical technique to make interpretations from a sample to a population from which the sample is drawn. There are different types of regression models used in research. One of them is a logistic regression (Berk, 2004:1).

This study followed a logistic regression model. Logistic regression identifies the effect of numerous independent variables which are defined simultaneously for estimating the existence of one of the other two dependent variables (Menard, 2010:318). The logistic regression model is also known as a logit model. Quinn and Keough (2002:363) allude that the logistic regression model caters for a non-continuous dependent variable. Baddeley and Barrowclough (2009:121) emphasise that a logistic regression model is used when the dependent variable is not continuous but instead has only two possible outcomes, zero or one. Allison (2012:18) explains that in a logit regression model the generalisation of multiple and unordered categories of the dependent variable can be allowed efficiently. A logistic analysis for a binary outcome aims to estimate the odds of an occurrence of an event and to predict the effects of the explanatory variable on these odds. The event of the odds is a denotation that involves the probability that an event will be a success and the probability that an event will be a failure (O'Connell, 2006:11).

The probability is represented as follows:

- 1, if p is Success
- 0, if p is Failure

When the probability of a success is greater than the probability of a failure, the odds are greater than (0.1) and when the probability of a success is less than the probability of failure; the odds are smaller than success (Simonoff, 2012:1). The binary response is represented by random variables of, $Y_{1,}$.....Y_n with 0_i = $\text{prob}(Y_1=1)$. For each 1....., n there is a row vector x_i = (x_{i1}, ...,x_{ip}) of the explanatory variable (Cox and Snell, 1988:26).

In this study a logit regression model was used to establish the impact of socio-economic and demographic variables on the food security status of households. This model was fitted with nine variables to help identify factors that have an effect on food security. Therefore food security was analysed using the bid value of 1 (food secure) and 0 (food insecurity). Verbeek (2004:190) notes that the variance of the error term is not constant but dependent upon the explanatory variable. To identify the main determinants of household food security status in Kwakwatsi, nine explanatory variables were fitted in the model; these variables were chosen because similar studies by (Babatunde *et al.,* 2007; Benjamin & Joseph, 2012 and Kassie *et al*., 2012) used the regression model to find out factors that affect household food security. The regression model used in this study is defined as follows:

$$\mathrm{Y_t} = \beta_1 + \beta_2\mathrm{GENDER_i} + \beta_2\mathrm{AGE_i} + \beta_3\mathrm{HHSIZE_i} + \beta_4\mathrm{MSHH} + \beta_5\mathrm{EDU_i} + \beta_7\mathrm{ESHH} + \beta_8\mathrm{INCOME} + \beta_8\mathrm{LABOUR_i} + \mathrm{E_t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

Where y_i = food security status (1 if household i is food secure and y_i= 0 if household i is food insecure)

- $GENDER_i$= Gender of household head

Benjamin and Joseph (2012:22) note that several studies conclude that female-headed households are mostly affected by food insecurity than male-headed households. Therefore in this study it is anticipated that there is an increased likelihood that male-headed households are likely to be food secure than their female counterparts. A dummy variable was used to represent this variable:

$GENDER_i$= Male = 0

Female = 1

- AGE_i = Age of household head

Age is said to have an effect on household food security. Kassie *et al.* (2012) observed that there is an inverse relationship between age of the household head and household food security. Age of the household head was used as an indicator for the experience of household food insecurity. In this study, age is measured in years because it is a continuous variable.

- $HHSIZE_i$= number of family members in one household

It is argued that the larger the household size, the higher the anticipation of more food consumption in a household (Olayemi, 2012:137). In the study, it is expected that households with economically active and employed members are more food secure than household with members who are unemployed. Therefore depending on the outcome of the results, the household size will have a positive or negative effect on food attainment.

- $MSHH_i$ = Marital status of household head

A study by Cancian and Reed (2009:21) concluded that a household with a head and a spouse has a greater chance of avoiding food insecurity, because the spouse is likely to contribute to the means of getting food. It is argued that single household heads bear a large burden on the attainment of food as they usually enjoy a limited support structure (Kaloi *et al.*, 2005:70). There was a need to include this variable because limited information is known about the relationship between marital status and food security (Hanson *et al.*, 2007:1460). Although this question had six options for the participants (Never Married, Married, Divorced, Separated, Living together, Widow/er), a number were grouped for ease of analysis and interpretation. The following dummy variable was used to denote this variable:

$MSHH_i$ = 1; Married/living together

0; Otherwise

- EDU_i= Education of Household head

Education is described as a social capital which has a positive effect on household food security (Babadunde *et al.*, 2007:354). The level of education determines whether an individual has better access to job opportunities in the labour market

(Kuwornu *et al.*, 2013:35). It was expected that households heads with higher educational qualifications will have a higher chance of being food secure. The analysis on education was based on the household head only.

- $ESHH_i$ = Employment status of household head

In this study, to be employed means that an individual works for three days or more in a week in order to obtain income for food consumption. The diversification of income sources enables an individual to have food needed to maintain a standard of living and avoid food insecurity (Frankenburger, 1992). The employment status is expected to affect household food security positively. In the questionnaire, the employment status was classified into four categories (formally employed, informal activities, unemployed, and not economically active). For simplicity, a dummy variable was used to outline the variable:

$ESHH_i$ = 1; Employed

0; Not Employed

- $INCOME_i$= total monthly income of a household

Monthly income in the study refers to income received by members of a household from all sources within a month. Income is regarded as the most important determinant for food security in a household (Onomona *et al*., 2007:404). In this study total monthly income is expressed in Rand value and it is expected to positively affect household food security. Monthly income was kept as a continuous variable.

- $LABOUR_i$= the number of people in a household who can work

The labour force in South Africa comprises of those individuals between the ages of 15 and 65 who are economically active (Stat SA, 2007), it is therefore calculated as the sum of employed and the unemployed. Individuals who are younger than 15 are usually learners and are not included in the calculation of the labour force (Bhorat & Oosthuizen, 2006:144). Aliber (2009) observed that households having members who are unable to work due to disability or age are most likely to experience food insecurity. Additional household members who are able and willing to work can look

for temporary employment in order to make the necessary means to attain food. This variable was used as a continuous measure.

3.7 CHARACTERISTICS OF THE STUDY POPULATION

This section provides a detailed description of the data gathered from a self-administered questionnaire. The aim is to highlight the different factors that might have an effect on household food security. Household demographics and socio-economic characteristics of the participants will be explained. A comparison will be made with national figures, provincial figures and from various studies.

3.7.1 Demographic characteristics of Participants

The study sample comprised of 225 households. A large share of the sampled population constituted of households' heads at 61.30% followed by spouses (33.80%) and then children (4.90%). The subsections below will explain the demographic characteristics of households from various perspectives.

3.7.1.1 Composition of household members

Figure 3.1 shows the composition of members of households in Kwakwatsi. The highest percentage of members constituted of daughters at 24.90% while the lowest percentage were uncles at 0.20%. The percentage of mothers (21.40%) is slightly higher than that of fathers (17.20%). The figure also shows a similar record for daughters and sons at 21.40% and 16% respectively. The classification of other (17.40%) implied extended family members such as nieces, nephews, grandchildren and cousins. The distribution of members in this study corresponds to that of Sekhampu (2010:123) in Kwakwatsi. His study found a high percentage of mothers (22%) with respect to fathers (14%).

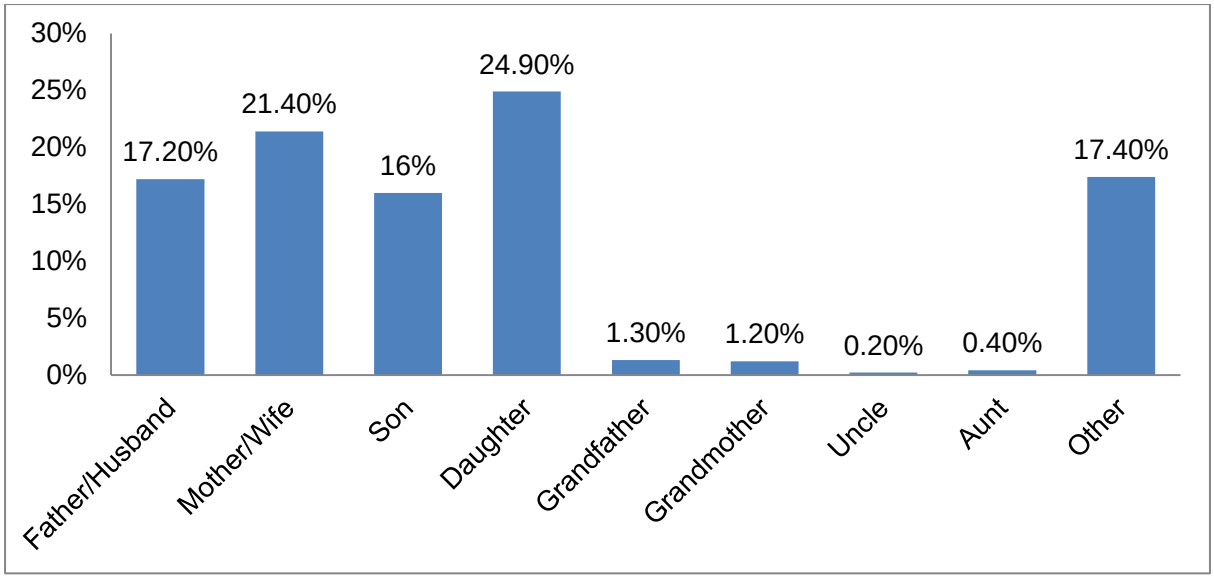


Figure 3.1: Composition of household members

Source: Survey data, 2013

It was also important to understand the status of the head of household for the sampled population, as shown in Figure 3.2. The results indicate that the composition of household members differs in household heads. The distribution of household heads constituted of fathers and mothers at 75.60% and 22.70% respectively, followed by daughters at 1.30% and then grandmothers at 0.40%. There was no household, headed by a son, a grandfather, an uncle or an aunt. National statistics in South Africa indicate that 56.20% and 43.80% of African households are headed by males and females, respectively (Stats SA, 2011:13).

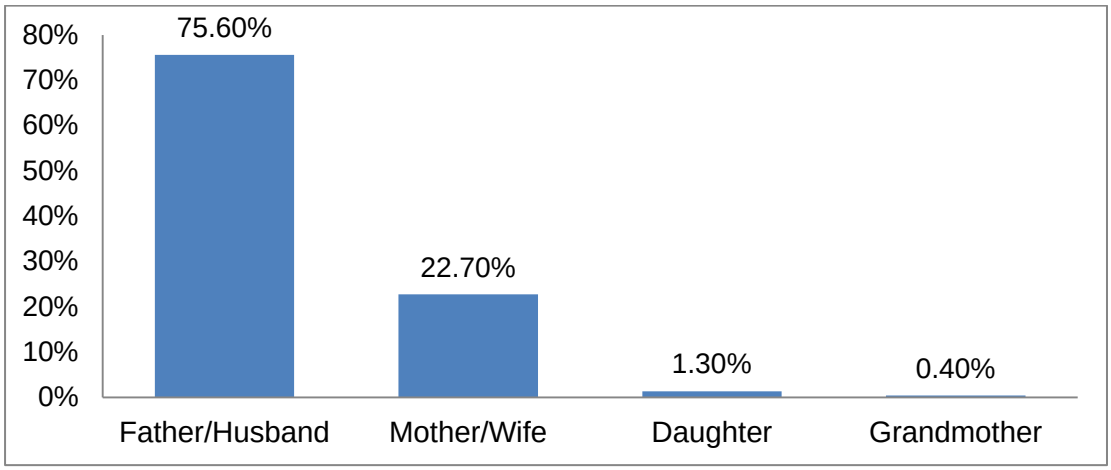


Figure 3.2: Composition of households' heads

Source: Survey data, 2013

3.7.1.2 Gender distribution of the population

A gender distribution of the sampled population of Kwakwatsi shows that a large share comprises of females (60.20%) than males (39.30%). National figures showed that the average population for males and females was 48.20% and 51.70% respectively (Stats SA, 2012:31). The Free State province has more males at 65.80% compared to 34.30% for females (Stats SA, 2011:14). The figures for Kwakwatsi are therefore similar to those of national figures with a higher percentage of females than males. When it comes to the gender distribution of household heads, Kwakwatsi has a higher number of male-headed (MHH) than female-headed (FHH) households. MHH constituted of 69.30% and FHH 30.70% of the total sampled population. Stats SA (2011:10) indicated that 56.20% of households in the black/ African population were headed by males while 43.80% were headed by female. This suggests that the figures for Kwakwatsi are similar to national figures and potential applicability of the findings to areas with a similar demography. Stats SA (2011) indicates that 43.80% of female-headed households among the black society is the highest when compared to other racial groups.

3.7.1.3 Population distribution by Age and Gender

This subsection looks at the age and gender distribution of the sample. Table 3.1 portrays the gender and age distribution of the sampled population of Kwakwatsi. The percentage of people who are under the age of 35 years for both females and males is 39.13% and 19.52% respectively. Both these figures do not correspond to those of Ngwathe Local Municipality(of which Kwakwatsi is part of) as census 2011 revealed that people who were under 35 years of age amounted to 60.85% for females and 39.15% for males (Stats SA, 2012:44). A large proportion of the sampled females are younger than 10 years of age (9.40%) whilst the highest share of the sampled males are between the ages of 45 to 49 years (4.85%). A record of 33.13% of the sampled population is 40 years of age and older.

Table 3.1: Population distribution by age and gender

Age groups	Female	Male	Total	% Female	% Male	% Total
<10	93	31	124	9.40	3.13	12.54
10-14	81	32	113	8.19	3.24	11.43
15-19	62	41	103	6.27	4.15	10.41
20-24	50	35	85	5.06	3.54	8.59
25-29	61	34	95	6.17	3.44	9.61
30-34	40	20	60	4.04	2.02	6.07
35-39	51	30	81	5.16	3.03	8.19
40-44	39	21	60	3.94	2.12	6.07
45-49	46	48	94	4.65	4.85	9.50
50-54	13	31	44	1.31	3.13	4.45
55-59	12	20	32	1.21	2.02	3.24
60-64	33	21	54	3.34	2.12	5.46
65-69	4	10	14	0.40	1.01	1.42
70-74	6	7	13	0.61	0.71	1.31
75-79	1	3	4	0.10	0.30	0.40
80+	3	10	13	0.30	1.01	1.31
Total	**595**	**394**	**989**	**60.16**	**39.84**	**100**

Source: Survey data, 2013

3.7.1.4 Age and gender distribution of household head

The average age of the household head of the sample was calculated at 49.9 years. Table 3.2 reports the percentage of the household heads in various age and gender categories. The youngest household head was a female at 29 years old and a male who is 30 years old. About 11.55% are headed by people who are over the age of 60 years. According to Stats SA (2011) among the African society individual household heads between the ages of 19-40 constituted the highest percentage at around 53%. In Kwakwatsi the majority of household heads are between the ages of 41 and 50 years old (44%) while the least are in the age category of 21-30 years old (0.89%).

Table 3.2: Age and gender distribution of household heads

Category	Female	Male	Total	% Female	%Male	%Total
21-30	1	1	2	0.44%	0.44%	0.89%
31-40	21	32	53	9.33%	14.22%	23.56%
41-50	35	64	99	15.56%	28.44%	44.00%
51-60	7	38	45	3.11%	16.89%	20.00%
61-70	3	11	14	1.33%	4.89%	6.22%
71-80	2	10	12	0.89%	4.44%	5.33%
Total	**69**	**156**	**225**	**30.7%**	**69.3%**	**100.0%**

Source: Survey data, 2013

3.7.1.5 Household size

The average household size was calculated to be 5. The average household size for male-head households and female-head households was 5 and 4 respectively. In contrast, a study by Sekhampu (2010:122) showed that the average household size for Kwakwatsi was calculated to be 4. Stats SA (2012) indicated that the average household size for Ngwathe Local municipality to be 3.

3.7.1.6 Marital status of the sampled population

Figure 3.3 portrays the marital status of the sampled population in Kwakwatsi. About 33.37% of the population constitutes of children who are not married. The percentage of people who are married is 35.60% and 23.70% have never been married. The share of people who are divorced and separated amounted to 1.31% and 0.40% respectively. A study by Sekhampu (2010:124) in Kwakwatsi showed that 19% of the population were married, 2% lived together while 9% were widowed.

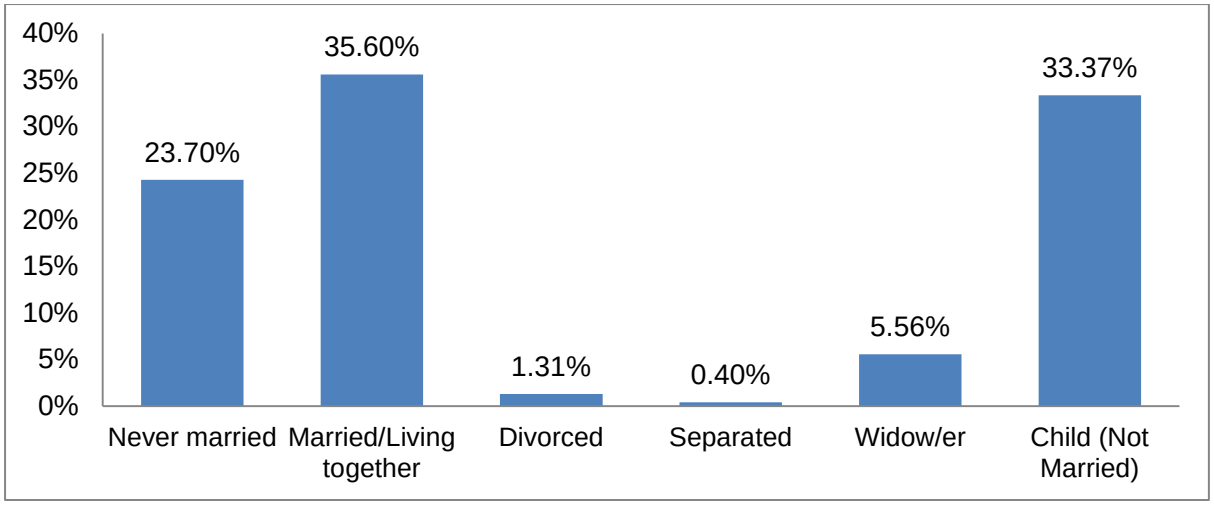


Figure 3.3: Marital status of the sampled population

Source: Survey data, 2013

Figure 3.4 indicates that a large percentage of household heads comprises of couples who are married/ living together (70.60%). This is followed by 18.70% who are widowed, 4.90% are divorced, 4% have never been married and 1.80% have separated.

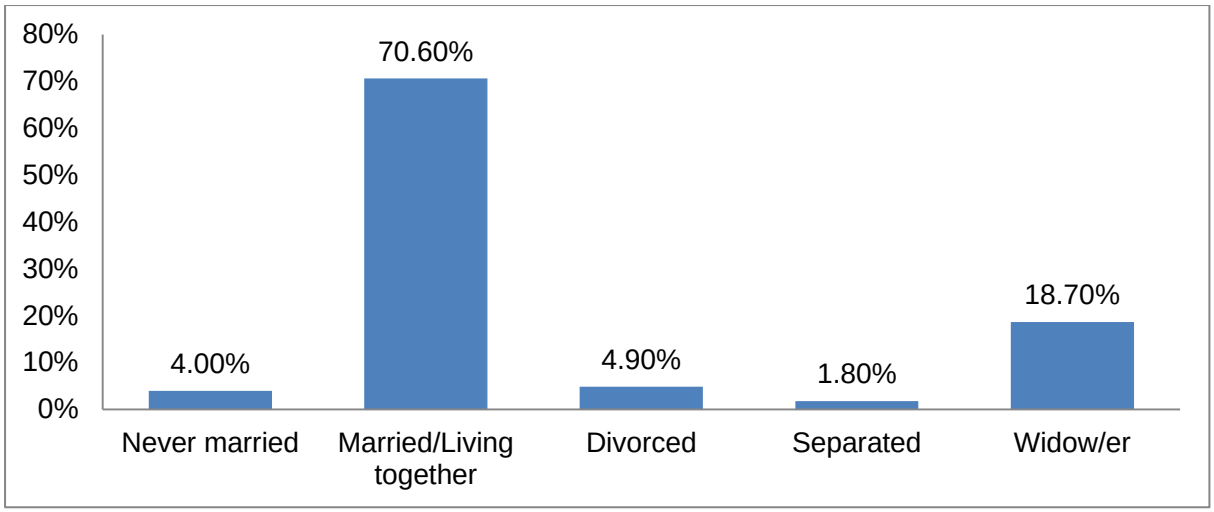


Figure 3.4: Marital status of household heads

Source: Survey data, 2013

Table 3.3 shows the marital status of household heads by gender. The majority of MHH (63.11%) are married/living together compared to FHH (7.56%). Those who are divorced and separated constitute of 4.89% and 1 .78% respectively. A total of

18.67% are widows/widowers, and out of this percentage 14.22% are FHH. This Table suggests that the majority of FHH in the study are single parents.

Table 3.3: Marital status of household heads by gender

Marital status	FHH	MHH	Total	%FHH	%MHH	%Total
Never married	9	0	9	4.00	0	4.00
Married	9	95	104	4.00	42.22	46.22
Divorced	8	3	11	3.56	1.33	4.89
Separated	3	1	4	1.33	0.44	1.78
Living together	8	47	55	3.56	20.89	24.44
Widow/er	32	10	42	14.22	4.44	18.67
Total	**69**	**156**	**225**	**30.67**	**69.33**	**100.00**

Source: Survey data, 2013

3.7.1.7 Average length of stay in Kwakwatsi

Table 3.4 indicates the average length of stay for the participants of Kwakwatsi. Of the sampled population approximately 54.20% are those who have stayed in Kwakwatsi for a period of 16 to 20 years. A total of 40.10% lived in the area for more than 20 years and only 5.70% have stayed for less than 15 years. Therefore the average length of stay is around 22 years.

Table 3.4 Average length of stay

Average Stay in years	Frequencies	Percentage
1-5	1	0.40%
6-10	7	3.10%
11-15	5	2.20%
16-20	122	54.20%
21-25	42	18.70%
26-30	29	12.90%
31-35	15	6.70%
36-40	4	1.80%
Total	**225**	**100.00%**

Source: Survey data, 2013

3.7.2 Literacy levels in Kwakwatsi

This section analyses the educational levels of the sampled population. In South Africa the right to basic and higher education for all citizens is highlighted in Section 29 (1) of the Constitution. The Constitution acknowledges that the government is responsible for providing access to education (Calderhead, 2011). Education is viewed as an effective tool for enhancing social and economic development (Badat, 2009:6).

3.7.2.1 Population in School

The figure 3.5 indicates the level of education for those who are still in school. A large proportion of the population is still in the process of the foundation phase (up to grade 3) at 32.42%. A total of 99.70% of the population is enrolled for basic education, out of these 59.95% and 39.75% are still in primary and secondary education respectively. The enrolment for Grade 12 is 10.09%. Only 0.31% are enrolled for their first tertiary education qualifications. Stats SA (2012:32) observed that school enrolment for the Black/African society has been rising at a slower rate from 70.70% in 2001 to 73.90% in 2011.

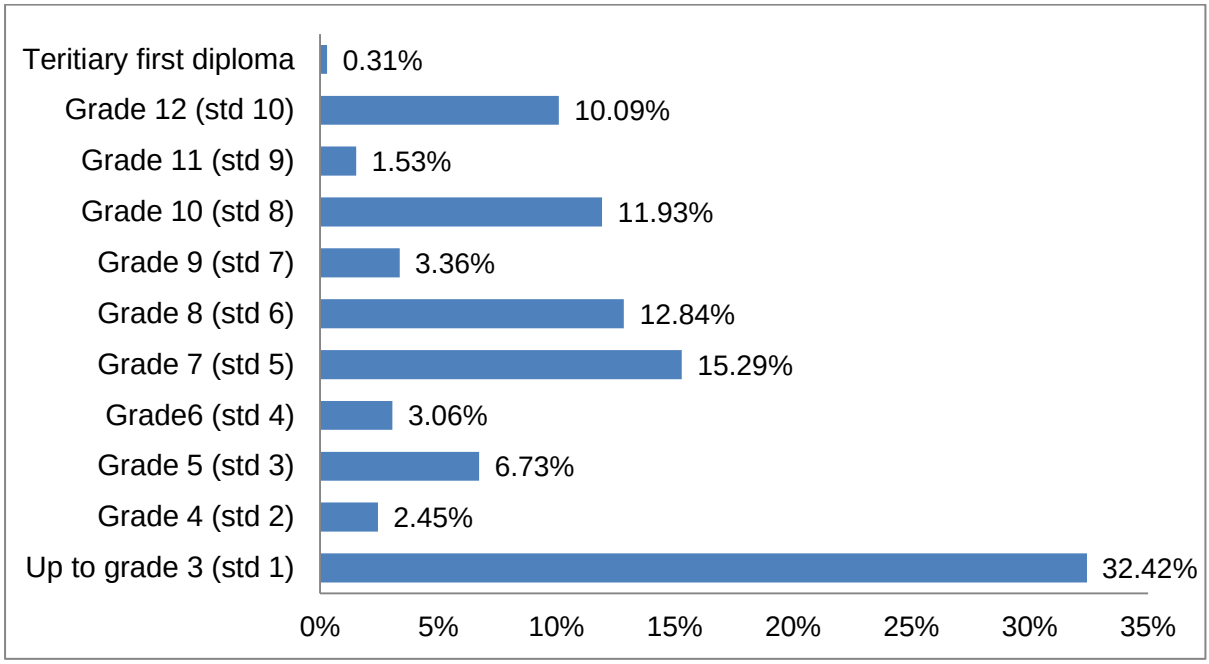


Figure 3.5: Qualifications of the population in school

Survey data, 2013

3.7.2.2 Out of school population

Figure 3.6 shows the qualification levels of those who are out of school for the sampled population. Only 3.32% have first diploma tertiary education. The percentage of the population who have Grade 12 (34.14%) is higher than that obtained for the population of Kwakwatsi in 2010 which was at 15% (Sekhampu, 2010:128). About 61.65% of those out of school have not attained matric (grade 12) and instead have lower educational qualifications. Approximately 3.32% of the population in Kwakwatsi have no formal education. In comparison to Stats SA (2012:34) 10.5% of the Black/African society had no formal education.

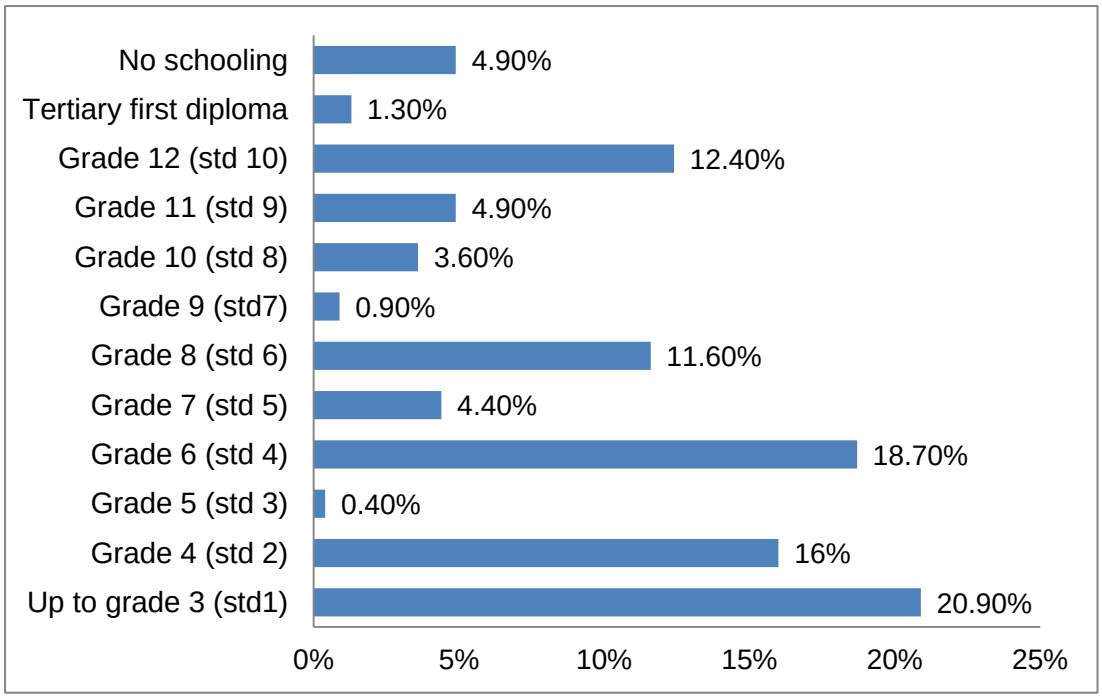


Figure 3.6: Qualifications of post-school population

Source: Survey data, 2013

3.7.2.3 Educational level of household head

Figure 3.7 shows the educational attainment of household heads. The majority of household heads have attended schooling only for the first 3 years (grade 3: 20.9%). The number with a National Senior Certificate (Grade 12) is 12.4%. None of the household heads sampled obtained post diploma/degree qualification. About 4.90% of household heads have no formal school. National figures show that 10.50% of Black/African society aged 20 years and older had no formal education. Stats SA

(2012:55) reports that over the years the level of tertiary education for the Black/African population has increased significantly from 3.60% in 1996 to 8.60% 2011.

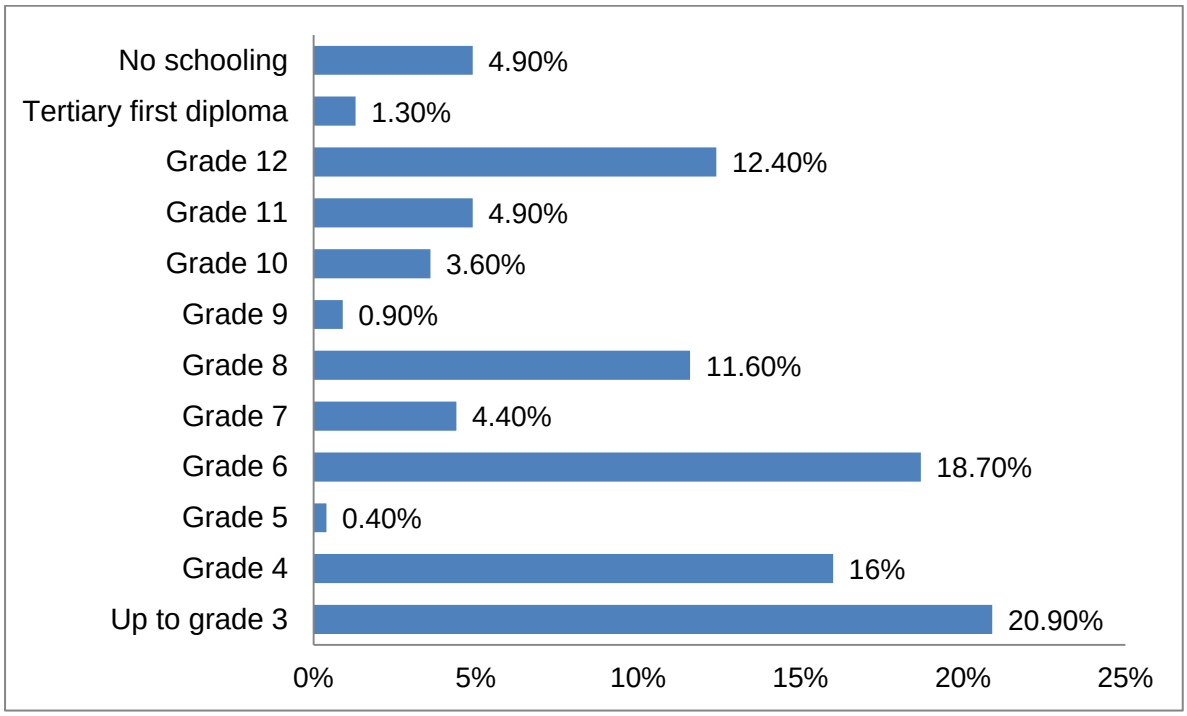


Figure 3.7: Educational level of household heads

Source: Survey data, 2013

Table 3.5 indicates the educational attainment of household heads by gender. The Table highlights that for each educational attainment displayed below MHH have the highest percentages for the specific educational attainment than FHH, except for first diploma tertiary education were FHH is 0.89% and MHH is 0.44%. About 10.22% of MHH have attained Grade 12 qualification compared to 2.22% for FHH. A total of 56.88% have attained less than primary education (14.22% are FHH and 42.56% are MHH).

Table 3.5: Educational attainment of household heads by gender

Grades/Standards	FHH	MHH	Total	%FHH	%MHH	%Total
Up to grade 3 (std 1)	10	39	49	4.44%	17.33%	21.78%
Grade 4 (std 2)	6	30	36	2.67%	13.33%	16.00%
Grade 5 (std 3)	0	1	1	0.00%	0.44%	0.44%
Grade6 (std 4)	16	26	42	7.11%	11.56%	18.67%
Grade 7 (std 5)	5	5	10	2.22%	2.22%	4.44%
Grade 8 (std 6)	12	14	26	5.33%	6.22%	11.56%
Grade 9 (std 7)	2	0	2	0.89%	0.00%	0.89%
Grade 10 (std 8)	3	5	8	1.33%	2.22%	3.56%
Grade 11 (std 9)	5	6	11	2.22%	2.67%	4.89%
Grade 12 (std 10)	5	23	28	2.22%	10.22%	12.44%
Tertiary first diploma	2	1	3	0.89%	0.44%	1.33%
No schooling	3	6	9	1.33%	2.67%	4.00%
Total	69	156	225	30.67%	69.33%	100.00%

Source: Survey data, 2013

3.7.3 Labour force

Unemployment is regarded as a serious economic problem as it generally leads to poverty, crime and loss of self-esteem for those who are discouraged and have not taken further steps to seek employment (Dwivedi, 2010:344). Unemployment in South Africa is structural in nature and still remains a cause for concern (Tabarrok, 2010). Stats SA (2000) conceptualised two appropriate definitions of unemployment: the strict and the expanded definition. The strict definition takes into account people who are discouraged and have not taken further actions to seek employment. The expanded definition includes those who desire to work and are taking various steps to seek employment. This section provides the employment status of the sampled population. This study used the expanded definition for analysis. Unemployment rate was calculated based on the standard equation of unemployment in South Africa.

$$U_r = \frac{\text{number of unemployed}}{\text{economically active population}} \times 100$$

Figure 3.8 shows that from the survey data (2013) the unemployment rate for Kwakwatsi is estimated to be 15.70%. The unemployment rate for Kwakwatsi is lower than national figures. Census 2011 indicated the expanded unemployment rate for the Ngwathe Local Municipality to be 35.20% (Stats SA, 2012). A further analysis of the data indicates that 12.20% are employed in the formal sectors and 72.10% are employed in the informal sectors.

The informally employed are employed through the government's Community Works Programme (CWP). The Expanded Public Works Programme was created with the aim of alleviating poverty through short-term employment incentives. The programme is also aimed at providing development skills. Infrastructure, social, economic and environmental sectors are the main sectors for creating job opportunities within the programme (RSA, 2004). This group is employed on a short-term basis to clean the streets and the periphery of the township for a monthly stipend of R500 (as at April 2013). A total of 45.20% of the sampled population of Kwakwatsi is economically inactive.

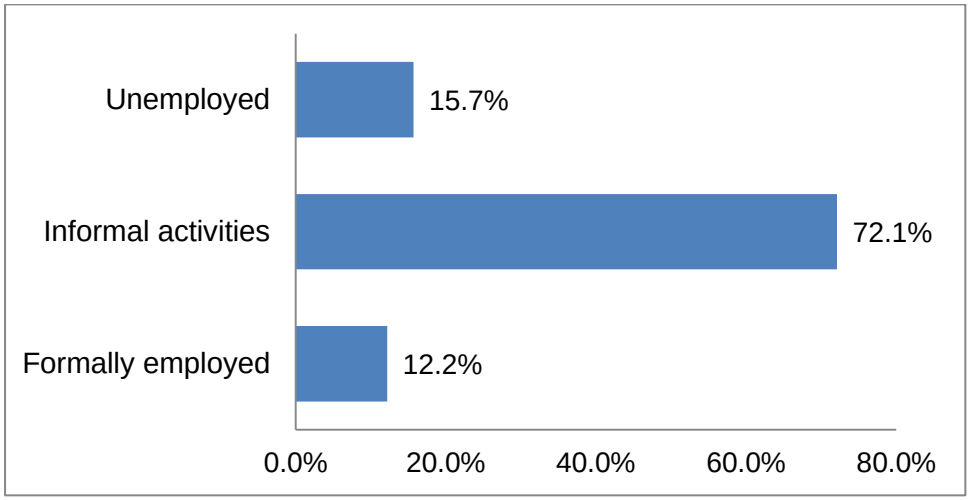


Figure 3.8: Total labour force

Source: Survey data, 2009

3.7.3.1 Duration of unemployment in years

Figure 3.9 highlights the duration of unemployment. The portion of the sampled population that was unemployment for more than ten years accounted for 17.44%. About 34.89% were unemployed for the duration of 5 to 9 years. The highest

percentage (19.77%) were only unemployed for 2 years. A total of 47.67% has been unemployment for a period of less than 5 years.

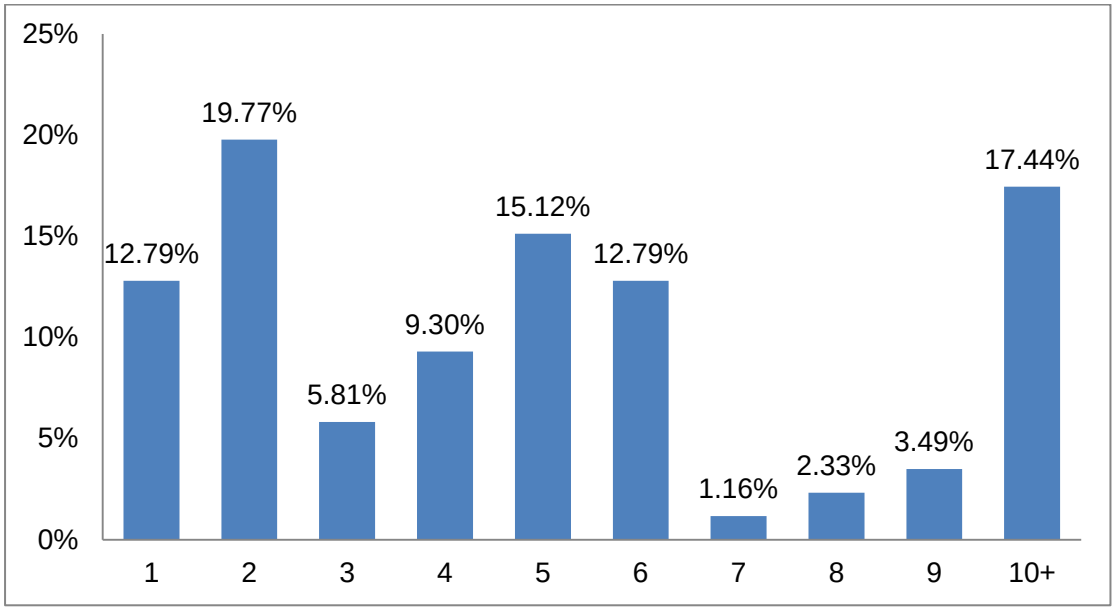


Figure 3.9 Duration of unemployment years

Source: Survey data (2013)

3.7.3.2 Skills acquired by the unemployed

When it comes to the unemployed, the majority acquired skills in retail/trade (46.40%). The second most common skills are building/construction at 21.40%, followed by catering/cooking (7.10%). About 2.40% have indicated skills in banking and sewing. The skills of other were not defined (see figure 3.10).

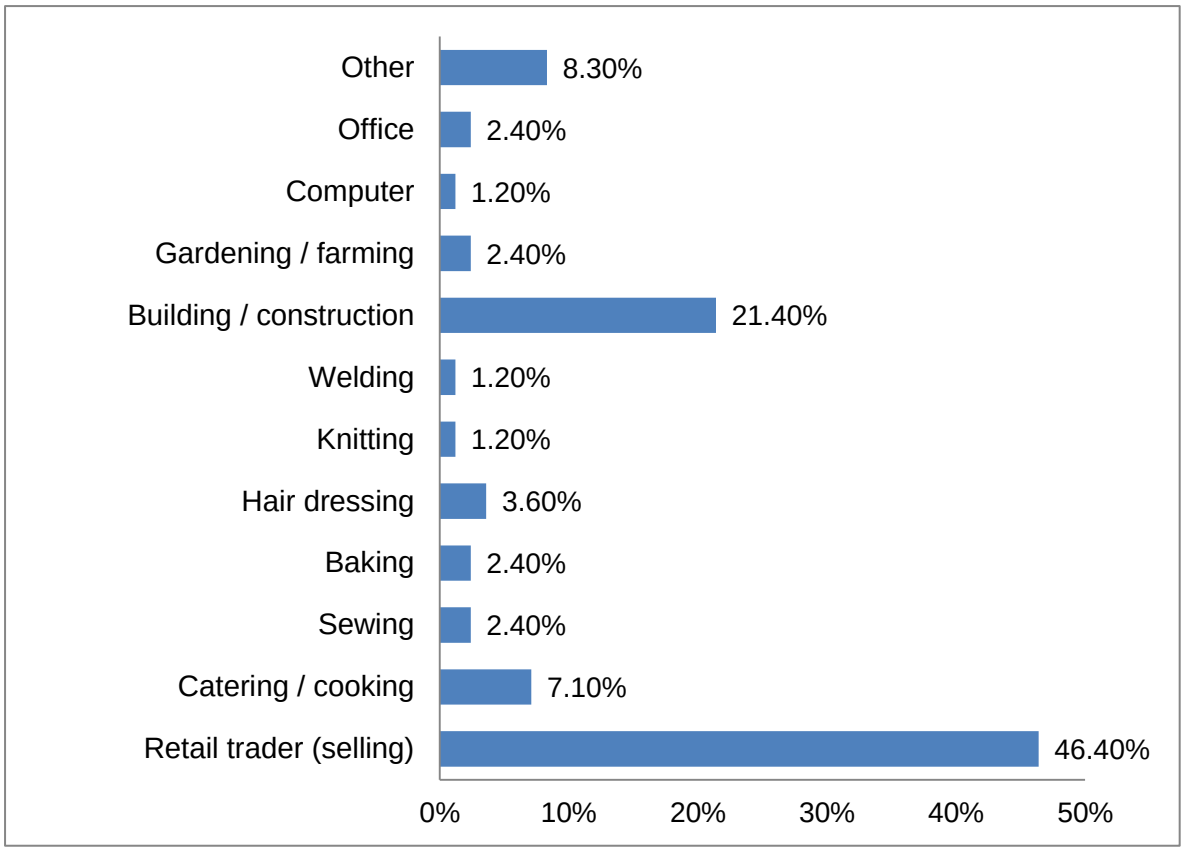


Figure 3.10: Skills acquired by the unemployed

Source: Survey data, 2013

3.7.3.3 What are the unemployed doing?

Since a small proportion of the sampled population is unemployed, figure 3.11 portrays the current activities of the unemployed. The majority of the unemployed are actively looking for work (93.50%), followed by those who are helping with household duties (3.90%) and then those who idle (2.60%.). Those who idle might not have taken active steps to seek employment due to lack of job opportunities in the labour market.

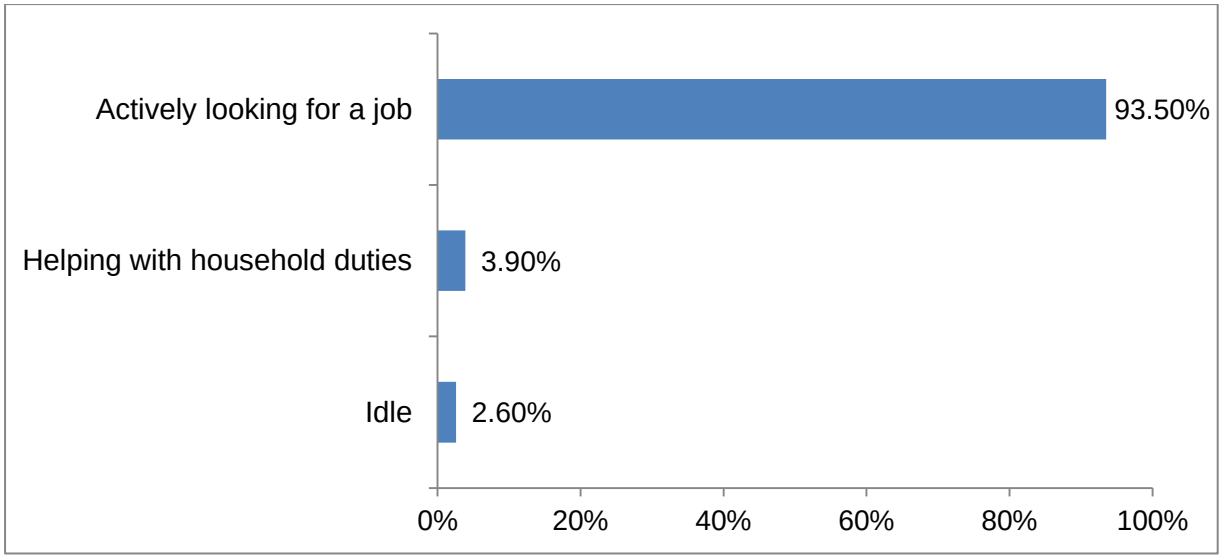


Figure 3.11: What are the unemployed doing

Source: Survey data, 2013

3.7.3.4 Employment status of household head

Figure 3.12 portrays the employment status of household heads. The share of unemployed household heads amounts to 4.40%. This means that 50.70% of the household heads work in informal activities while 22.20% are formally employed. Out of the sampled population 22.70% are economically inactive. The majority of formally employed household heads are men because they usually hold full-time jobs in urban areas and are most likely to provide more food for their families. In comparison to the national unemployment rate at 25.20%, for the first quarter of 2012, the unemployment rate for this study area is relatively low (Stats SA, 2012). This is as a result of the available employment opportunities in the informal sector particularly through the government's Community Works Programme currently running in the township.

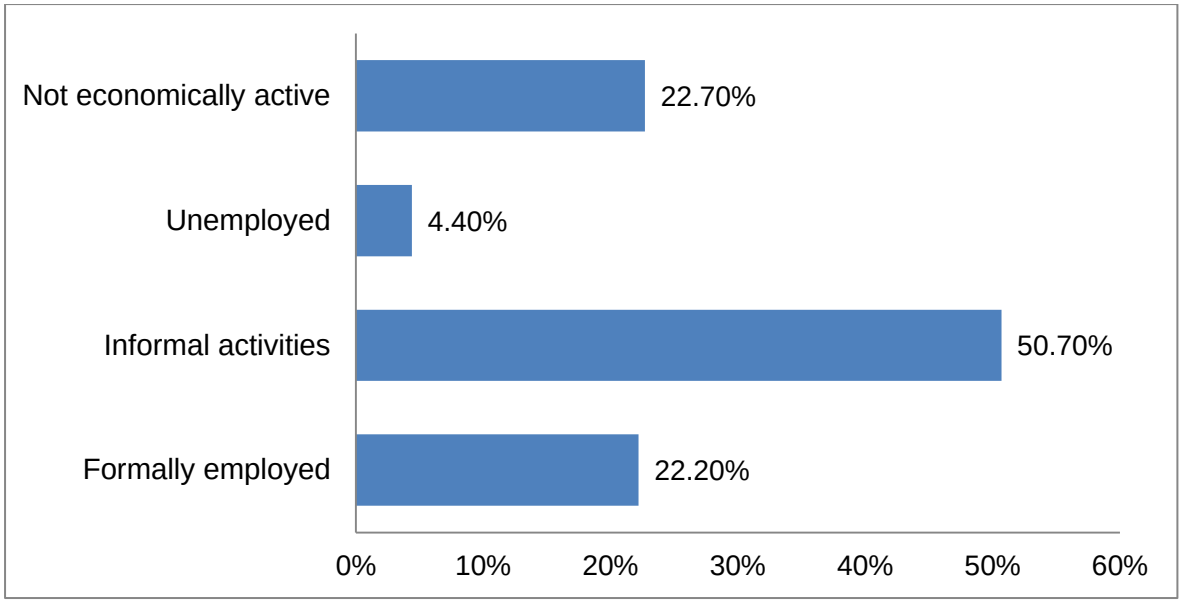


Figure 3.12: Employment status of household heads

Source: Survey data, 2013

Table 3.6 shows the employment status of households by gender distribution of the sampled population. Out of 22.22% of the unemployed, 19.11% are MHH and only 8% are FHH.

Table 3.6: Employment status of household heads by gender

Employment status of HH	FHH	MHH	Total	%FHH	%MHH	%Total
Unemployed	18	43	61	8.00%	19.11%	27.11%
Formally employed	13	37	50	5.78%	16.44%	22.22%
Informal activities	38	76	114	16.89%	33.78%	50.67%
Total	69	156	225	30.67%	69.33%	100.00%

Source: Survey data, 2013

3.7.3.5 Sector of employment for the employed

For the employed, about 55.20% are employed in community, social, education, training and personal services (see figure 3.12). The second major sector of employment is other sectors (27.20%), and was used to record informal activities such as farming/gardening and domestic work. The figure of the category of “other” is similar to a finding by Sekhampu (2010:142) in the area; 21% of the employed

were found to be in the “other” sector. About 6.80% are employed in the agricultural sector and 5.80% are employed in sectors such as wholesale, retail, trade and catering.

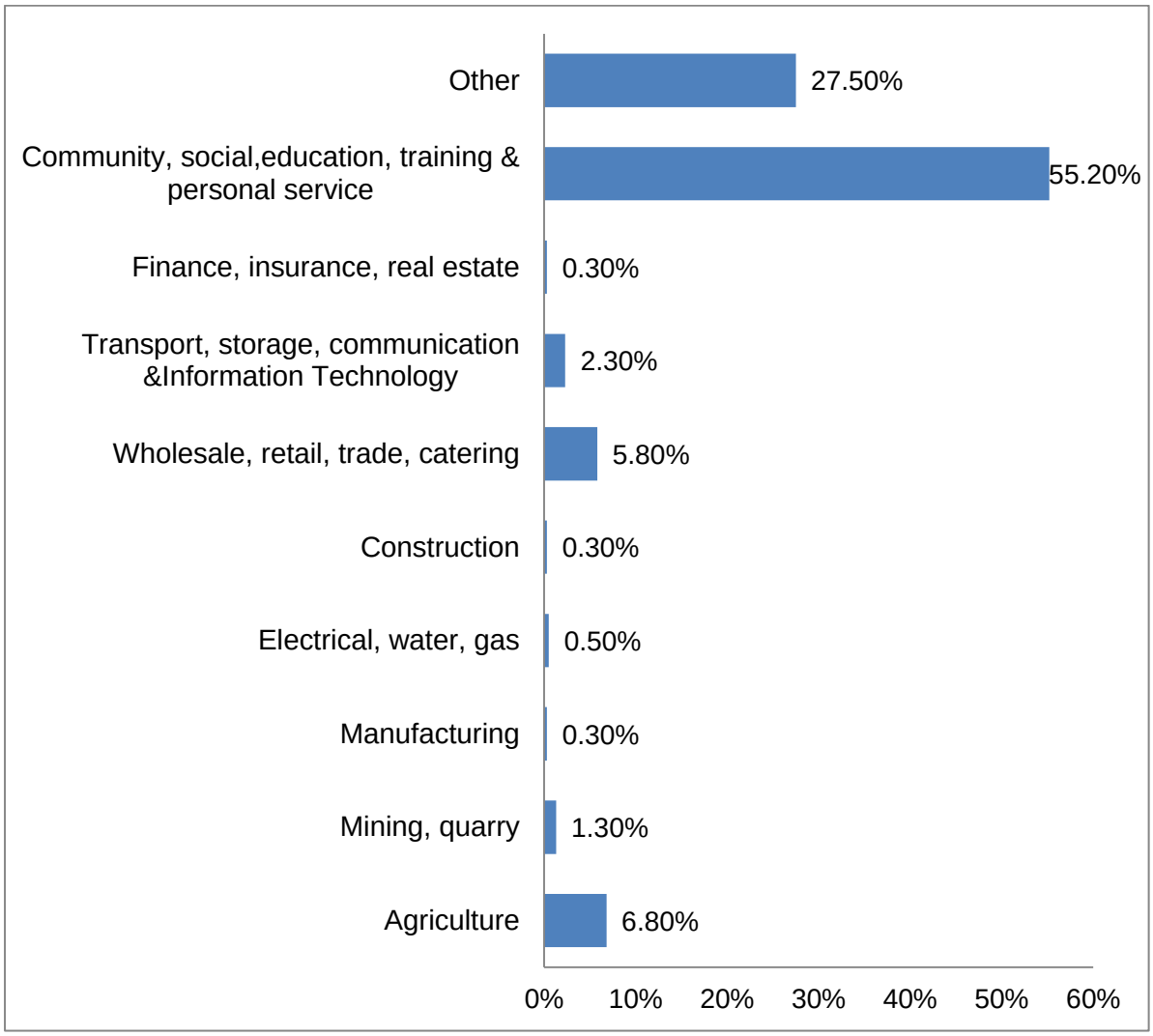


Figure 3.13: Sectors of employment for the employed

Source: Survey data, 2013

3.7.4 Income

Figure 3.14 shows the various sources of income for the sampled population in Kwakwatsi. The majority of household income (66.74%) is from salaries and wages. The second highest contributor is other market income at 16.83% followed by government pensions (15.82%) and then Help (0.61%) from family member and help in kind.

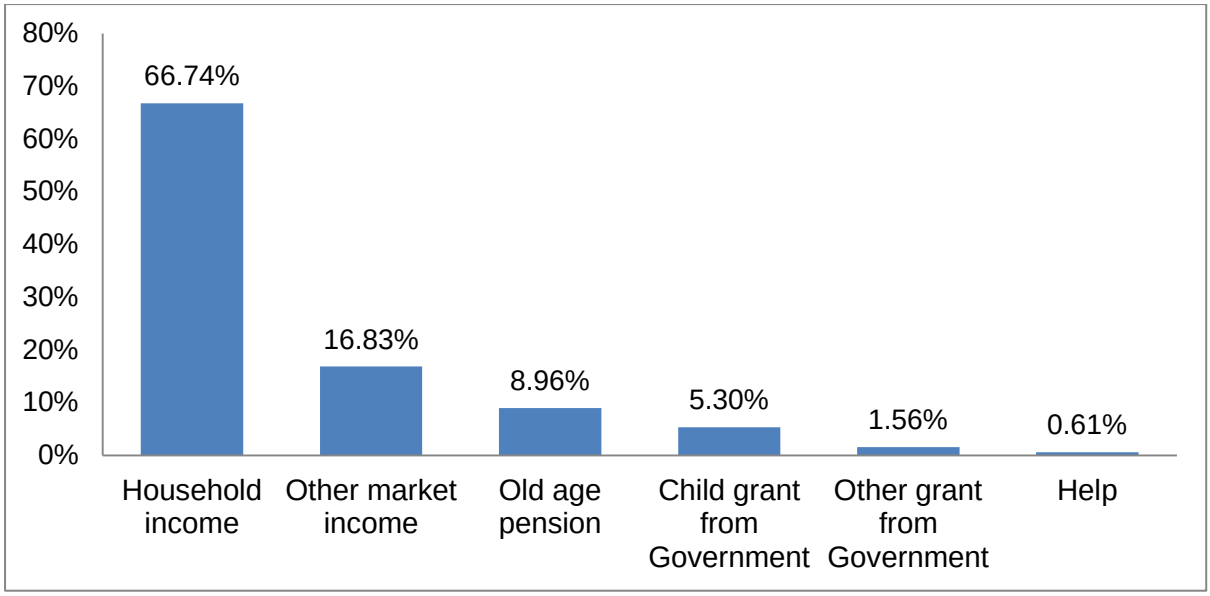


Figure 3.14: Sources of income

Source: Survey data, 2013

The average income for the sampled population was determined at R 2061.33 per month. In 2010 it was determined to be at R 1409.01 for Kwakwatsi (Sekhampu, 2010:142). This may suggest an improvement in the average income since 2010. The average monthly income for the sampled population is lower than that obtained for the entire Black/African population for South Africa in 2011 at R5051.08 (Stats SA, 2012:48).

3.7.4.1 Average sources of income for household heads

Figure 3.15 shows the average monthly income earned by household heads in Kwakwatsi. The total average monthly income of R4010, 50 was obtained from salaries and wages. The average monthly income from other sources and social grants amounted to R1011.29 and R950.76 respectively.

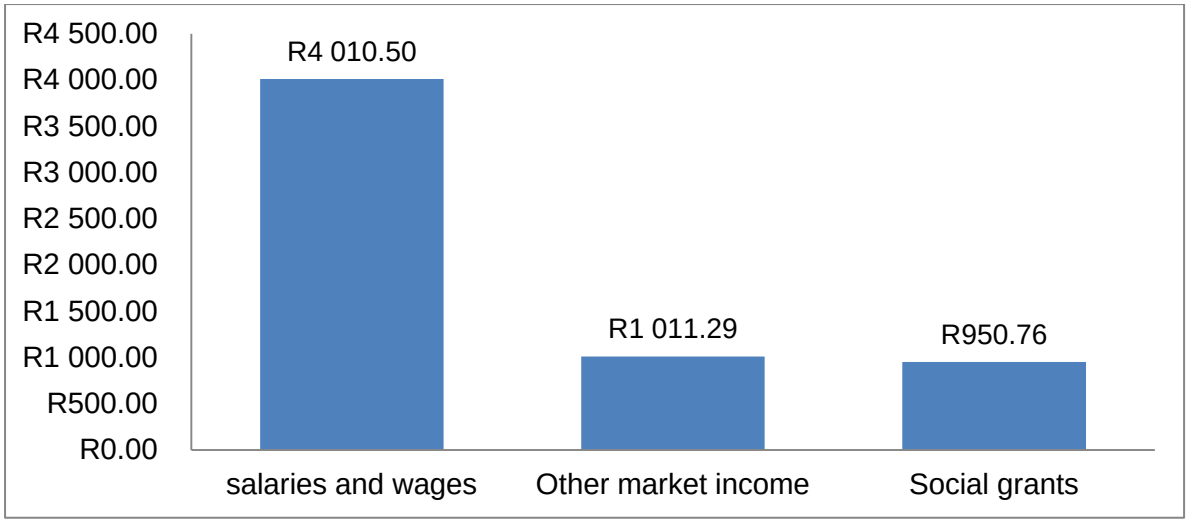


Figure 3.15: Average sources of income for household heads

Source: Survey data, 2013

3.8 SUMMARY AND CONCLUSION

There are different types of research methods used in research. The study area included households in kwakwatsi situated in the Free State province, South Africa. The main objective of the study was to determine the food security status of households in the area. The research design constituted of a quantitative research method. A random sampling technique was used to collect data and a sample size involved 225 households. A self-administered questionnaire was administered in the area through face-to-face interviews by trained field workers.

The study employed both secondary and primary research for the data collection. Secondary research was used for information applicable to chapters 1 and 2 of the study. Primary research was conducted using a household survey. The self-administered questionnaire identified the socio-economic and demographic characteristics of households. The HFIAS scale developed by USAID will be applied in the next chapter to measure household food security status, while the logit regression model was chosen to establish the main determinants of food security status of households, through the application of nine explanatory variables fitted in a model.

A descriptive analysis of the data indicates that there are more mothers (21.40%) than fathers (17.20%) in the area. This figure corresponds to that of daughters and sons at 21.40% and 16% respectively. A large share of the sampled population consists of more females (60.20%) than males (39.30%).The age of the household heads ranged from 29 to 80 years. The youngest female head was 29 while the youngest male was 30. The average age of the household head was 49.9 and the majority were in the age category of 41 to 50 years. The average household size of 4 is expected to contribute to the likelihood of household being food insecure. The majority of household heads are married, a small percentage were never married. Since 2010 the number of married people has increased, seeing that people who live together are considered to be married. A total of 40.10% have stayed in Kwakwatsi for more than 20 years.

The attainment of higher education is diminishing in Kwakwatsi because only a small proportion of the population has a tertiary qualification (0.31%). The sampled results revealed that MHH have better educational attainment than FHH. The sampled population appears to have a lower unemployment rate at 15.7% because a large percentage is employed in formal activities at 72.1%. Over a half of the sampled population is employed in sectors such as community, social, education, training and personal services at 55.20%. Household heads also have a lower unemployment rate at 4.4%. The biggest sources of income are from salaries and wages at 66.74%. The average income for the population of Kwakwatsi was calculated at R 2061.33 per month. The total average monthly income of R4010, 50 was for household heads.

CHAPTER 4 FOOD SECURITY STATUS OF HOUSEHOLDS

4.1 INTRODUCTION

Food security relates to people securing access to food they need for a healthy and an active life. It has been widely regconised that food insecurity occurs when people become vulnerable to hunger and starvation (Crush *et al*., 2012: 272). The concept of food insecurity has become a fundamental form in any developmental agenda since the last 30 years, especially in Africa (Maxwell, 2000a). Food insecurity is still a major concern for a large share of households in South Africa (Du Toit *et al.*, 2011:1). Altman *et al*. (2010:355) observed that South Africa does not have adequate measures for monitoring the extent of household food security.

This chapter sets out to evaluate the food security status of the sampled households in Kwakwatsi. The results of the study were classified into two categories: the analysis of household food security and the regression analysis. The Household Food Insecurity Access Scale (HFIAS) measure, developed by the USAID was used as a measure of household food security in the area. The HFIAS is used to monitor whether households become vulnerable to food access in the past 30 days. The scale comprises of nine questions which ask about changes households made in their diet or food consumption patterns because of lack of sufficient resources to purchase or produce food. It measures the extent of food insecurity in the previous 30 days, as indicated by the participant households. The study observed the responses of the participants to the nine generic HFIAS questions.

A logit regression model was used to identify the main determinants of household food security. The regression analysis seeks to determine the impact of demographic and socio-economic variables (gender, age, household size, marital status, educational attainment, employment status, household income and the labour force) on household food security. More information regarding the food security status among sampled households in Kwakwatsi was gathered through a self-administered questionnaire. The findings of the study will be compared with other similar studies.

4.2 DESCRIPTIVE RESULTS

The section reports the descriptive results of household food security and the factors that determine food security. Out of 225 households sampled 115 (51.10%) were food secure and 110 (48.90%) were food insecure. The Household Food Insecurity Access Scale is analysed using three indicators, firstly, it allows one to look at the HFIAS score, secondly, it distinguishes food secure households from the food insecure and lastly, the HFIAP indicator categorises households into four levels of household food insecurity (Webb *et al*., 2006). The aim of this section is to analyse these indicators.

4.2.1 Household Food Insecurity

The HFAIS score is a continuous measure of the prevalence of food insecurity in the previous month. The HFAIS score was calculated for each household based on the answers to the nine 'frequency-of-occurrence' questions. The household food insecurity score ranges from 0 to 27, with a high score indicating greater vulnerability to food insecurity (Coates *et al*., 2007:18). In the study, the average score measuring vulnerability to food insecurity was 3.5 (mildly food insecure), the minimum score was 0 and the maximum score was 21. The standard deviation of 4.9 implied that there was a high variation between the individual scores ranging from 0 to 21.

Table 4.1 portrays the average HFIAS scores for each explanatory variable. FHH recorded a higher score at 4.8 than MHH at 2.9. This indicates that food insecurity is mostly frequent in households headed by females. Those who were older than 65 years of age had a lower score of 2.2 compared to other age categories. Married couples (3.1) had lower scores than those who were never married (4.4). Similarly, lower HFIAS scores were recorded for households with employed heads (3.2) than household with unemployed heads (4.2). It is observed that household heads with lower educational attainment (up to grade 3, grade 4-7, and grade 8-9, no schooling) had higher scores than those with better educational attainment (Grade 12 and tertiary education). The more income earned the lower the HFIAS score recorded, indicating lower vulnerability to food insecurity.

Table 4.1: Socio-economic characteristics of household heads

Variables	Average score	Std dev.
Gender		
Male	2.9	4.3
Female	4.8	5.8
Age		
<40	3.7	5.2
41-50	3.6	4.9
51-64	3.5	5.0
65+	2.2	4.9
Household size		
1	7.8	6.4
2-4	3.8	4.9
5-7	2.8	4.4
8+	4.7	5.9
Marital Status		
Married/ living together	3.1	4.5
Otherwise	4.4	5.6
Education		
Up to grade 3	2.5	4.1
Grade 4-7	4.2	5.3
Grade 8-11	3.7	4.7
Grade 12	2.6	5.1
Tertiary Education	3	5.2
No Schooling	3.4	4.8
ES Head		
Employed	3.2	4.6
Unemployed	4.2	5.5
HH Income		
< R2000	4.5	5.2
R2001-R4000	1.7	3.1
R4001-R6000	1.5	2.4
R6001-R8000	1.4	1.9
R8000+	2.5	0.7
No Income	5.5	7.6
Labour force		
0	6.6	4.7
1	5.9	5.7
2	3.1	4.8
3	2.9	4.4
4	3.9	5.3
5	1.6	2.3
6	0	0

Source: Survey data, 2013

The next subsection will look at the categorisation of household food security by using the HFIAP indicator. The Household Food Insecurity Access Prevalence (HFIAP) indicator is used to observe household food insecurity prevalence (Coates *et al.*, 2007:19). In the study the HFIAP indicator categorised households into four main levels of food security status (food secure, mildly, moderately and severely food insecure) depending on how they respondent to the nine-frequency-of-occurrence questions.

4.2.2 Categories of food (in) security

Food secure households did not worry about food access; they rarely experienced anxiety about not having enough food. These are households that were able to have a full meal three times in a day without food running out, in the past 30 days (Coates *et al*., 2007:19) The mildly food insecure households were anxious about not having sufficient food. They usually consumed inadequate diet, or ate food that they did not prefer. However these households did not experience the three severe conditions of going a whole day without eating, going to bed hungry or running out of food in the last 30 days (Coates *et al*., 2007:19). Moderately, food insecure households began sacrificing quality on a continuous basis by consuming inadequate diet and eating less preferred food. They started reducing the quality of food intake by decreasing meal sizes and by only eating once or twice in a day in the past 30 days (Coates *et al*., 2007:19). Severe food insecure households experienced high incidences of food security. The condition of reducing meal sizes and the number of meals worsened each day. The three most severe conditions of going a whole day without eating, going to bed hungry or running out of food in the past 30 days occurred ‘often’. Furthermore, households that experienced the three most severe conditions only once or twice in the past 30 days, were also considered as severely food insecure households (Coates et al., 2007:20).

The household food security status was measured and the results are presented in figure 4.1. Based on the HFIAS classification measure of food insecurity, about 51.10% of the sampled households were classified as food secure, 8.90% as mildly food insecure, 10.70% as moderately food insecure and 29.30% as severely food insecure. The study shows that a large proportion of households are food secure at 51.10%. The General Household Survey conducted by Stats SA (2012:40) in 2011

indicated that 21.20% of households in the country were food insecure, out of this 6.50% were severely food insecure, for the Free State Province (Kwakwatsi is in this province), about 22.60% of households were estimated to be food insecure, out of this figure 8% were severely food insecure. Moreover, households that were food secure amounted to 78.80% and 77.40% in South African and the Free State province respectively.

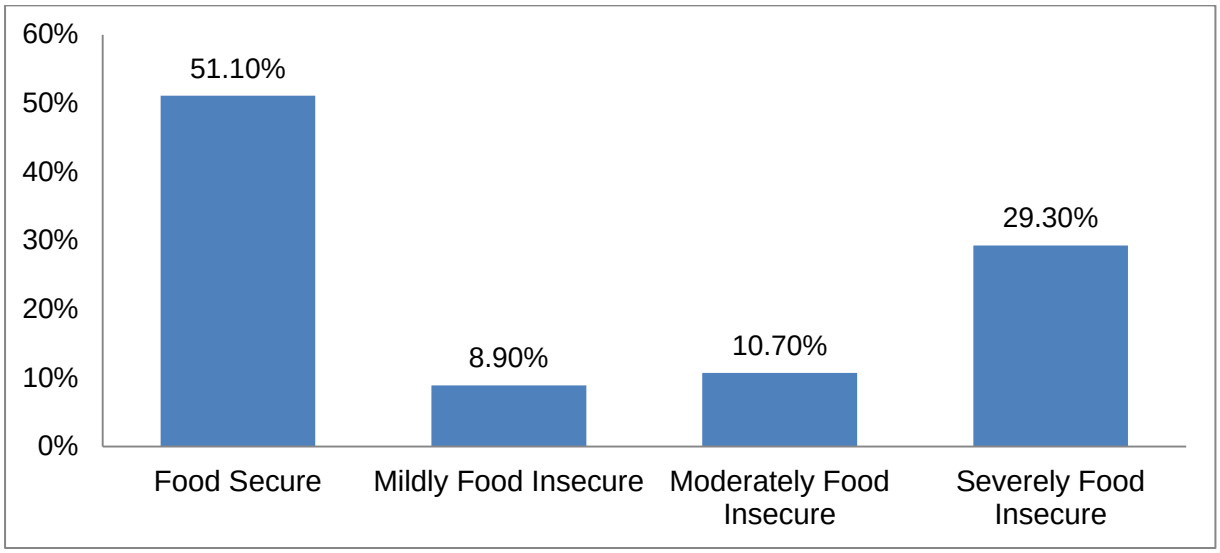


Figure 4.1: Percentage distribution of household food security level

Source: Survey data, 2013

4.2.3 Household food security and demographic variables

The purpose of this subsection is to examine the socio-economic and demographic variables of Kwakwatsi households using the HFIAS categorisation measure. These variables include gender, age, household size, marital status, education, employment, household income and the labour force.

4.2.3.1 Gender of Household head

The relationship between gender and household food security is presented in figure 4.2. The results obtained suggest that gender plays a vital role in enhancing household food security, because food security varies substantially between male-headed households (MHH) and female-headed households (FHH). MHH (57.10%) were more food secure than FHH (37.70%). Food insecurity is mostly prevalent in FHH with mildly, moderately and severely food insecurity of 11.60%, 10.10% and

40.60% respectively than MHH of 7.70%, 10.90% and 24.30%. D'Haese *et al*. (2011:66) observed that MHH experience less food insecurity than FHH; because women usually do not have sufficient access to productive resources and also have low educational levels. Gebre (2012:165) found increased vulnerability to food insecurity in households headed by females in Ethiopia. This is because women are not engaged in income-generating activities for food consumption. Furthermore, FHH spent a large proportion of their income on food than MHH; however they are still worse off in terms of food insecurity (De Cock, 2012:38).

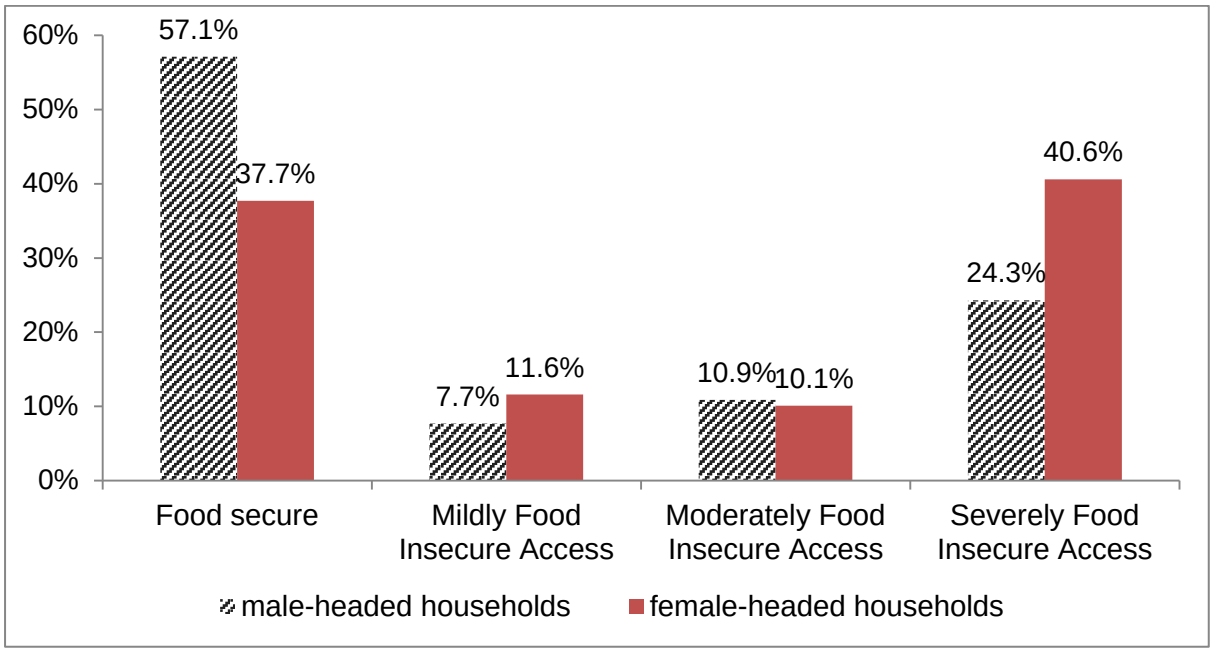


Figure 4.2: Food Security and Gender

Source: Survey data, 2013

4.2.3.2 Age of the household head

Table 4.2 indicates that for each age bracket, about half of the participants were food secure. The condition of food insecurity varies with age. The mildly food insecurity category showed that the level of food insecurity decreases with an increase in age. The incidence of severe food insecurity is higher for the working-age bracket of 41-50 (32.30%) and 51-64 (32.70%) and lower for those who are 56 years and older at 10.50%. The results imply that older household heads are more food secure than younger household heads. This is because older household heads in need can apply

for the state's old age pension grant and some might have retirement funds with less household members to support.

The results are consistent with similar studies (De Cock *et al.,* 2013: 275 and Haile *et al*., 2005) which found high incidences of food insecurity in households headed by young people. This is because older household heads are likely to have better access to land distribution compared to younger household heads; thus improving food security for older household heads. Mwita *et al*. (2011:335) concluded that those households headed by people who are over 65 years of age are more food secure because they have more experience in social and physical environment as well as subsistence farming activities.

Table 4.2: Age of the household head

Age	Food Secure		Mildly Food Insecure		Moderately Food Insecure		Severely Food Insecure	
	N	%	N	%	N	%	N	%
<40	28	50.90%	5	9.10%	7	12.70%	15	27.30%
41-50	50	50.50%	8	8.10%	9	9.10%	32	32.30%
51-64	26	50%	4	7.70%	5	9.60%	17	32.70%
65+	11	57.90%	3	15.80%	3	15.80%	2	10.50%

Source: Survey data, 2013

4.2.3.3 Household size

From Table 4.3, approximately 53.80% of households with 5 to7 members are food secure. The results obtained do not necessarily indicate that food insecurity increases with the rise in household size. Households with 2 to 4 members actually experienced high incidences of severe food insecurity than those with more than 8 members (30.10% and 11.10% respectively). The difference in the level of food insecurity is that, larger household sizes have more people who are involved in income-generating activities. The findings are in line with (Battersby, 2011:23) which showed a weak link between household size and food security. This is because food security decreased with an increase in household size.

Table 4.3: Household size

Household size	Food Secure		Mildly Food Insecure		Moderately Food Insecure		Severely Food Insecure	
	N	%	N	%	N	%	N	%
1	2	40%	0	0	0	0	3	0
2-4	59	50%	8	6.80%	12	10.20%	39	30.10%
5-7	50	53.80	11	11.80%	9	9.70%	23	24.70%
8+	4	44.40%	1	11.10%	3	33.30%	1	11.10%

Source: Survey data, 2013

4.2.3.4 Marital Status of household head

Households with married couples (54.10%) are more food secure than those with unmarried heads (43.90%). Severe food insecurity is mostly linked to people who are not married (37.90%) compared to married people (25.80%). The difference in the percentages is that people who are not married are most likely to be single parents with less support structures from other family members. The result is consistent with a similar study by Cancian and Reed (2009:255), where household headed by people who are not married were likely to rely on the earnings of one adult, thus increasing their likelihood of food insecurity.

Table 4.4: Marital status of household head

Marital status	Food Secure		Mildly Food Insecure		Moderately Food Insecure		Severely Food Insecure	
	N	%	N	%	N	%	N	%
Married	86	54.10%	13	8.20%	19	11.90%	41	25.80%
Otherwise	29	43.90%	7	10.60%	5	7.60%	25	37.90%

Source: Survey data, 2013

4.2.3.5 Educational attainment

Household food security was seen increasing with the educational attainment of the household head. Food insecurity is mostly frequent in households headed by people with lower levels of education and no formal schooling. This is because better educated people are able to improve the quality of labour for generating-income. The findings are in line with Sakyi (2012:45) who indicated that severe food insecurity is

directly linked with household headed by people with low educational levels and no formal education.

Table 4.5: Educational level of household head

Education	Food Secure		Mildly Food Insecure		Moderately Food Insecure		Severely Food Insecure	
	N	%	N	%	N	%	N	%
Up to Grade 3	26	57.80%	5	11.10%	3	6.70%	11	24.40%
Grade 4-7	44	49.40%	4	4.50%	13	14.60%	28	31.50%
Grade 8-11	18	38.30%	9	19.10%	4	8.50%	16	34%
Grade 12	17	60.70%	1	3.60%	3	10.70%	7	25%
Tertiary Diploma	2	66.70%	0	0	0	0	1	33.30%
No Schooling	7	53.80%	1	7.70%	2	15.40%	3	23.10%

Source: Survey data, 2013

4.2.3.6 Employment Status

Households wherein the head was employed are more food secure (53.70%) than those headed by unemployed people (44.30%). Incidences of food insecurity are higher in households headed by unemployed people with mildly, moderately, severely at 11.50%, 13.10% and 31.10% respectively, compared to those headed by employed people at 7.90%, 9.80% and 28.70%. These findings are in line with those of McLntyre *et al.* (2012:5) which indicated that the likelihood of food insecurity is high in households headed by people who hold part-time jobs such as seasonal workers. Unemployment is regarded as a contributing factor to household food insecurity (FAO, 2012).

Table 4.6: Employment status of household head

Employment	Food Secure		Mildly Food Insecure		Moderately Food Insecure		Severely Food Insecure	
	N	%	N	%	N	%	N	%
Employed	88	53.70%	13	7.90%	16	9.80%	47	28.70%
Unemployed	27	44.30%	7	11.50%	8	13.10%	19	31.10%

Source: Survey data, 2013

4.2.3.7 Household income

The household income was categorised into six income groups. The results indicate that there is a strong relationship between food security and household income. Food security improves with a rise in household income. About 64.70% of households earning between R4001-R6000 per month are more food secure compared to those earning R2000 and less at 41.80%. The level of severe food insecurity is mostly prevalent in households that earn less income (<R2000) at 37.70%, and those with no income (37.50%). Households which earn more than R6000 did not experience severe food insecurity.

The results are in line with Rudolph *et al.* (2012:14) who found a clear correlation between household income and food security: households in low income class experienced high incidences of food insecurity at 50% compared to households in high income class at 20%. The results are also similar to those of Oluyole *et al.* (2009:9), were it was observed that the proportion of the food secure tends to increase with a rise in household income.

Table 4.7: Household Income

Income	Food Secure		Mildly Food Insecure		Moderately Food Insecure		Severely Food Insecure	
	N	%	N	%	N	%	N	%
<R2000	51	41.80%	11	9%	14	11.50%	46	37.70%
R2001-R4000	40	62.50%	5	7.80%	6	9.80%	13	20.30%
R4001-R6000	11	64.70%	1	5.90%	3	17.60%	2	11.80%
R6001-R8000	3	60%	0	0	2	40%	0	0
R8001+	0	0	1	50%	1	50%	0	0
No Income	10	62.50%	0	0	0	0	6	37.50%

Source: Survey data, 2013

4.2.3.8 The labour force

The labour force is a measure of the number of people in a household who are able to work (economically active). Households with more members who are economically active are generally more food secure than those with less economically active members. A total of 71.40% are severely food insecure because

these households have fewer members who are economically active, those who are able to work and make the necessary means to attain food. The findings are similar to those of Haile *et al*. (2005), wherein a rise in the number of economically active members in a household, was found to be leading to a rise in productivity thereby increasing household food security.

Table 4.8: Labour Force

Labour force	Food Secure		Mildly Food Insecure		Moderately Food Insecure		Severely Food Insecure	
	N	%	N	%	N	%	N	%
0	0	0	0	0	2	28.60%	5	71.40%
1	6	26.10%	3	13.10%	2	8.70%	12	52.20%
2	61	57.50%	8	7.50%	9	8.50%	28	26.40%
3	30	53.60%	7	12.50%	6	10.70%	13	23.20%
4	14	51.90%	1	3.70%	4	14.80%	8	29.60%
5	3	60%	1	20%	1	20%	0	0

Source, Survey data, 2013

4.2.5 Responses of Kwakwatsi households to the nine HFIAS questions

Table 4.9 represents the responses to each of the nine HFIAS questions. The share of affirmative responses relating to each question is observed in order to assess whether the sequence of severity is attained by the HFIAS questionnaire. The highest share of the sampled population revealed that they ‘worry about food’, making the question the lowest determinant for household food security on the scale. This is followed by those who reported being ‘unable to eat preferred foods’, meaning that they eat food they really do not desire when they get hungry. The smallest proportion of the participants indicated that they ‘go to sleep hungry’ or ‘go a whole day and night without eating’. This usually happens when there is no food in the household.

Table 4.9 Responses of Kwakwatsi households to the nine HFIAS questions

	Options							
	No		Rarely		Sometimes		Often	
HFIAS questions	N	%	N	%	N	%	N	%
Q1 : Worry about food	131	58.2	74	32.9	18	8	2	0.9
Q2: Unable to eat preferred foods	146	64.9	42	18.7	28	12.4	9	4
Q3: Eat just a few kinds of foods	157	69.8	30	13.3	35	15.6	3	1.3
Q4: Eat foods they really do not want to eat	154	68.4	38	16.9	30	13.3	3	1.3
Q5: Eat a smaller meal	170	75.6	31	13.8	23	10.2	1	0.4
Q6: Eat fewer meals in a day	176	78.2	35	15.6	13	5.8	1	0.4
Q7: No food of any kind in a household	176	78.2	34	15.1	13	5.8	2	0.9
Q8: Go to sleep hungry	179	79.6	35	15.6	11	4.9	0	0
Q9: Go a whole day and night without eating	180	80	31	13.8	12	5.3	2	0.9

Source: Survey data, 2013

The most serious condition of severe food insecurity is experienced in the last three questions of the HFAIS questionnaire (Coates *et al.*, 2007:22). Figure 4.3 shows the responses to each of the last 3 questions; about 20.40% reported that they had nothing to eat, followed by those who went to bed hungry at 20.40% and then those who went the whole day and night without eating at 20%. These three conditions either occurred rarely, sometimes or often.

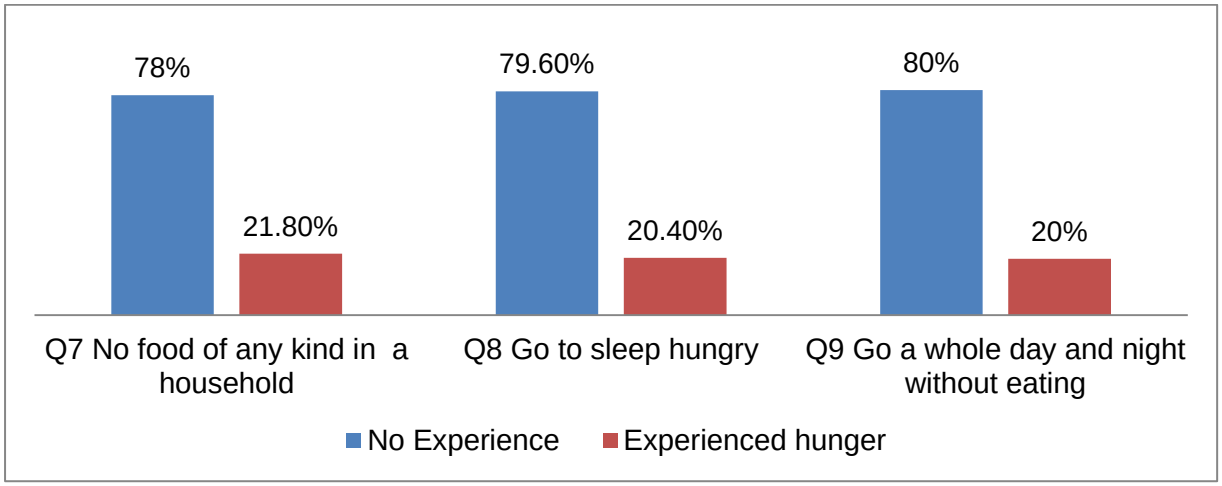


Figure 4.3: Last three HFIAS questions

Source: Survey data, 2013

4.3 DETERMINANTS OF FOOD SECURITY

The aim of this section is to analyse the determinants of food security in the study area; thus looking at the potential for socio-economic and demographic variables to be used as predictors of food security. Table 4.10 observes the correlation analysis while Table 4.11 presents the estimated results of the logit model.

4.3.1 Correlation analysis

Table 4.10 portrays the correlations analysis between the eight explanatory variables and the HFAIS score. Correlation analysis measures the degree to which the dependent variable and the independent variable are linearly linked (Miles & Shevlin, 2001:20). The HFAIS score was significantly linked with the explanatory variables which includes; gender, household size, marital status, household income and the labour force. A positive and significant relationship was found between gender of the household head and HFIAS score ($r = 0.179$, $p < 0.007$). This implies that there is a significant correlation between gender of the household head and the HFIAS score of households. On average, FHH had higher scores than MHH. Household size was significant and negatively correlated with HFIAS score ($r =- 0.146$, $p < 0.028$). A rise in household size corresponds to a lower HFIAS score. The results indicate that HFIAS score varies with household size meaning large household sizes is associated with less HFIAS score and vice versa. A negative and significant correlation existed between the marital status and HFIAS score. Household heads that are married/living together had lower HFIAS scores compared to those who were not married.

There was a negative and strong significant correlation between the household income and HFIAS score ($r = -0.485$, $p < 0.000$). The negative correlation implies that an increase in household income corresponds with a decrease in the HFIAS score. The study observed that low income households were likely to be more vulnerable to food insecurity. A negative and significant correlation also exists between the labour force and the HFAIS score. An increase in the number of people who can work in a household corresponds to a decrease in HFAIS score. The observed results suggest that households with more people who are economically

active have lower vulnerability to food insecurity, while households with less members in the labour force appear to be vulnerable to food insecurity.

Similar to a study by Shisanya (2008:65), the HFIAS score was significant with variables such as gender, household size, marital status and income. No significant correlation existed between age, education and employment with the HFAIS score.

It important to remember that correlation test for the level of association between variables but it does not imply the effect of one variable to another. Thus, the next section uses a logistic regression to identify the effects of selected variables on the food security status of households.

Table 4.10: Correlation analysis

Variables	HFAIS Score	Significant
Gender	0.179***	0.007
Age	-0.062	(0.354)
Household Size	-0.146**	(0.028)
Marital Status	-0.124*	(0.064)
Education	-0.028	(0.671)
Employment Status	-0.091	(0.175)
Household Income	-0.485***	(0.000)
Labour Force	-0.134**	(0.045)

***Significant at 1% level, **Significant at 5% level, *Significant at 10%

Survey data, 2013

4.3.2 Factors that determine household food security

The results show that the variables are relevant in explaining the determinants of household food security status in Kwakwatsi. Among the nine explanatory variables fitted in the model, five have a significant effect on household food security. These variables include: gender, household size, marital status, household income (other market income). The marginal effects are used to analyse the relationship between the dependent variable in relations to a one unit increase in the value of the explanatory variable, with other variables remaining constant (Kleinbaum, 1994). In the study, the marginal effects of the significant explanatory variables were estimated to highlight their importance for policy implementation and decision

making. The marginal effects for the explanatory variables are consistent with a similar study by Gebre, (2012:165).

Table 4.11: Factors that determine household food security

Variable	Coefficient	Std.Err	Marginal effects (dy/dx)
Gender_H	-0.855746*	0.48617	-0.16525
HH_Size	-0.319556**	0.140094	-0.06171
Marital_Head	-0.908292*	0.494548	-0.1754
Income_HH	0.0006694***	0.000128	0.000129
Other_HH_Income	-0.00045***	0.000173	-0.0869.
Age_Head	-0.013955	0.022445	
Educ_Head	-0.047581	0.049401	
ES_Head	-0.727192	0.564098	
Labour_Force	0.33868	0.228597	
N = 225 Prob> F = 0.000 Pseudo R^2 = 0.1860 Log likelihood -129.00731			

***Signficant at 1% level, **Significant at 5% level, *Significant at 10% level

Gender of household head (male = 0; female = 1): This variable is negative and significant at 10% level ($p < 0.10$). The focus of gender comparison is on female. The results therefore indicate that a female-headed household has a lower chance of being food secure as compared to a male-headed household, ceteris paribus. This means that the probability of food security decreases if a household is headed by female as compared to a household headed by a male. Female-headed households usually have larger household sizes and have low educational attainment. The results are in correspondence to a similar study by Olagunju *et al.* (2012:119) who found that households' headed by female were more food insecure than those headed by male. Women usually have high dependency ratio with limited access to productive resources (FAO, 2012). The marginal effect of the variable implied that the probability of a household being food secure decreases by -0.16 if household is headed by a female as compared to male, ceteris paribus.

Household size: Based on the categorisation of the HFIAS, this variable did not indicate a strong link with food security. However the regression results suggest that

there is a significant (5% level of significance) and negative relationship between household size and food security. This implies that an increase in household size decreases the probability of a household being food secure. This is because an increase in household size tends to increase the quantity of food consumed in a household. However, this applies only when the additional member does not contribute less than what he/she consume. This finding is in line with other similar studies (Amaza *et al*. 2012:26 and Mitiku *et al*. 2013:137), that found significant and negative relationship between household food security and household size. The marginal effect for household size reveals that one additional household member decreases the probability of a household being food secure by 0.06, ceteris paribus. These results agree with the prior expectations that the probability of a household being food secure decreases with an increase in household size.

Marital status: (Married/living together = 1, Otherwise = 0): The marital status is negative and significant at 10% level of significance. This shows that the likelihood of food security will decrease if a household is headed by a married person compared to an unmarried household head, ceteris paribus. This is because married couples have larger household sizes than those of unmarried households' heads. These results are contrary to a similar study by Oesi *et al*. (2013:038) which found that food security was associated with marital status of the household head. The marginal effects suggests that the probability of a household being food secure decreases by -0.17 if a household head is married compared to a non-married head, ceteris paribus.

Household income (Other Household income): The variable is positive and significant at 1% level of significance. An increase in household income improves household food security because generally more food can be produced or purchased. Household income is the most significant determinant for household food security, with regards to food accessibility. The findings are similar to those of Bashir *et al*. (2012:4), who found a positive relationship between household income and household food security. Low income household are most likely to experience less food security than middle income households (Jacobs, 2009). The marginal effect of the variable implies that for example, the likelihood of food security increases by 0.012 for every R100 earned over a year.

The following are variables that were not significant, these variables include age, education, employment and the labour force.

Age: The variable is not significant in explaining household food security. The negative sign of the coefficient indicated that an increase in age leads to a decrease in the probability of a household being food secure. However the results are contrary to (Olagunju *et al*., 2012:118; Benjamin & Joseph, 2012:209; Bogale & Shimelis, 2009:1921) which indicated that the likelihood of food insecurity decreases with an increase in age because older people have better experience in subsistence agriculture and are able to accumulate better wealth.

Education: This variable is not significant in explaining the food security status of households in Kwakwatsi. The negative sign suggests that the probability of a household being food secure deceases with an increase in educational attainment. However, (Benjamin & Joseph, 2012:209 and Kuwornu *et al*. 2013:35) found a negative and significant relationship between education and household food security. Furthermore this suggested that the higher the educational level by the household head, the less food insecurity the household experience. Better educated people are able to engage in income-generating activities and improve the quality of labour. The findings of the current study is different from other studies because from the descriptive characterised, a large share of the sampled population has attained the same educational level which is primary education, as shown by Figure 3.9 earlier.

Employment: This variable is not significant in explaining the relationship between employment status of household head and food security. The results are contrary to Arene, and Anyaeji (2010:14), who found that households headed by unemployed experienced high incidences of food insecurity as compared to those headed by employed people in both formal and informal employment. The current results are different because over a half of the sampled population is employed in informal activities, as explained in descriptive analysis (see Figure 3.10)

Labour force: Although the variable was not significant, the coefficient has a positive sign suggesting that the labour force has a positive effect on household food security. This implies that additional members who are able to work are most likely to contribute to the consumption of food in the household.

The implication of the results observed suggests that the probability of a food secure household depends on various factors such as gender, household size, and marital status, household income (other market income). Household income is the most significant determinant of household food security, through the accessibility of acquiring sufficient food.

4.4 DATA INTEGRITY

Data integrity refers to the accuracy and consistency of data that is captured or stored (Dosal, 2013). The importance of data integrity is that it reduces data corruption that might occur in the process of reading, writing or storing the data (Crespi, 2007:3). The data collection process was monitored on a daily basis in order to rectify problems that occurred. The field worker revisited the individual households of the study area to correct for any variables that were missing. Spot checks were also conducted continuously.

The Household Food Insecurity Access Scale (HFIAS) questions produced excellent internal consistency (Cronbach's $\alpha > 0.92$). Using a thumb rule suggested by Pallant (2013:104), the Cronbach's Alpha value of 0.92 is preferable. This value provides a clear estimation of the true reliability of the sample surveyed in the study. This value also suggests that on average households have similar characteristics relating to the nine explanatory variables that determine household food security status. The reliability result is consistent with a similar study conducted by Ansari (2010:34) which showed that the internal reliability of the HFIAS questions as measured by Cronbach's Alpha (0.993) was high. Moreover, the individual questions were consistent and correlated with each other.

4.5 SUMMARY AND CONCLUSION

The study employed the HFIAS measure for analysing household food security status. By using the HFIAS it was possible to identify the level of food insecurity for each individual household in the community of Kwakwatsi. The average score was 3.5 and the score ranged from 0 to 21. HFAIS score was observed on each of socio-economic and demographic variables included in the study. FHH (4.8) had higher HFIAS scores compared to MHH (2.9). The HFIAS categorisation results indicated that gender is an important variable for determining household food security.

Households headed by female were mostly affected by mildly, moderately and severely food insecurity compared to household headed by males. The prevalence of severe food insecurity were more frequent for the working-age bracket of 41-50 at 32.30% while the lowest for those who are 65 years and older at 10.50%. Household size did not indicate a strong relationship with household food security. Households headed by married people (54.10%) were more food secure than those headed by people who were not married (43.90%). Households headed by people who are educated are most likely to be food secure than those with no formal education. Severe food insecurity is mostly prevalent in households headed by the unemployed (31.10%) than those who are employed (28.70%). The higher income earned the lower the incidences of food insecurity. Seemingly, food insecurity decreases with an increase in the number of economically active members in a household.

The incidences of food insecurity differed substantially among the participants with different socio-economic and demographic characteristics. When analysing the household food security status using the HFAIS categorisation measure, it was observed that food insecure households included: those headed by female, young household heads, those with low educational attainment, not married, low household income and those who had less members who are able work in a household. There was a clear correlation between HFIAS score and the explanatory variables, which include; gender, household size, marital status, household income and the labour force. No significant correlation occurred between age, education, employment status with the HFIAS score.

The logit regression results indicated that, out of the nine explanatory variables fitted in the study, five were statistically significant in explaining household food security. These variables include, gender, household size, marital status, and household income (other market income). Gender, household size and marital status were negatively related with household food security. Larger household sizes were worse affected by food insecurity because they consumed more food. Married couples are less food secure. Household income contributes positively in influencing household food security. Low income household experience more food insecurity than middle income households. Age, education, employment and the labour force were statistically insignificant in explaining household food security. The coefficient of age,

education and employment were negatively related with food security. The labour force influenced household food security positively. The Cronbach's Alpha for the nine HFIAS was high (0.92), this showed that the HFIAS questionnaire had excellent internal consistency reliability.

CHAPTER 5 SUMMARY AND CONCLUSION

5.1 INTRODUCTION

The aim of the study was to determine the food security status of households in a South African township. During March 2013, a household survey was conducted; this was done to understand the purpose of the study. The world food leaders and national governments take the issue of food security seriously; however food security policies fall short of effective strategies for the most deep rooted situations of undernourishment and starvation (Maxwell, 2012). The need to conduct this study was motivated by the fact that food insecurity is a real problem in South Africa; this is because a large number of households cannot access adequate food, particularly female-headed households (Hendricks, 2005; Du toit *et al*., 2011 and Altman *et al*., 2009). Therefore the study also aimed at highlighting the gender dynamics of household food security in South Africa. This chapter provides a summary of the study and draws some conclusions and gives recommendations from the findings in other chapters of the study.

5.2 SUMMARY OF THE DISSERTATION

The summary of the dissertation will be presented based on the outline of the study. The subsection will start with an overview of the theoretical literature review, following a synopsis of the empirical results. The final part will be the conclusion and recommendations stemming from the findings of the study.

5.2.1 Theoretical overview

Food plays a crucial role for economic development, because it enables people to carry out their daily activities effectively. The concept of food security comes from an understanding of what lack of sufficient food entails. Food security is a multidimensional concept with ranging definitions, but at the most common level it refers to sufficient access by all people at all times to food needed to live and maintain an active and health lifestyle. The definition comprises of four key components: availability, accessibility, utilisation and stability.

Food (in) security can be explained at a global, national, community and individual household levels. The first three levels suggest that food security relates to food availability in a form of production and distribution. Household level implies that all individuals should have physical and economic access to food in order to maintain an active and healthy lifestyle. Food insecurity relates to anxiety about not having adequate food to eat; can either be chronic or transitory. Chronic food insecurity occurs when people do not have enough food to eat over a long period. Transitory food insecurity relates to an unexpected shortfall in food thereby resulting in temporal food insecurity.

The historical perspective on the conceptualisation of food security identifies three major shifts that occurred since the 1970s, these shifts include:

- from the global and national level to the household and individual level;
- from a narrow 'food first' perspective to a broader 'livelihood' perspective and;
- from objective (measurement) indicators to subjective (self-reported) perspective.

There are several methods used to measure household food (in) security. This study focused on three measures relevant to understanding household food security. These measures include; Household Dietary Diversity Score (HDDS), coping Strategies Index (CSI), and Household Food Insecurity Access Scale (HFIAS). The HDDS is used to measure the consumption of the quantity of food over a certain period. CSI attempts to understand the copying strategies of households when they do not have sufficient access to food. The HFIAS captures household food insecurity access levels in terms of anxiety, uncertainty, quality and quantity of food consumed.

Despite the Millennium Development Goal (MDGs) goal of halving the percentage of hunger and poverty by 2015, global food insecurity still remains a course for concern. A large proportion of the world's population is vulnerable to hunger and malnutrition, particularly in developing countries. Food insecurity continues to be prevalent in the Sub-Saharan region as compared to other regions throughout the world. This is because agricultural development in terms of access to land remains relatively low in Sub-Saharan region. In South Africa, since the political transition in 1994, the country has always been self-sufficient in food supply but many households remain vulnerable to food insecurity both in rural and urban areas. In

recent years, the cost of rising food prices is one of the crucial determinants for household food security in the country. During the year 2002, the government of South Africa adopted the Integrated Food Security Strategy with the aim of alleviating hunger and enhancing food access for poor households. Agricultural production has played an important role in the provision of an extra source of income for low-income households in rural areas. Several studies have argued that social grants help with poverty alleviation however available data suggests that the relationship between food security and social grants is imperfect.

The causes of household food insecurity are numerous and diverse. The study explored general causes affecting the world at large. Rising food prices and natural disasters were the main causes of household food insecurity. The rise in the cost of food prices has recently been triggered by the 2008 global financial crisis, and this in turn increased the incidences of food insecurity for poor households particularly in developing countries. Natural disasters threaten the livelihood of many people throughout the world. Natural disasters affect low income households more because they reside in areas vulnerable to natural disasters this in turn contributes to household food insecurity. Hunger, vulnerability and malnutrition are among the three biggest consequences of food insecurity. Hunger is caused by food insecurity overtime and also leads to low productivity as workers who are not productive are generally hungry. People who become vulnerable to food insecurity find it difficult to cope with the condition due to stress. Malnutrition is linked to food insecurity as agreed by several authors. Malnutrition causes multiple sicknesses over time because of the lack of sufficient means to consume nutritious food. The empirical review on the determinants of food security showed that household income is the most fundamental determinant for improving household food. This generally implies that an increase in household income increases the likelihood of a household being food secure.

5.2.2 Empirical study

The study area included households in Kwakwatsi township which is situated in the Free State province, South Africa. The research design involved a quantitative research method. The study employed a random sampling technique with a sample size of 225 households. The study used both elements of secondary and primary

research for data collection process. Secondary research involved information relevant to chapter 1 and 2. Primary research was conducted using a household survey; thus the household survey was carried out through a self-administered questionnaire, which was distributed in the area through face-to-face interviews.

The Household Food Insecurity Access Scale (HFIAS) was used to analyse the food security status of households. The HFIAS measure captured the household food insecurity levels (access) in terms of anxiety, uncertainty, quality and quantity of food consumed. Secondly, a logit regression model was used to establish the socio-economic and demographic factors that have an effect on household food security status. Food security was a dependent variable and it was estimated by using a bid value of 1(food secure) and 0 (food insecure).

The following demographic characteristics of Kwakwatsi households were recorded:

- A large proportion of households comprises of females at 60.20% than males at 39.30%, however the number of female-headed households (30.70%) were less than those headed by their male counterparts (69.30%).
- The average age of the household head is 49.9, the youngest head is 29 years while the oldest head is 80 years old.
- The average household size is 4; the average household size is expected to influence the probability of households being food insecure.
- A large number of households' heads constitutes of people who are married/ living together (70.60%), followed by 18.70% who are widowed, 4.90% are divorced, 4% have never been married and 1.80% has separated.
- Looking at the percentage of the population that has tertiary education (0.31%), it is clear that higher education is weakening. This is because a small share of the sampled population has achieved post matric education. Female-headed households have lower levels of education than male-headed households.
- Over half of the sampled population are employed in informal activities at 72.10%; this is main reason for the low unemployment rate (15.70%) recorded in the study. Household heads also have a lower unemployment rate at 4.40%.

- About 55.20% of the population are employed in sectors such as community, social, education, training and personal services.
- The majority of household income is from salaries and wages. The average monthly income from the sampled population was estimated at R2061.33, while for households' heads it was recorded at R4010.50.

5.2.2.1 Food security status of households in Kwakwatsi

The HFIAS score was computed based on the nine-frequency of occurrence questions (1 rarely, 2 sometimes, and 3 often). The HFIAS score was conducted to establish the level of food insecurity in the households. The average score is 3.5 and the score varies from 0 to 21. HFAIS score explored the socio-economic and demographic characteristics of households. Male-headed households (2.9) have lower average HFIAS score than female-headed households (4.8). The HFIAS categorisation results indicated that, about 51.10% of the sampled households were classified as food secure, 8.90% as mildly food insecure, 10.70% as moderately food insecure and 29.30% as severely food-insecure.

Gender is an important determinant of household food security. Male-headed households are least affected by food insecurity than female-headed households. It was found that households headed by the working age category (15–64) are severely food insecure than those with a head whose 65 years and older. There was no significant relationship between household size and food insecurity. Severe food insecurity is mostly associated with households headed by people who are not married (37.90%) compared to those who are married (25.80%). Households headed by people with lower levels of education or no formal education experienced higher incidents of food insecurity than those who have attained Grade 12 and tertiary education. The prevalence of food insecurity is lower in households headed by employed people. The level of food insecurity decreases with an increase in household income. Households earning a monthly income of more than R6000 experienced less food insecurity than those earning less than a R2000 per month. Likewise, food insecurity decreases with an increase in the number of economically active people in a household.

5.2.2.2 Determinants of food security

In order to establish the determinants of household food security, nine explanatory variables (gender, age, household size, marital status, educational attainment, employment status, household income and the labour force) were fitted in a logit model. A comparison between the HFIAS score and the socio-economic and demographic variables was carried out. There is a clear significant correlation between the HFIAS score and variables such as gender, household size, marital status, household income and the labour force. No significant correlation existed between the HFIAS score and the explanatory variables, which include; age, education and employment status.

The regression results showed that gender, household size, marital status, and household income were significant predictors of household food security. Gender, household size and marital status were negatively related with the probability of a household being food secure. This implies that female-headed households had a lower chance of being food secure because they spend a large share of their income on food and they have lower educational levels. The probability of food security will decrease with an increase in household size. Larger household sizes usually have more members to feed thus they have to consume more food, therefore this decreases their chances of being food secure. Households headed by people who are not married are more food secure than those headed by people who are married. People who are married generally have larger household sizes. Household income was positively associated with household food security. An increase in household income improves household food security because generally more food can be produced or purchased.

Age, education, employment and the labour force were not statistically significant in explaining household food security. The coefficient of age, education and employment were negatively related to household food security. An increase in age decreases household food security. The reason for this might be older household heads rely on pension funds than younger heads. With regards to education and employment, the results differ from other similar studies, which found that higher levels of education and employment improve household food security. The labour force was positively linked with household food security. This suggests that the

higher the number of members who are economically active in a household the better the chance of household food security.

5.3 CONCLUSION

Food security is indeed a multi-dimensional concept with ranging viewpoints. The need to understand food (in) security has been triggered by a wide variety of factors contributing to the world's food problems. While global polices are available to address the issue of food insecurity, the concept remains a serious cause for concern in the twenty-first century. More empirical studies are needed in South Africa to understand the degree of household food insecurity. In this regard, the aim of the study was to investigate the determinants of the food security status of households in a South African township of Kwakwatsi.

By using the Household Food Insecurity Access Scale measure (HFIAS), it was possible to identify the level of food insecurity for each individual household in the community of Kwakwatsi. The socio-economics and demographic characteristics affecting household food security were established. The findings from this study revealed that gender, household size, marital status and household income were important factors that can predict household food security in Kwakwatsi.

Food insecurity was a serious problem in female-headed household because the majority cannot access sufficient food. This is because they have larger household sizes and have low educational attainment. Furthermore, households with stable income such as salaries and wages are generally more food secure than households who rely on other sources of income (social grants and help in kind). From the HFIAS categorisation measure the socio-economic and demographic variables such as gender, age, marital status, education employment status, household income and the labour force had an impact on mildly, moderately and severely food insecurity of some households in the study area.

The implication of the regression results observed suggests that FHH, larger household sizes and Married couples are worse off in terms of food insecurity. FHH are more vulnerable to their male counterparts because they spend a large proportion of their income on food with less financial support from other household members. Larger household sizes generally have to feed more people with fewer

resources. Household income is the most significant determinant for household food security, with regards to food accessibility.

5.4 RECOMMENDATIONS

The purpose of this section is to suggest strategies aimed at improving household food security. The recommendations in the study are based on the findings and conclusions made from the data collected.

5.4.1 Gender equality

Women play a central role for enhancing household food security because in most cases they usually produce or prepare food for other members of their household. The study indicated that female-headed households are less food secure than male-headed households. The study also revealed that female-headed households are more illiterate compared to their male counterparts. Female education is important for food security because it allows access to new opportunities rather than early marriage, domestic work and having no skills (Veriava, 2011:120). It is important that the government assist the local community to empower women by providing them with professional education with regards to ways of improving food access.

5.4.2 Agricultural education

Income was regarded as the most significant determinant for household food security. It is therefore vital that the government promote agricultural education in the study area, by encouraging households to participate in food gardening/farming activities as a source of generating extra income. Agricultural production in a form of fruits and vegetables is central for securing access to food for low income households (FAO, 2013:26). It is advised that incentives such as quality seeds are provided to households in order to encourage them to engage in subsistence farming. Although subsistence agriculture does not assure food security for low income households, it does help them generate extra income (Altman *et al*., 2009).

5.4.3 General recommendations

The following general recommendations are made:

- The household size was a significant determinant for household food security; therefore it is important to educate the community about family planning in order to encourage households to plan for smaller family sizes, particularly for female-headed households.

- The South African government has to implement more strategies for addressing the issue of food insecurity at a household level. The government should empower the community of Kwakwatsi by conducting workshops, support groups, in which people can be trained to ensure that they improve their dietary intake and quality foods.

- Entrepreneurial programmes are also needed in the area to encourage households to grow their own food and sell it. This can be a good incentive for generating extra income that is needed in the household.

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ANNEXURE A: QUESTIONNAIRE

Questionnaire #		Date	
House Number		Interviewer	

Please note that the Head of the household should preferably answer the questionnaire

A	BACKGROUND INFORMATION					
1	What is the position of the respondent in the Household?	Head (1)	Spouse (2)	Child (3)	Extended family member (4)	Boarder (5)
2	Gender of the head of the household	Male (0)	Female (1)			
3	How many housing units are on the site					
4	Record one main material used for the roof and walls of the dwelling					
	Bricks	Cement / concrete	Corrugated iron / zinc	Wood	Plastic	
	Cardboard	Tile	Mud	Thatching	Asbestos	
5	How many people stay permanently on the site					
4	What language do you mostly speak at home?					
	Sesotho	IsiZulu	Sepedi	Tshivenda	IsiNdebele	
	English	IsiXhosa	Siswati	Afrikaans	Other:_____	
7	How long have you (respondent) stayed in the Kwakwatsi (years)					

B	HOUSEHOLD COMPOSITION									
	Please provide the following information about your households									
1	Number of people in the household									
2	Composition of members (Code list 2)									
3	Age of each member in years									
4	Sex (Male = 0; female = 1)									
5	Marital Status (code list 5)									
6	Highest qualifications (still at school) (Code list 6)									
7	Qualifications (not at school) (Code list 7)									
8	Employment Status (Code list 8)									
9	Sector of employment (Code list 9)									
10	(10 – 13 for unemployed only) Skills of unemployed (list 10)									
11	Duration of unemployment in years									
12	What is the Unemployed doing presently									
	INCOME (Take home pay per month)									
13	Wages/salaries (Formal)									
14	Old Age Pension									
15	Child Grant from Government									
16	Other Grants from Government									

17	Help (family/relatives/help in kind)								
18	Informal activities								
19	Other (Specify)								

C	Household Food Insecurity Access Scale (HFIAS)			
	(rarely: once or twice; sometimes: 3 to 10 times; Often: more than 10X in the last 4 weeks)			
1	In the past four weeks, did you worry that your household would not have enough food? (*if answer is No, skip to Q2)*	1: Yes	0: No	
1a	How often did this happen?	1: Rarely	2: Sometimes	3: Often
2	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources? (*if answer is No, skip to Q3)*	1: Yes	0: No	
2a	How often did this happen?	1: Rarely	2: Sometimes	3: Often
3	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources? (*if answer is No, skip to Q4)*	1: Yes	0: No	
3a	How often did this happen?	1: Rarely	2: Sometimes	3: Often
4	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food (*if answer is No, skip to Q5)*		1: Yes	0: No
4a	How often did this happen?	1: Rarely	2: Sometimes	3: Often
5	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food? (*if answer is No, skip to Q6)*	1: Yes	0: No	
5a	How often did this happen?	1: Rarely	2: Sometimes	3: Often
6	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food? (*if answer is No, skip to Q7)*	1: Yes	0: No	
6a	How often did this happen?	1: Rarely	2: Sometimes	3: Often
7	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food? (*if answer is No, skip to Q8)*	1: Yes	0: No	
7a	How often did this happen?	1: Rarely	2: Sometimes	3: Often
8	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food? (*if answer is No, skip to Q9)*	1: Yes	0: No	
8a	How often did this happen?	1: Rarely	2: Sometimes	3: Often
9	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	1: Yes	0: No	
9a	How often did this happen?	1: Rarely	2: Sometimes	3: Often