

The Relationship between Household Food Gardens and Household Food Security in an Urban Area in Harare, Zimbabwe: A Right to Food Perspective.

by
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ABSTRACT

Introduction:

It is now widely accepted that hunger constitutes a violation of the human right to food. Urban agriculture may have a role to play in realising the right to food as it addresses hunger in the form of urban food insecurity, which is bound to become increasingly important with the secular trend towards the urbanization of poverty. This research is focused on Zimbabwe; one of the many African countries in which urban agriculture is a common occurrence. Urban agriculture in Zimbabwe is not directly supported by any piece of national legislation and this provides for a poor foundation in advocating for and promoting its practice. However it would do more harm to encourage the establishment of food gardens in households if they made no or insignificant contribution to food security and their maintenance became more of a burden on households.

Aim:

This study investigated the relationship between household food gardens and household food security as well as dietary diversity in Zimbabwe's urban population; adding to knowledge on whether urban agriculture is indeed one of the solutions to urban food security concerns and ultimately if it can be considered as a strategy for implementing the right to adequate food in Harare, Zimbabwe.

Methodology:

This study was cross-sectional and quantitative. A questionnaire consisting of validated tools and a researcher-designed food garden questionnaire was used to collect data from 113 households in Harare. The tools captured scores on dietary diversity, food garden use and food insecurity levels of households. Food garden scores were correlated with food insecurity scores and dietary diversity scores to assess whether there was an association between food security, dietary diversity and urban agriculture.

Results:

Results show that a significant number of households in the sample population had food gardens despite experiencing a number of barriers including land tenure, water supply and the availability of financial resources. High levels of food insecurity also existed within this population. There were no significant associations found between household food gardens and household food security or dietary diversity thus this study did not provide sufficient evidence to support urban agriculture as a solution to combating food insecurity or improving dietary diversity in Harare.

Conclusion:

Presently, based on available research evidence, urban agriculture cannot be advocated as an effective approach to realizing the right to food in Harare. However urban agriculture remains a widespread practice in households in Harare, which may help them cope with worsening food insecurity. From a human rights perspective, urban agriculture can be viewed as an entitlement in that people in Harare are using it to feed themselves in a dignified manner thus claiming their right to food. By removing barriers impeding urban agriculture, such as prohibitive by-laws, the potential of urban agriculture may be better realised and observed. More research should be conducted on how it can be turned into a means of addressing food insecurity and hidden hunger, ultimately contributing to realizing the right to adequate food.

OPSOMMING

Inleiding:

Dit word nou algemeen aanvaar dat honger 'n skending is van die mens se reg op voedsel. Stedelike landbou kan 'n rol speel in die vewesenliking van die reg op voedsel as dit honger in die vorm van stedelike voedselonsekerheid aanspreek. Met die sekulêre neiging tot die verstedeliking van armoede word dit al hoe belangriker om voedselonsekerheid aan te spreek. Hierdie navorsing is gefokus op Zimbabwe, wat een van die baie Afrika-lande is waarin stedelike landbou algemeen voorkom. Stedelike landbou in Zimbabwe word nie direk deur enige stuk nasionale wetgewing ondersteun nie, en daar is dus 'n swak fondament vir die bevordering van die praktyk. Dit sou meer skade doen om die vestiging van voedseltuine in huishoudings aan te moedig as dit slegs 'n geringe bydrae tot voedselsekerheid maak, en hul onderhoud 'n las op huishoudings sou plaas.

Doelwit:

Hierdie navorsingstuk ondersoek die verhouding tussen huishoudelike voedseltuine en huishoudelike voedselsekerheid, sowel as die dieetdiversiteit van die stedelike bevolking van Zimbabwe. Die doel voor oë is om by te dra tot die kennis oor stedelike landbou, en te ondersoek of dit inderdaad een van die oplossings bied vir stedelike voedselonsekerheid, en of dit uiteindelik beskou kan word as 'n strategie vir die implementering van die reg op voldoende voedsel in Harare, Zimbabwe.

Metodologie:

Hierdie studie was 'n deursnit-kwantitatiewe ondersoek. 'n Vraelys wat bestaan uit gevalideerde instrumente en 'n groentetuin-vraelys (ontwerp deur die navorser) is gebruik om data van 113 huishoudings in Harare in te samel. Data oor die dieetdiversiteit, voedselinname, groenteverbouing en voedselonsekerheidsvlakke van huishoudings is ingesamel. Groentetuinpraktyke is gekorreleer met voedselonsekerheidsvlakke en dieetdiversiteit om te bepaal of daar 'n verband bestaan tussen voedselsekerheid, dieetdiversiteit en stedelike landbou.

Resultate:

Resultate toon dat 'n beduidende aantal huishoudings in die steekproefpopulasie voedseltuine verbou, ondanks 'n aantal struikelblokke, insluitende grondbesit, watervoorsiening en die beskikbaarheid van finansiële hulpbronne. Hoë vlakke van voedselonsekerheid bestaan ook in hierdie bevolking. Daar was geen beduidende verband tussen huishoudelike voedseltuine en huishoudelike voedselsekerheid of dieetdiversiteit nie. Die studieresultate ondersteun dus nie die bevordering van stedelike landbou as 'n oplossing vir die bekamping van voedselonsekerheid of verbetering van dieetdiversiteit in Harare nie.

Gevolgtrekking:

Tans kan stedelike landbou nie op grond van beskikbare navorsingsresultate bepleit word as 'n effektiewe benadering tot die vewesenliking van die reg op voedsel in Harare nie. Stedelike landbou bly nietemin 'n algemene praktyk in huishoudings in Harare wat dit moontlik kan help as die voedselsekerheidsituasie versleg. Uit 'n menseregtiperspektief kan stedelike landbou beskou word as 'n reg, omdat mense in Harare, as regtehouers, geregtig is daarop om hulself met waardigheid te voed. Deur hindernisse wat stedelike landbou belemmer, bv streng plaaslike verordeninge, te verwyder, kan die potensiaal van stedelike landbou beter vewesenlik word. Meer navorsing moet gedoen word oor hoe stedelike landbou verbeter kan word om voedselonsekerheid en verborge honger aan te spreek, en by te dra tot die uiteindelijke verwesenliking van die reg op voldoende voedsel.

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CONTRIBUTION BY PRINCIPAL RESEARCHER AND FELLOW RESEARCHERS

The principal researcher, Lorner L. Chikoto, developed the idea and the protocol, planned the study, undertook data collection with the assistance of three interviewers, captured data for analysis with the assistance of a statistician assigned by the University of Stellenbosch's Biostatistics Division, Moleen Zunza. The principal researcher interpreted the data and drafted the thesis. Prof. M. McLachlan and Dr. L. Zanamwe provided input and proposed revisions to the protocol and thesis at all stages.

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ACRONYMS AND ABBREVIATIONS

AFSUN	African Food Security Urban Network
ART	Anti-retroviral Therapy
DACEL	Department of Agriculture, Conservation and Environment
FANTA	Food and Nutrition Technical Assistance Project
FAO	Food and Agriculture Organisation
FPS	Food Purchase Score
GADS	Gauteng Agricultural Development Strategy
GDP	Gross Domestic Product
GNU	Government of National Unity
HDDS	Household Dietary Diversity Score
HFIAS	Household Food Insecurity Access Scale
HHFGS	Household Food Garden Scale
HIV/AIDS	Human Immuno-Deficiency Virus/ Acquired Immuno-Deficiency Syndrome
ICESCR	International Covenant on Economic, Social and Cultural Rights
ODA	Overseas Development Assistance
RUAF	Resources Centres on Urban Agriculture and Food Security
UA	Urban Agriculture
UN	United Nations
UPA	Urban and Peri-Urban Agriculture

CHAPTER 1: INTRODUCTION

Human rights are the basic rights and freedoms that belong to every person in the world.¹ Human rights entail both rights and obligations. States assume obligations and duties under international law to respect, to protect and to fulfil human rights.² States create, maintain and provide for an environment in which people can live with dignity. Poverty is a violation of human dignity.³ Where poverty exists, access to food is compromised resulting in food insecurity.⁴

Public understanding of hunger and food insecurity has undergone radical transformation in the last century.⁵ It is now widely accepted that poverty should not be seen only as a lack of income, but also as a deprivation of human rights and that hunger constitutes a violation of the human right to food.^{6, 7} This acceptance of access to healthy food as a human right; that is, inalienable, universal, interdependent with and indivisible from all other human rights, brings with it the modern understanding of rights based approaches.⁵

Extreme poverty is not inevitable. It is, at least in part, created, enabled and perpetuated by acts and omissions of States and other economic actors.⁸ The deprivation and indignity of poverty stem from various sources. Persons living in poverty are confronted by the most severe obstacles – physical, economic, cultural and social to accessing their rights and entitlements.⁸ As Nelson Mandela once said; “overcoming poverty is not an act of charity”.⁹ Overcoming poverty is a matter of human rights.

The principles of rights-based approaches include (i) respecting people’s right to participate in decision-making processes that affect their lives; (ii) understanding and addressing the root causes of poverty and suffering; (iii) emphasising the equal dignity and worth of all people and promotion of tolerance, inclusion, non-discrimination and social justice; and (iv) holding all development actors accountable for respecting, protecting and fulfilling human rights.¹⁰ The human rights approach attaches as much importance to the processes which enable developmental goals to

be achieved as to the goals themselves.¹¹ Thus it could not only address the outcome of abolishing hunger, but may also propose ways and tools by which that goal can be achieved.¹²

The effort to realise the right to food is not without its challenges; It is expected that by 2020, 85 % of the poor in Latin America, and about 40 – 45 % of the poor in Africa and Asia will be concentrated in towns and cities.¹³ This rapid urbanization goes together with a rapid increase in urban poverty and urban food insecurity. At the same time, food producers are experiencing greater competition for land, water, and energy. Rapid population growth and the need for increase in food production is exacerbated by the threat of the effects of substantial climate change.¹⁴ As the world population continues to grow, much more effort and innovation will be urgently needed in order to sustainably increase food production. There is a need to change the way in which food is produced, stored, processed, distributed, and accessed.¹⁴ This is where urban agriculture^a is thought to play a role.

The Food and Agriculture Organisation (FAO) suggests that urban agriculture and peri-urban agriculture contributes to local economic development, poverty alleviation, in recognition of the human right to food, the social inclusion of the urban poor and women in particular, as well as to the greening of the city and the productive reuse of urban wastes.¹³ Food insecurity has always haunted cities and towns. At times it would be well-controlled, at other times it would strike more or less significant portions of the population. At all times, urban agriculture has played some role in ensuring a food supply for urban residents.¹⁵

Urban agriculture is not a new concept in Zimbabwe, by the mid-1950s most urban centres had effectively taken shape. To supplement his/her meagre and often sporadic income the urban African had to grow crops around his/her workplace or the temporary home.¹⁶ The practice of urban agriculture is still evident in Zimbabwean communities today. Many national and local authorities, especially in developing countries, viewed intra-urban agriculture mainly as a source of problems and at best as a survival option for the urban poor in times of crisis.¹⁷ Presently in

^a Urban agriculture: can be defined as the growing of plants and the raising of animals within cities. Source: <http://www.fao.org/urban-agriculture/en/>

Zimbabwe urban agriculture is a grey area, often prohibited by the local authorities. However, to prohibit the practice of urban agriculture can be viewed as a violation of human rights. But it can also be argued that promoting the practice of urban agriculture when its contributions are very limited, unsustainable and harmful goes against human rights.

This paper investigates the relationship between household food gardens^{b,c} and household food security^d in Zimbabwe's urban population, exploring whether urban agriculture is indeed one of the solutions to urban food security concerns and ultimately if it can be considered as a strategy in implementing the right to adequate food in Harare, Zimbabwe.

^b Household Food Gardens refers to a portion of land which may be around the household or within walking distance from the family home. Source:

<http://agricultureandfoodsecurity.biomedcentral.com/articles/10.1186/2048-7010-2-8>

^c Household food gardens are used interchangeably with urban agriculture in the context of this study

^d Food Security defined as a state when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life. Source:

<http://www.who.int/trade/glossary/story028/en/>

CHAPTER 2: LITERATURE REVIEW

This review will take a global look at the different aspects of food and nutrition security in the context of the right to food, the problems affecting food and nutrition security, followed by the idea that urban agriculture is a solution to some of these problems and can be considered a human right. The last sections of this review will look at urban agriculture in the context of Zimbabwe, the purpose of this study and relevance of the tools used in gathering information for the study.

2.1 FOOD, NUTRITION AND HUMAN RIGHTS

2.1.1 The right to adequate food

The International Human Rights system strives to ensure that food is recognized as a human right not only at national level but at individual level as stipulated in Article 11 of the 1966 United Nations International Covenant of Economic, Social and Cultural Rights (ICESCR). Article 11 states:

1. The States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions. The States Parties will take appropriate steps to ensure the realization of this right, recognizing to this effect the essential importance of international cooperation based on free consent.
2. The States Parties to the present Covenant, recognizing the fundamental right of everyone to be free from hunger, shall take, individually and through international co-operation, the measures, including specific programmes, which are needed:
 - a) To improve methods of production, conservation and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the principles of nutrition and by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilization of natural resources;

- b) Taking into account the problems of both food-importing and food-exporting countries, to ensure an equitable distribution of world food supplies in relation to need. The right to adequate food is realized when every man, woman and child, alone or in community with others, have physical and economic access at all times to adequate food or means for its procurement.¹⁸

The right to food is not a right to be fed by government, but primarily the right to feed oneself with dignity. Like other economic, social and cultural rights, the right to adequate food confers an obligation on states to respect, protect and fulfil that right.¹⁹ This means that states should not adopt measures that could ultimately prevent access to adequate food, but that they should adopt measures to ensure that no individuals are deprived of their access to adequate food, and should proactively engage in activities to strengthen people's access to and use of resources, including means to ensure their livelihood and food security.²⁰

2.1.2 The right to food and food security

According to FAO, the general concept of the right to adequate food can be broken down into several elements: the food supply should be adequate, which means that the types of foodstuffs commonly available (nationally, in local markets and ultimately, at the household level) should be culturally acceptable (fit in with the prevailing food or dietary culture); the available supply should cover overall nutritional needs in terms of quantity (energy) and quality (it should provide all the essential nutrients, including micronutrients such as vitamins and minerals); and, last but not least, food should be safe (free of toxic elements and contaminants) and of good quality (in terms of, for example, taste and texture).²¹

This concept of the right to adequate food assimilates that of food security as evident in the 1996 definition of food security which characterizes it as a situation that exists "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".²² The 1996 definition of food security recognizes the multi-faceted

nature of food security by including food availability, stability of food supplies, food access and food utilization.²²

Food is in the first place important for survival-we need it simply to live, food and eating are also central to our subjectivity, or sense of self.^{23, 24} Hunger is one of the worst violations of human dignity and unacceptable in a world which produces enough food for all and which knows enough about appropriate solutions to the problem.²⁵ Ensuring food and nutrition security is fulfilling basic needs and ethical obligations.²⁰ Food security is a pre-condition for the full enjoyment of the right to food.¹⁹

2.1.3 Food access

Hunger and malnutrition remain among the most devastating problems facing the majority of the world's poor and needy people, and continues to dominate the health of the world's poorest nations.²⁶ Efforts have been made by governments worldwide to improve food availability in the world, however making food available does not ensure everyone will have access to it. For the world as a whole, per capita food availability has risen from about 2220 kcal/person/day in the early 1960s to 2790 kcal/person/day in 2006 - 08, while developing countries recorded a leap from 1850 kcal/person/day to over 2640 kcal/person/day.²⁷ Recent estimates of global food and nutrition security show that even though hunger is declining, about 805 million people world-wide were chronically malnourished in the period from 2010 to 2014; 791 million of whom lived in low-income countries.²⁸

Access to food is ensured when all households and all individuals within those households have sufficient resources to obtain appropriate foods for a nutritious diet. It is dependent on the level of household resources which consist of capital, labour, knowledge and on prices.¹⁹ As Noble Laureate Amartya Sen wrote in 1983, "starvation is the characteristic of some people not having enough food to eat. It is not the characteristic of there being not enough food to eat".²⁹ Food is available, but people have limited or no access to it.

2.1.4 Nutrition security

Access to food addresses a household's demand for food however access does not guarantee quality. A good nutritional status goes far beyond having access to sufficient food as explained by General Comment 12 which states that the right to adequate food implies: "The availability of food in a quantity and quality sufficient to satisfy the dietary needs of individuals, free from adverse substances, and acceptable within a given culture".^{30, 31}

Food insecurity results in the decreased purchase of more expensive foods. These expensive foods are usually from animal sources (meat, poultry, eggs, fish, and dairy) or fruits and vegetables. Hence the intake of specific nutrients, in particular micronutrients is reduced before energy intake is reduced. This causes increased prevalence and severity of micronutrient deficiencies.³² An estimated 2 billion people suffer from one or more micronutrient deficiencies demonstrating that hidden hunger is responsible in part for the global malnutrition burden.³³ Measures may therefore need to be taken to maintain, adapt or strengthen dietary diversity and appropriate consumption and feeding patterns.³⁴ By adopting such measures, countries and the world may go a long way in solving micronutrient deficiencies and addressing hunger as a whole.

2.1.5 The right to food for women

The socially constructed gender roles of men and women interact with their biological roles to affect the nutrition status of the entire family and of each gender. Because of women's cyclical loss of iron and their childbearing, their nutrition status is particularly vulnerable to deficiencies in diet, care and health or sanitation services. Poor female nutrition early in life reduces learning potential, increases reproductive and maternal health risks and lowers productivity. The situation contributes to women's diminished ability to gain access to other assets later in life and undermines attempts to eliminate gender inequalities.³⁵

Women grow or raise much of the world's food. They could be doing much more, if they had access to required resources and had a voice in the decisions that have an impact on their lives and the lives of their families. FAO's research shows that, if women had the same access to those resources as men, they would produce 20 - 30 percent more food and their families would enjoy better health, nutrition and education.³⁶

Investment in women's nutrition contributes significantly to improving household nutrition and overall human development capacity of a country.³³ In essence well-nourished women will give birth to well-nourished children, who will become better educated and more productive adults who in turn will continue the cycle of better nutrition and productivity. From a human rights based perspective, governments have an obligation to create an enabling environment to ensure that women have sufficient access to resources to be able to feed themselves.³³ Strengthening the status of women and their decision-making power within the household over the family budget in particular, entails important benefits both for household food security and for children's health, nutrition and education. This is why no food security strategy is likely to succeed without taking this dimension into account.³⁷

2.1.6 Food supply and cities

Urban growth is attributed to both natural population growth and rural to urban migration. Urbanization contributes to sustained economic growth which is critical to poverty reduction.³⁸ However the rapid growth of cities means that not only will the majority of the world's populations in the future be living in cities, but poverty will increasingly be focused in urban areas.³⁹ Poverty is unmistakably the driving factor in the lack of resources to purchase or otherwise procure food.⁴⁰ Globally, food production and supply are characterized by large-scale commercial farming, processing and packaging of food products, corporate concentration in retailing and distribution and the growth of the urban population who rely almost completely on purchased food.⁴¹ Such means of access to food is also prone to risk, especially if jobs are lost, incomes fall, food prices rise or harvests in rural areas are hampered.⁴²

Urban households reduce both dietary diversity as well as energy intake in response to increased food prices and reduced income. The ability of different households to establish access to adequate food can be considered both in terms of production and in terms of people's ability to exchange their assets for food.⁴³ In Southern Africa, almost half (49.6%) of total expenditure by poor urban households is on food.⁴⁴

The over-reliance on commercially produced foods may not be the best means of solving food insecurity issues. Increasing commercial agricultural productivity may not sufficiently address problems of access for net food buyers and for other vulnerable groups who may require targeted policy interventions such as strengthening safety nets and other social protection.²⁸ The right to food could help propose such interventions as it is an inclusive right. It is not simply a right to a minimum ration of calories, proteins and other specific nutrients. It is a right to all nutritional elements that a person needs to live a healthy and active life, and to the means to access them.¹⁹

2.1.7 The challenge

The world now faces the challenge of feeding a growing population, in the face of a number of hindrances; there is a decrease in availability of agricultural land used for food production as it competes with other human activities such as bio-fuel crop production, housing, industry, mining, and recreation. Other factors such as climate change which negatively impacts agricultural yields, over-exploitation of fisheries and water scarcity, exacerbate this challenge. To make matters worse there is a decline in investments in agriculture as this funding competes with the cost of addressing social and health issues such as the HIV/AIDS pandemic and other communicable diseases, poverty and under-nutrition, and rising incidence of obesity and non-communicable diseases.^{45, 46, 47}

Human rights are inter-dependent, and by using a human rights based approach to tackling poverty and malnutrition, states and the world could solve the majority of its problems as investment in human rights may result in returns which ensure

participation, empowerment, resilience and sustainability in or of the solutions. The right to food is a human right recognized under international law that provides entitlements to individuals to access adequate food and the resources that are necessary for the sustainable enjoyment of food security. A world where the right to food is achieved for everyone is a world where people at every level are active participants in society, have input to government policies and can demand action from their leaders, and governments are held accountable. It is also a world where resources are distributed and used more equitably and sustainably.⁴⁸

2.2 URBAN AGRICULTURE AND THE RIGHT TO FOOD

2.2.1 Rights based approach to urban agriculture

Urban agriculture may have a role to play in addressing urban food insecurity problems, which are bound to become increasingly important with the secular trend towards the urbanization of poverty and of the overall population in development regions.⁴⁹ It is estimated that 15 – 20 percent of the world's food is produced in and close to urban areas.⁵⁰ Urban agriculture is practiced by as much as 40 percent of the population in African cities and up to 50 percent in Latin America.⁵¹

According to some accounts, 200 million people are employed in urban farming and related enterprises, contributing to the food supply of 800 million urban dwellers.⁵² With such a presence, urban agriculture may deserve attention as one of the strategies for addressing food security.

The state as the primary duty-bearer in realising human rights for its people; has to respect people's existing access to food and means of obtaining food. The state has to proactively strengthen people's access to food and use resources and means of ensuring their livelihoods, including food security. The state bears the responsibility of creating an enabling environment which allows people to choose whether or not they want to practice urban agriculture.¹⁹ Thus, one might argue that to prohibit the practice of urban agriculture could be viewed as a violation of human rights as the state would be actively impeding people's access and means of obtaining food

Conceptually, urban agriculture may contribute to food security, increased food consumption and enhanced diet composition, dietary diversity and nutritional status by increasing direct access to locally produced foods as well as increasing freshness and variety of available foods. It may be time developing countries shifted from the traditional view of a city and instead explored the idea of a more sustainable view of a city which accommodates the practices and desires of its inhabitants.

2.2.2 Pro-Urban Agriculture Movement

Those who support urban agriculture see it as having the potential to address urban poverty, including food security issues and to create sustainable cities in light of growing urban populations and the reduction in land space available for commercial agriculture, rising food processing, transport costs and inadvertently food prices. Urban and peri-urban agriculture^e (UPA) is said to have other benefits including low costs with sales near the point of production. Producers are also responsive to market demand.⁵³ From an environmental perspective, some say that urban food gardening reduces the effects of climate change by decreasing greenhouse gas emissions.⁵⁴

It is not only in developing countries that citizens see the potential of urban agriculture. African countries can draw lessons from North America and Europe. Historically, urban food production in the United States and Britain has flourished in moments of economic crisis. As we find ourselves once again in the throes of a crisis of capitalism, the popularity of urban agriculture in the Global North^f has surged and the discourse surrounding it has shifted from one of recreation and leisure to one of urban sustainability and economic resilience.⁵⁵ Some North American cities have begun to rebuild the tenuous links between food production and consumption by promoting urban agriculture and farmer's markets. In Brooklyn's Greenpoint neighbourhood for example, a 6000 square foot urban farm has been built atop an industrial building overlooking the East River. They planned to sell their produce to

^e Urban and Peri-Urban Agriculture is defined as the growing of plants and the raising of animals within and around cities. Source: <http://www.fao.org/urban-agriculture/en/>

^f Global North: socio economic classification of countries which is made up of the United States, Canada, Western Europe and developed parts of East Asia. Source: https://en.wikipedia.org/wiki/North%E2%80%93South_divide

local restaurants and communities and use bicycles to transport produce to consumers.⁵⁶

In South America, the Cuban government developed “organoponicos”, rectangular-walled constructions containing raised beds of a mixture of soil and organic material such as compost. The “organoponicos” have become one of the mainstays of vegetable cultivation in the city of Havana’s urban agriculture practices. Some Cuban diets have benefited from the introduction of locally produced, organic agricultural products. Havana’s environment has benefited both from the cultivation of crops and from the fact that it is all done agro-ecologically.⁵⁷ Providing an enabling pro-poor framework for urban agriculture is one strategy for implementing the right to adequate food.⁵⁸ From a human rights perspective states should be urged to move away from the benevolence model of food aid and instead emphasize enabling environments that support people in feeding themselves.²⁰

2.2.3 The Downside of Urban Agriculture

Although urban and peri-urban agriculture (UPA) helps secure urban livelihoods and combat hunger and poverty, there are concerns that health hazards may undermine nutritional and social development benefits.⁵⁹ Health authorities see urban agriculture as a health hazard. Urban farming systems recycle liquid and solid waste but without appropriate practices such as co-composting⁹ or infrastructure. This may lead to soil and water pollution and compromised food safety as is the case in Kampala, Uganda where urban agriculture is legalized. A health impact assessment on rearing livestock in Kampala city revealed that the city is at risk of pollution from effluent from zero-grazing^h animals, poor manure disposal and dust from poultry houses.⁵³ These bear both physical and mental health side effects such as diarrhoea, respiratory problems, parasitic diseases and emotional stress on the population with these conditions in close proximity.⁶⁰

⁹ Co-composting is the controlled aerobic degradation of organics, using more than one feedstock (faecal sludge and organic solid waste). Source: <http://akvopedia.org/wiki/Co-composting>

^h Zero-grazing is a farming method that involves keeping cows inside and bringing them cut grass, rather than letting them feed in the fields. Source: <http://www.oxfordlearnersdictionaries.com/definition/english/zero-grazing>

Some urban planners, policy makers and experts do not support the practice of urban agriculture. Planners tend to think that urban food growing is a messy business; it does not fit in with the modern view of an urban area and it poses health risks.⁶¹ In Harare, Zimbabwe, Chibanda cites the lack of policies and regulations, or inadequate institutional frameworks as the reasons that most cities do not manage urban agriculture activities to ensure environmental protection, health and safety. He is of the opinion that water flows and hydrological regimes of rivers, wetlands and groundwater for boreholes may change as UPA increases. Agricultural chemicals washed into the water system pollute it. Stream bank cultivation leads to siltation of dams supplying the city with water.⁶²

Webb reviewed evidence on the practice of urban agriculture in South Africa and found that some studies showed it had no significant benefit to the urban poor despite it being actively promoted.⁶³

2.3 URBAN AGRICULTURE AND THE CITY

2.3.1 How Urban Agriculture is viewed

Urban agriculture remains an under-appreciated avenue to food security. Despite its importance as a potential livelihood source, farming in towns is (still) illegal in many African countries. By-laws frequently date from colonial times and forbid all agricultural activity within the boundaries of urban centres, as it did not fit in the western perception of what constitutes 'urban' and because it is believed to cause all kinds of environmental hazards.⁶⁴ Cities grow and the demand for food increases, but areas suitable for agriculture diminish due to competing demands for lands.⁶⁵ From 1960 to 2010, the African continent's urban population has grown from 53 million to more than 400 million. In sub-Saharan Africa, the urban population is projected to double, from 298 million to 595 million between 2010 and 2030.⁶⁶

Urban agglomerations and their resource uses are becoming the dominant feature of the human presence on earth, profoundly changing humanity's relationship to its host planet and its ecosystems.⁵⁰ It is unlikely that the planet will be able to accommodate an urbanized humanity that continues to draw upon resources from

ever more distant hinterlands, or which uses the biosphere, the oceans and the atmosphere as a sink for its wastes at the current accelerating population growth and migration rates. The question remains, whether cities can transform themselves into self-regulating, sustainable systems.⁶¹

2.3.2 Policy and urban planning

Urban agriculture has been an integral part of urban livelihoods throughout human history. The concept only came to the fore in the late 1980s/early 1990s, evoking interest among international donors and development practitioners.⁶⁷ However it was not until the mid-1990s that some local authorities and central governments recognized urban agriculture as a legitimate land use practice.

With increasing poverty in the urban areas, city planners and national policy makers are now beginning to consider the role of urban and peri-urban agriculture in the wider urban economy. Policy, legislation, institutional support and advisory services are however yet to be designed in the majority of urban areas and countries.⁶⁸ Municipal authorities often do not understand how to incorporate it into planning or remain concerned about the environmental effects.⁶⁶ The lack of national management policies on urban agriculture, even if they are conservative in nature (where municipal authorities remove prohibitive laws but do not invest financially in urban agriculture), may hamper its potential.

2.3.3 Land tenure

In developing countries the majority of urban agriculture is taking place on public land or on land leased from a local landlord.⁶⁹ The land use environment is extremely competitive and role-players in urban and peri-urban food production may not have a loud voice. They compete with a wide variety of interests on access to land for agricultural use and their cultivations are seldom protected by secure tenure arrangements.⁷⁰

Formal and informal access to land by the urban resource-poor includes share cropping, squatting, renting, leasing, inheriting and outright purchase.⁷¹ Without secure title to land, livelihoods can be terminated by a council order to uproot crops growing in violation of city by-laws, by a local leader reclaiming land granted under an unwritten contract, by a real estate developer staking out a subdivision for new housing, by an invasion of low income families coming to build the first shacks of a peri-urban settlement or land can be sold to foreign entities for production of bio-fuel crops.^{66, 67}

Urban populations in Africa are increasing without a proportionate expansion of infrastructure and services. Within this context, city officials give higher priority to the more visible aspects of urban life such as office buildings and shopping malls and lower priority to issues relating to food production, supply and distribution.⁷² Without sufficient access to land, urban dwellers may not have any space on which to practice urban agriculture, should they choose to supplement the dietary intake of their families.

2.3.4 Financial investment

Urban agriculture (UA) requires increased financial and political legitimacy if it is to continue developing as a productive force. While political support for urban agriculture has been steadily increasing, financial support for urban growers has been more limited.⁷³ Most urban producers lack access to credit and investment schemes. Urban farmers rely heavily and primarily on the mobilisation of their own funds.

Insecure land tenure not only stifles vegetable growers' capacity to build up working capital, without title to land they have virtually nothing to offer financial institutions as collateral.⁶⁶ From 2008 to 2010, local teams from 17 cities in the "Global South"ⁱ carried out applied research, coordinated by the Resource Centres on Urban Agriculture and Food Security Foundation (RUAFF), on financing of small-scale urban

ⁱ Global South is a socio economic classification of countries which is made up of Africa, Latin America, and developing Asia including the Middle East. Source: https://en.wikipedia.org/wiki/North%E2%80%93South_divide

and peri-urban agriculture. The study revealed that micro-credits for small-scale urban farmers are granted mostly for commercially oriented activities such as raising animals, agro-processing or marketing.⁷⁴

Most credit institutions are reluctant to give loans to urban farmers for a number of reasons. The most common reasons given are a high rate of default, too-high risk because of possible crop failure essentially for climatic reasons, limited financial management capacities of farmers and a lack of proper title deeds or collateral.⁷⁴ Local governments could implement credit and financing policies and instruments, especially for the poorer and most vulnerable groups, applying conditions that are compatible with the technical and productive nature of urban agriculture.⁷⁵ However this would have to be guided by a cost-benefit analysis of urban agriculture of which evidence is still conflicting.

2.3.5 The water issue

In addition to these afore mentioned factors that can hinder the success of urban agriculture, urban and peri-urban farmers often do not have access to a safe and reliable water supply. As the world population increases, the competition for freshwater resources between domestic demands, industry, commerce, institutions such as hospitals, and agriculture is intensifying.⁷⁶

Global demand for water has tripled since the 1950s, but the supply of fresh water has been declining due to climate change, drilling of deeper boreholes and inefficient use of irrigation.⁷⁷ Seventy percent of surface and groundwater is used for rural agriculture; agricultural water use has grown substantially and is still increasing. At the same time, urban areas and industrial development claim an increasing share of available water resources. Overexploitation and poor management of water resources threaten the resource base on which agriculture depends.⁷⁸

There is a need to reconsider water use practices and develop strategies that can respond to the challenge of increasing water demand and declining fresh water supply. Globally there is sufficient land and water resources to produce food over the

next 50 years, but only if water for agriculture is better managed. It is no longer sufficient to build more water storage or harness more surface water without considering long-term sustainability.⁷⁹ Urban agriculture could further complicate the supply and demand for water as households will most likely be using potable water for these gardens.⁷⁸ Given the compound challenge of increases in demand for water and decreases in traditional supply sources it is unlikely that the traditional approach of one source, one system and one discharge can close the water gap.⁷⁹

Wastewater^j reuse could be considered, in particular where water is scarce.⁸¹ However, the use of waste-water comes with its own health risks such as contamination of crops by pathogens or heavy metals.⁷⁶ This leaves more questions on the sustainable use of potable water for urban agriculture and the feasibility of using waste-water as an alternative.

2.4 URBAN AGRICULTURE IN ZIMBABWE

2.4.1 Background

This research is focused on Zimbabwe, one of the many African countries in which urban agriculture is a common occurrence. Once known as the “breadbasket of Southern Africa”, Zimbabwe is a landlocked country sharing borders with Mozambique, South Africa, Zambia, and Botswana. It covers a total area of 390 580 square kilometres.^{80, 81} According to the 2012 national census, Zimbabwe has a total population of 12 973 808.⁸²

2.4.2 Urban agriculture and Zimbabwe

Urban agriculture was practiced as early as the days of the pioneer settlers, a reference to the first group of white settlers who colonized Zimbabwe and set up

^j Wastewater is a combination of one or more of domestic effluent consisting of blackwater (excreta, urine and faecal sludge) and greywater (kitchen and bathing wastewater); water from commercial establishments and institutions, including hospitals; industrial effluent, stormwater and other urban run-off; agricultural, horticultural and aquaculture effluent, either dissolved or as suspended matter. Source: http://www.unwater.org/fileadmin/user_upload/unwater_new/docs/UN-Water_Analytical_Brief_Wastewater_Management.pdf

their initial settlements at Fort Tuli, Fort Victoria, Fort Charter and Fort Salisbury respectively in the 1890s. Originally considered rural land, these settlements gradually developed to become urban settlements. By the mid-1950s most urban centres had effectively taken shape.^{80, 83} During this era, the urban African was considered a temporary 'fixture' in the city. They were considered cheap labour which was reflected in the meagre income they received. To supplement their meagre and often sporadic income, urban Africans had to grow crops around their workplaces or the temporary homes to supplement their dietary intake.¹⁶

Zimbabwe has three typologies of urban agriculture. "On-plot" agriculture is farming practised on the plots around houses, like backyard gardening. "Off-plot" agriculture is conducted in public open spaces, utility service areas and agriculture allotments. The third typology "Peri-urban" agriculture is the production of crops and livestock in areas outside the city boundary, formerly rural agricultural land up to a radius of 150 km, which is economically integrated into the city.¹⁶

For more than a decade, the country has been dominated by acute social and political polarization over appropriate policies to address inequitable resource distribution patterns inherited at independence in 1980 and continued into post-colonial Zimbabwe.⁸¹ The overall outcome of these continuous challenges in the past decade has been that the country's real annual Gross Domestic Product (GDP) growth rate cumulatively declined by approximately 46 percent during the period of 2000 to 2008 and annual hyper-inflation reaching a peak of 231 million percent in July 2008.⁸⁴ These challenges together with the perennial droughts, HIV/AIDS pandemic, declining Foreign Direct Investment (FDI) and low Overseas Development Assistance (ODA) have left the population vulnerable to poverty and food insecurity.⁸⁵

The proportion of households living below the Total Consumption Poverty Line (very poor and poor) increased from 42 percent in 1995 to 63 percent in 2003. By 2008, formal sector unemployment was over 80 percent and inflation was running at almost 100 percent per day.⁸¹ To survive these hardships, and with the increase in a month on month inflation rate, urban dwellers had to find alternative strategies to fend for themselves and their families. Vegetable home gardening became one of the agro-

based safety nets against food shortages and nutritional needs for these urban dwellers.⁸³

The economic situation has stabilized with the introduction of the multi-currency system in 2008. The proportion of households considered food insecure decreased significantly from 33 % in 2009 to 13 % in 2011.⁸⁶ The country experienced a 5.7 % growth in GDP in 2009, a shift from the previous year's negative growth of 17.3 %.⁸⁷ The question thus arises whether urban dwellers still use urban gardens as a food source.

2.4.3 Urban agriculture policy in Zimbabwe

Zimbabwe acceded to the ICESCR in May of 1991.⁸⁸ By virtue of the state acceding to the ICESCR, it becomes legally bound to observe the rights contained in this document.⁸⁹ The right to food is also protected in the Zimbabwean Constitution with the state proclaiming to take reasonable legislative and other measure, within the limits of the resources available to it to achieve the progressive realisation of this right.⁹⁰

Urban agriculture in Zimbabwe is not directly supported by any piece of national legislation and this provides for a poor foundation in advocating and promoting its practice. However it could be argued that it would do more harm to encourage the establishment of food gardens in households if no strong evidence exists for their contribution to food security and their maintenance became more of a burden on urban households in Zimbabwe. Given this lack of evidence the main aim of this study is to assess whether household food gardens make a contribution to household food security.

There are a number of Acts in Zimbabwe which can be used indirectly to govern the practice of urban agriculture, the most influential being the three Acts briefly described below.

- *The Urban Councils Acts- Chapter 29:15.*⁹¹; this act governs the administration and activities of urban amenities e.g. roads. Section 235 of this act gives the Minister of Local Government, Rural and Urban Development the power to prohibit/regulate cultivation of land or keeping of animals if it threatens urban development or management.
- *The Environmental Management Act- 20:27.*⁹²; sets out principles on the sustainable management of the environment, thus it can prohibit or encourage urban agriculture depending on whether or not it is considered sustainable.
- *The Regional Town and Country Planning Act- 29:12.*⁹³; gives the local planning authority the power to determine how land within its jurisdiction should be used by either issuing permits or developing “master plans” and “local plans” which are maps setting out how that land can be used. This means the local authority can reserve spaces to be used for urban agriculture.

In all these acts, power do not lie with the residents of Harare thus they do not allow residents to participate in the decisions made regarding urban agriculture. Should the city council decide to slash crops or change the use of an open space, they can do so and are not held accountable for such actions. This goes against a rights based approach.

On a progressive note; local authorities in Zimbabwe have shown that they recognise the importance of urban agriculture. This was done in the form of two separate declarations namely the Nyanga Declaration on Urban Agriculture of 2002 and the Harare Declaration on Urban Agriculture in Eastern and Southern Africa of 2003.^{94, 95} In these documents, local authorities acknowledge the existence and importance of urban and peri-urban agriculture. They also acknowledge its role in food security, poverty alleviation, local development and economic empowerment. However this acknowledgement is yet to translate to actual action.

2.4.4 The water situation in Zimbabwe

Since the 1980's many urban centres in Zimbabwe have been experiencing water problems which have been attributed to poor rainfall, insufficiently trained water

resources personnel, population growth, aging infrastructure and a lack of funds. Water rationing has become common-place with some urban areas going without water for long periods, ranging from 12 hours to one month or more.⁹⁶

One such urban centre is Bulawayo, the second largest city in Zimbabwe. This city has resorted to using various sources of water such as boreholes and wastewater for urban agriculture purposes as potable water sources (e.g. tap water) are being reserved for domestic uses such as cooking, bathing and drinking.⁹⁷

Harare, the capital city of Zimbabwe, has also been facing water quality problems whilst water scarcity will be a major problem in the next 5 years.⁹⁸ The city has since tightened water rationing, causing some residential areas to go without this basic necessity for an average of two days or more per week.⁹⁹ Published research regarding the urban water supply and urban agriculture in Harare has focused on the use of waste water as a source of water for urban agriculture and has also looked at solutions to managing the water quality and water scarcity problems the city is currently facing.^{82,83} This study will gather current information on water use and its relationship to household food gardens.

2.5 MEASURING FOOD SECURITY, DIETARY DIVERSITY AND URBAN AGRICULTURE

Given the rising interest in and potential commitment towards urban agriculture by academics and decision makers in some governments, there is a need to provide sufficient evidence of its contributions particularly as a solution to food security and dietary diversity issues. This will determine whether it can be advocated as an intervention in the progressive realisation of the right to food

2.5.1 Measuring food security and dietary diversity

Food insecurity is a complex, multidimensional phenomenon which varies through a continuum of successive stages as the condition becomes more severe.¹⁰⁰ In the

past, food security was measured using national food availability figures. However, as indicated above, national food availability does not guarantee access to food, or nutritional adequacy. It is thus necessary to use other indicators to measure food security at household and individual level. Obtaining detailed data on household food access or individual dietary intake using 24 hours recalls or diet records can be time consuming and expensive, and requires a high level of technical skill both in data collection and analysis.¹⁰¹ For this reason, validated food access and dietary diversity measures are increasingly being used as measures of household food security and as proxies of nutrient intake.¹⁰² These proxy measures will be used to collect data on the variables for this study.

2.6: Conclusion

In summary, this study is founded on the overall assumption that urban agriculture in the form of household food gardens is an intervention which could be applied to improve food security and thus a strategy in realising the right to food. Data will be collected using proxy measures coupled with a researcher designed tool. Findings from the study will contribute to knowledge on urban agriculture in Harare and whether there are associations between household food gardens and household food security and dietary diversity. One could argue that Harare's City Council has an obligation to respect and protect the practice of urban agriculture, however the obligation to fulfil this in the form of active support of the practice may be difficult as the economic value of urban agriculture is not yet adequately demonstrated.

CHAPTER 3: QUESTIONNAIRE DESIGN

3.1 INTRODUCTION

This study used a questionnaire composed of four different sections (Addendum B) Two of the sections namely the demographic section and the household food garden scale were investigator designed. The remaining sections were adopted from already existing tools namely the household dietary diversity score and the household food insecurity access scale.^{100, 101} The process of questionnaire development is shown in the Figure 3.1.

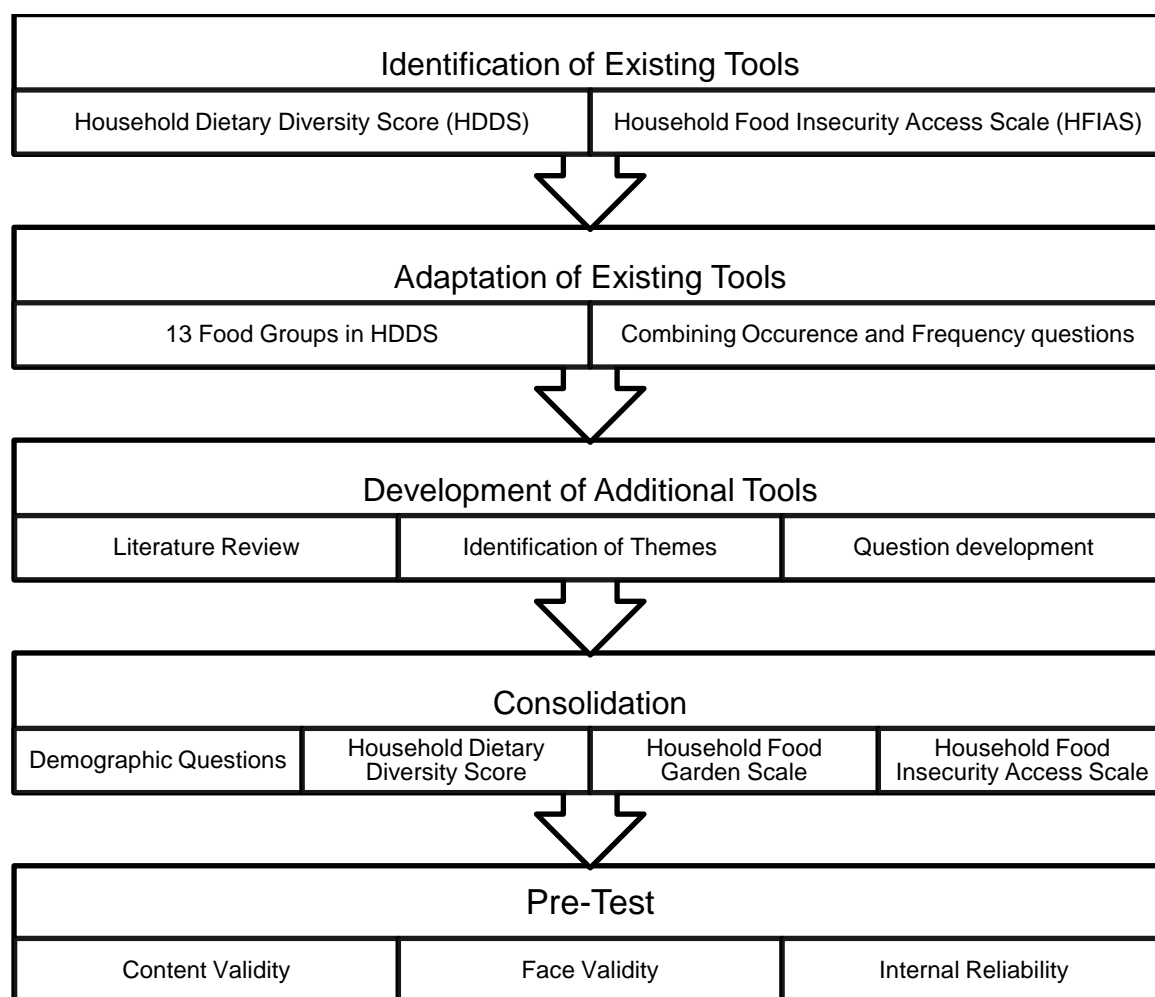


Figure 3.1: Steps in Study Questionnaire Design

The aim in designing the questionnaire used in this study was to create a single instrument which would capture sufficient data on food gardens, food security and dietary diversity to meet the study objectives. The intention was to create a simple and easy to use tool for field workers with limited field experience. Questions in the questionnaire were mainly closed ended with coded responses. Translation of the questionnaire into Shona was done using back-translation by a qualified local translator from a local company, Cendel Language Bridge. The questionnaire was investigator administered and was recall based.

3.2 IDENTIFICATION OF EXISTING TOOLS

After an extensive literature search; the Food and Nutrition Technical Assistance Project's (FANTA) Household Dietary Diversity Score (HDDS) and the Household Food Insecurity Access Scale (HFIAS) were identified as suitable validated tools for use in measuring dietary diversity and food security respectively for this study.^{100, 101} There were no tools found for measuring urban agriculture.

3.2.1 Measuring food security (access)

FANTA's HFIAS is a simple but methodologically rigorous tool designed to capture data on the prevalence of food insecurity in households. The questions in the HFIAS represent universal domains of the household food insecurity (access) experience and can be used to assign households and populations along a continuum of severity, from food secure to severely food insecure. The information generated by the HFIAS can be used to assess the prevalence of household food insecurity (access) and to detect changes in the household food insecurity (access) situation of a population over time.¹⁰⁰

3.2.2 Measuring dietary diversity

Dietary diversity is defined as the number of foods consumed across and within food groups over a reference period. FANTA's HDDS provides a list of foods which can be adapted to suit a particular population and has been tested in developing countries.^{101, 103} The household dietary diversity score is a measure of food

consumption that reflects household economic access to a variety of foods. An increase in dietary diversity is associated with improved socio-economic status and household food security.¹⁰¹

The decision to use this tool as an indicator of nutrient adequacy and not socio-economic access to food was based on a discussion paper by Marie Ruel where she provides evidence from different studies conducted in developing countries which show that a list of food groups can be used to successfully assess the nutrient adequacy of a household's diet with different recall periods.¹⁰³

Dietary diversity scores are created by summing either the number of individual foods or food groups consumed over a reference period. To better reflect the quality of the diet, the number of different food groups consumed is used, rather than the number of different foods consumed.¹⁰⁴ The commonly used reference period for recall is 24 hours but this can be extended up to 15 days.¹⁰³

3.2.3 Measuring urban agriculture

Some research studies on urban agriculture focus on all forms of urban agriculture; off- and on- plot agriculture and they also include peri-urban agriculture in this fold.^{17, 45, 73} Other studies quantify urban agriculture in terms of the number of people involved in the practice.⁴⁵ Some academics refer to many urban agriculture claims found in the literature as deterministic 'universalisms', meaning that general sweeping statements of the importance and potential of urban agriculture to benefit the environment and household food security have been based on 'fragmentary research', as opposed to its demonstrated impact 'on the ground'.^{105, 106, 107} There is no standard tool that has been designed or used to quantitatively measure the practice of urban agriculture or its contribution.

The tool designed and used for this study was designed to provide a quantitative description of the characteristics of urban agriculture in the form of household food gardens (e.g. number involved in food gardening, number of crops/livestock and frequency of consumption of produce), which would be correlated with data collected on the food security and dietary diversity situations of households.

3.4 ADAPTATION OF EXISTING TOOLS:

3.4.1 Household Dietary Diversity Score

In FANTA's Household Dietary Diversity Score (HDDS), the number of food groups used is 12. For this study it was adapted to include local foods such as locally grown cruciferous vegetables and some not commonly used foods such as yams were removed. After adaptation it included 13 food groups. This was as a result of the food group of vegetables being split into two separate groups of "green leafy vegetables" and "other vegetables". This was done to avoid the bias by respondents of assuming the English term "vegetables" is synonymous with just green leafy vegetables, disregarding other vegetables.

The recall period for this section was 14 days prior to the interview. The participant was asked if members of the household aged 5 years and above have consumed any foods falling under certain food groups in the 14 days prior to the interview. Responses to this section were a "Yes" or a "No" answer. The responses were coded for by a letter with Y = "Yes" and N = "No".

To enable analysis the text responses obtained from this section were re-coded into numerical values; "No = 0 and "Yes" = 1. The re-coded values were then summed up to give a household dietary diversity score. The minimum score that could be obtained was 0 and the maximum score was 13. The higher the dietary diversity score the more diverse the diet of that household, the lower the score the less diverse the diet of that household.

3.4.2: Household Food Insecurity Access Scale.

The questions from the FANTA's Household Food Insecurity Access Scale (HFIAS) gather data on a household's access to food and subsequent food security status.¹⁰³ The HFIAS has 9 questions created in a manner where each question in ascending order represents a generally increasing level of food insecurity. The recall period of this section was 14 days.

The questions in this section are based on the occurrence and frequency format. For example, the occurrence question would be; “In the past 2 weeks (14 days), did you or any household member go to sleep at night hungry because there was not enough food?” This is followed by a frequency question; “How often did this happen?” In the questionnaire for the study these two questions are combined into one question; “In the past 2 weeks (14 days), how often did you or any household member go to sleep at night hungry because there was not enough food?”

Responses from this section were coded with numerical values. For analysis responses obtained in the section were re-coded to include zero values. The HFIAS generated four indicators, namely;

- Household Food Insecurity Access Scale Score
- Household Food Insecurity Access-related Conditions
- Household Food Insecurity Access-related Domains
- Household Food Insecurity Access Prevalence

The HFIAS Score was calculated by summing up the re-coded responses. The minimum score for the HFIAS was 0 and the maximum score was 27.¹⁰⁰ The higher the score the less food secure a household, the lower the score the more food secure a household. This score would be correlated with scores from the other sections of the questionnaire.

The indicator on household food insecurity related conditions were generated by calculating the percentage of households answering positively to each question regardless of severity. The indicator on household food insecurity related domains was generated by calculating the percentage of households answering positively to specific sets of questions regardless of severity. The HFIAS prevalence was obtained by categorising households by varying levels of food insecurity based on the responses they gave to particular sets of questions.¹⁰⁰

3.5 DEVELOPMENT OF ADDITIONAL TOOLS

3.5.1 Demographic questionnaire

This section of the questionnaire was designed to gather data on the characteristics of the population being studied. Information captured included the type of suburb in which the household is located, the number of people living in that household and the age distribution of members of the household and the type of landownership. This was intended to provide a background of the population being studied. The questions contained in this section were based on questions in the Zimbabwe Multiple Indicator Monitoring Survey 2009.¹⁰⁸

This section had no scoring system. It captured background information on the population being studied.

3.5.2 Household Food Garden Score

The Household Food Garden questionnaire was designed to quantify the productivity and frequency of use of food gardens by households by generating a score for each household. The section also contained questions on the purchasing habits of all households regardless of whether they had or did not have a food garden. The design of this tool was necessitated because currently there is no tool to measure urban agriculture.

The content of questions in this section was designed using themes and information gathered from literature on the characteristics, typology, practice and financing of urban agriculture particularly in developing countries including those in Southern Africa.^{15, 16, 42, 65, 69, 73, 109 - 116}. The process of this section's development is shown in Figure 3.2.

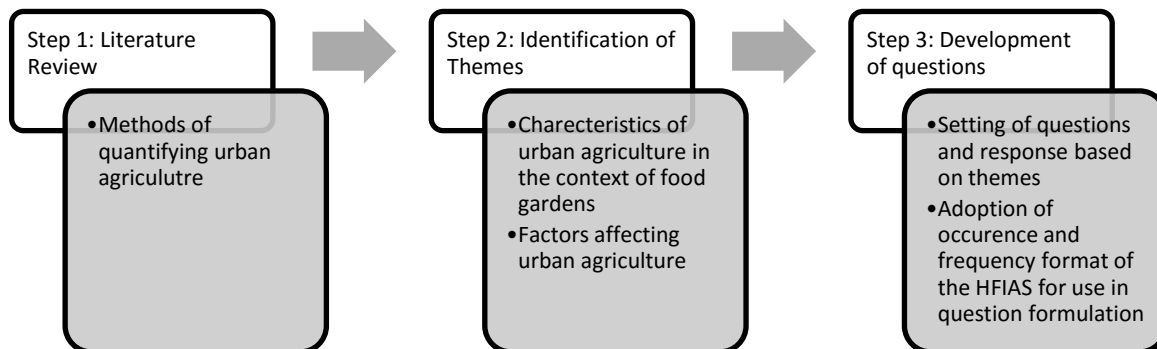


Figure 3.2: Steps in Household Food Garden Section Development

The Household Food Garden questionnaire was designed with a recall period of 14 days prior to the interview. It was based on the occurrence and frequency mode of questioning adopted from FANTA's Household Food Insecurity Access Scale. For example in FANTA's HFIAS the occurrence question would be; "In the last 2 weeks (14 days) have you eaten any crops/vegetables from your garden?" The frequency question would be; "How often did this happen?" In the questionnaire for the study these two questions are combined into one. For example; "In the past 2 weeks (14 days) how often did you eat crops/vegetables from your garden?"

The first question in this section was on whether a household had a food garden or not, the answer would determine which questions were applicable to that household. In households which did not have gardens, the questions of food gardens would become irrelevant and the interviewer would move to the food purchasing set of questions. The household food garden scale would generate two variables, a household food garden score and a food purchasing score.

Responses to this section were coded by numerical values. The initial numerical values assigned to responses in this section were re-coded to include zero-values as shown in the table below. The re-coded numerical values would then be summed

to give a household food garden score which would be used to indicate the extent to which a household made use of their garden. Only specific questions from this section were summed up in order to produce this household food garden score. These are listed in the table below (Table 3.1):

Table 3.1: Questions constituting the household food garden score

Question	Original Response	Coded	Re-Coded Responses
C1 Do you have a food garden or not?	1 = No 2 = Yes		0 = No 1 = Yes
C3.3 How many different types of crops does your household grow	1 = None 2 = 1-3 types 3 = 4-5 types 4 = more than 5 types		0 = None 1 = 1-3 types 2 = 4-5 types 3 = more than 5 types
C 3.5 In the last 2 weeks/14 days how often did you eat any crops/vegetables from your food garden?	1 = Never 2 = Rarely (1-2 times in 2 weeks/14 days) 3 = Sometimes (3-10 times in 2 weeks/14 days) 4 = Often (more than 10 times in 2 weeks/ 14 days)		0 = Never 1 = Rarely (1-2 times in 2 weeks/14 days) 2 = Sometimes (3-10 times in 2 weeks/14 days) 3 = Often (more than 10 times in 2 weeks/ 14 days)
C 3.6 How many different types of livestock does your household keep?	1 = None 2 = 1 type 3 = 2-3 types 4 = more than 3 types		0 = None 1 = 1 type 2 = 2-3 types 3 = more than 3 types
In the last 2 weeks/14 days how often did you eat any livestock/livestock products (e.g. eggs, organ meats) from your food garden?	1 = Never 2 = Rarely (1-2 times in 2 weeks/14 days) 3 = Sometimes (3-10 times in 2 weeks/14 days) 4 = Often (more than 10 times in 2 weeks/ 14 days)		0 = Never 1 = Rarely (1-2 times in 2 weeks/14 days) 2 = Sometimes (3-10 times in 2 weeks/14 days) 3 = Often (more than 10 times in 2 weeks/ 14 days)

The minimum score for the food garden section was 0 and a maximum score of 13. A high food garden score indicated more productivity and use of a food garden by the household and a lower score indicated less productivity and use of a garden by the household. A zero score indicated that a household did not have a food garden.

The household food garden section had questions related to purchasing which would produce a food purchase score for all households regardless of whether they had a food garden or not. The minimum score for this was 0 and the maximum was 6. The higher the score, the more a household had to purchase food, the lower the score, the less a household had to purchase food.

These scores also allowed households to be categorised according to their purchasing levels as indicated below.

Table 3.2: Food purchasing categories

Food Purchase Score	Category
0-2	Low Purchasing
3-4	Medium Purchasing
5-6	High Purchasing

3.6 CONSOLIDATION

The different sections of the questionnaire were consolidated into one questionnaire, the Household Food Garden and Food Security Questionnaire in the following order.

1. Section A: Demographic Questionnaire
2. Section B: Household Dietary Diversity
3. Section C: Household Food Garden Scale
4. Section D: Household Food Insecurity Access Scale

The questionnaire had 48 questions in total.

3.7 PRE-TEST STUDY

A pre-test study was conducted to assess the validity and reliability of the questionnaire. The pre-test sample was selected using convenience sampling from communities similar to those which were used in the main study. The sample consisted of 12 participants and extended over eight days. The questionnaire was administered by the principal investigator and three research assistants. It also provided a good opportunity to observe if data collection procedures were being followed, and address any errors in collecting data. The inclusion and exclusion criterion for the main study was used in selecting households for the pre-test. This data was excluded from the main study.

The questionnaire was administered to participants on the first day (Day 1) of the pre-test period and again on the last day (Day 8) of the pre-test period. The participants' responses were recorded as well as their understanding of the questions and language used in the questions in the form of a rating scale on the first day of the pre-test period. Participants were asked to report any terms or words they did not understand after each question, these were also recorded. The questionnaire was then re-administered on the last day of the pre-test period excluding the rating section.

3.7.1 Pre-test objectives

1. Face validity: Identify terms/questions which were not well understood by participants.
2. Assess content validity of the questionnaire using comments obtained from experts with extensive knowledge of urban agriculture.
3. Assess the reliability of the questionnaire by comparing responses from the two sets of data collected during the test-retest period.

No hypotheses were formulated for the pre-test study.

3.7.2 Validity

Only face and content validity were sought for the questionnaire. This was due to the fact that the questionnaire contained different tools adapted to suit the study including two investigator designed sections. It was also due to alterations in the recall periods for the HDDS and HFIAS which limited how findings of this study could be compared to those of other studies.

Face validity

Face validity was assessed by administering the questionnaire to participants and assessing their level of understanding of each question using a rating scale which also prompted them to report any terms they did not understand in the questions. The rating scale is shown in the Table 3.3. The responses from this would be summed up to give a score of understanding. This score has a minimum of 48 and a maximum of 192. The higher the score, the more understood the questionnaire. In any questions which were not well understood (questions with ratings of; “not well” understood or “somewhat” understood), participants were asked to list the terms which they did not understand.

Table 3.3: Rating scale for level of understanding of questions

1	2	3	4
Not at all	Somewhat	Well	Very Well

Content validity

Content validity of the questionnaire was assessed by submitting the questionnaire for review by three experts with extensive knowledge of food security and urban agriculture prior to pre-testing.

3.7.3 Reliability

Reliability of this questionnaire as a single tool could not be assessed as it contained different sections drawn from different tools thus a reliability co-efficient was calculated for each section. The questionnaire was administered using a test- retest method. It was administered on day 1 of the pre-test period and repeated on day 8 of the pre-test period. Their test score for each section of the questionnaire and for each of the two interviews were calculated. This provided two sets of scores for each section of the tool excluding the demographic section

A test-retest reliability co-efficient was calculated for each pair of scores for the different sections using Pearson's correlation. The co-efficient values from this analysis showed that the pairs of scores from each section were closely related though varying in degree.

3.8 PRE- TEST DATA ANALYSIS AND RESULTS

3.8.1 Data analysis

Data from the pre-test was analysed using IBM's SPSS program. Frequency tables were used to generate descriptive statistics for the data set.

Pearson's correlation was used to assess the relationship between the two sets of scores from the different sections of the questionnaire. This was to gain understanding on how close the pairs of data were linked. A p-value of $p < 0.05$ was used to represent statistical significance.

3.8.2 Face validity

The questionnaire was well received by respondents in both English and Shona as shown by a mean score of understanding of 190.3 (± 2.2). For the majority of questions, there were no difficulties with terms reported. However some questions had terms with which respondents were not familiar such as wild fruits and

chuchururu (legumes) (Table 3.4). Once these terms were explained, the respondent was able to answer the questions.

Language (English or Shona) did not seem to have any effect on the level of understanding of the questionnaire. Respondents failed to answer a question on the size of their garden as most had never measured their gardens. In cases where a household had multiple food garden sites the answer a participant would have to give was further complicated.

Table 3.4: Terms not understood by households in questionnaire (n = 12)

Term Not Understood	n	Percentage of Household
Wild Fruits	1	8.3 %
Chuchururu	3	25 %
Condiments/ Zvekurunga	2	16.7 %
“On” and “Off” Plot Gardens	1	8.3 %
Types and Varieties of Crops and Livestock	1	8.3 %
Wastewater	1	8.3 %

3.8.3 Content validity

Content validity was assessed by having experts critique the questionnaire. Some experts were of the opinion that the demographics section of the questionnaire should capture information on the income characteristics of participants; however this was rejected on the premise that a question on income would be difficult to compare to any standard. Another proposal was to delve deeper into the ways participants who had food gardens used the produce or livestock particularly those who reported selling some of that produce or livestock. Again this proposal was rejected based on the opinion that this would widen the scope of the research drawing focus away from the intended objectives.

Initially each section of the questionnaire had a different recall period (HDDS - 7 days; HHFGS - 14 days; HFIAS – 30 days) and a suggestion was made to make all

the recall period uniform (14 days) thus all the recall period for the all the section of questionnaire was changed to 14 days. The recall periods were changed because there were concerns that having different recall periods would require that data from the sections with shorter recall periods be extrapolated to match the sections with the longest recall period when correlating findings which would have compromised the accuracy of these findings.

3.8.4 Internal reliability

Pearson's correlation yielded different co-efficient values for each section of the questionnaire. Strong correlations between the pairs of scores were found in three of the sections of the questionnaire; The Household Food Garden Scores, The Food Purchase Scores and the Household Food Insecurity Access Score (Table 3.5) however the concern was that these results may be inaccurate due to the small sample size of the pre-test population and also because analysis did not look at each individual question. These results were not used as an indication of reliability thus the reliability of the questionnaire was not successfully determined.

Table 3.5: Reliability co-efficient for questionnaire sections (n = 12)

Test Scores	Pearson's Correlation	P- value
Household Dietary Diversity Scores	0.674	p = 0.016
Household Food Garden Scores	0.978	p < 0.001
Food Purchase Scores	0.972	p < 0.001
Household Food Insecurity Access Scores	0.762	p = 0.004

3.8.5 Conclusion

The mean time taken to administer the questionnaire was 26 minutes. The question pertaining to the size of a household food garden was omitted from the final questionnaire as all households in the pre-test study failed to respond to this question. Households had never measured the size of their gardens, and this

response would be complicated if a household had both an “on-plot” and “off-plot” garden.

Comments given by experts suggested that the questionnaire contained sufficient content to capture data to meet the study objectives, however some grammar needed correction and the recall periods needed to be uniform.

The questionnaire was well received by participants in the pre-test as the majority reported that they had understood questions clearly and in instances where they had experienced difficulties comprehending question they highlighted the terms which limited their understanding.

To improve the comprehension of questions it was resolved that any terms (e.g. on-plot or off-plot, varieties, condiments) in the questionnaire would be supported by a brief explanation when the respondents asked for such an explanation and in some instances examples to which the respondent could relate e.g. on-plot food garden- a place located within you property on which you grow crops or keep livestock. Research assistants were trained in this aspect before data collection for the main study.

Internal reliability for the questionnaire was not successfully determined.

CHAPTER 4: METHODOLOGY

4.1 INTRODUCTION

In conducting this research, quantitative methods were used to investigate the relationship between household food gardens and food security. These measures were employed so as to not only understand the nature of the relationship between household food garden and food security but also the motivations behind the practice of household food gardens. This chapter outlines the research questions, hypotheses, and research methodology used in this study.

4.2 AIMS AND OBJECTIVES

4.2.1 Aims

This study aimed to understand the relationship between household food gardens and household food security in urban areas. Household food gardens are considered part of urban agriculture which has played some role in ensuring a food supply for urban residents. From a human rights perspective, urban agriculture is considered as an intervention or practice which can assist in realizing the right to food.

4.2.2 Objectives:

- To investigate the relationship between having a household food garden and household food security in the southern districts of Harare (consisting of the southern, south eastern and south western districts of Harare)
- To assess the association between having a household food garden and household dietary diversity in the southern districts of Harare.

Aligned with these two objectives were two hypotheses:

4.2.3 Hypotheses

1. Literature suggests that with the growth of urban populations in most developing countries during the last half of the 20th century, urban food production and distribution systems became less and less reliable. In response, urban agriculture became increasingly common in an ever-growing number of countries. It can be considered a coping strategy in response to food insecurity which is the foundation for the following hypotheses:

- H0: There is no association between having a household food garden and household food security in the southern districts of Harare.

VERSUS

- H1: There is an association between having a household food garden and household food security in the southern districts of Harare.

2. Food security cannot be thought of in terms of quantity alone but also quality of which dietary diversity can be used as a proxy for dietary quality. It is important to examine whether urban agriculture contributes to dietary quality thus the following hypothesis:

- H0: There is no association between having a household food garden and household dietary diversity in the southern districts of Harare.

VERSUS

- H1: There is an association between having a household food garden and household dietary diversity.

To measure variables for this study a questionnaire with four different sections was used (Chapter 3). This questionnaire had a demographic section, a household dietary diversity section, a household food garden scale section and a household food insecurity section.

4.3 STUDY DESIGN

In conducting this research, quantitative methods were used to investigate the relationship between household food gardens and food security. These measures were employed so as to understand the nature of the relationship between household food gardens and food security

4.3.1 Sample population

Multi-stage sampling was used to select the sample population. Purposive sampling was used to select the districts which would form the sampling frame. Due to limitations in accessibility and resources, only those districts in the southern part of Harare were selected namely the southern, south eastern and south western districts. Using the boundaries used by the City Health Department (Addendum A) to mark out the chosen health districts on a larger more extensive map of Harare, the residential suburbs falling under these districts were Arcadia, Braeside, Chadcombe, Cranborne, Glen Norah, Hatfield, Highfields, Hillside, Houghton Park, Induna, Lochinvar, Logan Park, Malvern, Mbare, Midlands, Msasa Park, Park Meadow Lands, Park Town, Prospect, Queensdale, Saint Martin's, Southerton, Sunningdale, Waterfalls and Wilmington Park.

The suburbs in the selected districts were divided into three strata namely: low density, medium density and high density. Classification into strata was based on the parameters used by the city's Department of Physical Planning. Low density suburbs had households which occupied an area between 1000 m² and 4000 m², high density suburbs had households which occupied 200 m² to 300 m² and medium density suburbs had households which occupied an area above 300 m² but below 1000 m².¹¹⁷ This classification would be used as a proxy for different income level. The more populated areas would represent the less affluent households and the less populated area would represent the more affluent households.

Cluster random sampling was used to draw suburbs from the strata. Thus each suburb was considered a cluster and one cluster was randomly drawn from each stratum. The final number of selected clusters was three consisting of Logan Park

(low density suburb), Msasa Park (medium density suburb) and Mbare (high density suburb).

4.3.2 Sample size

The proportion formula for calculating a sample size was used in determining the number of households needed in the study. Using a confidence interval of 95 %, a critical standard z score of 1.96, a probability value of 0.5 and a margin of error of 9%, the sample size was determined using the formula displayed below.

$$n = [(z^2 \times p \times (1 - p) \div (ME/100)^2)]^k$$

Key: z = critical standard z score

p = probability value

ME = margin of error

A sample size of 119 households was obtained which was round up to 120 to ensure the same number of households would be interviewed in each suburb. This sample size of households accommodated the resources allocated for the project.

Systematic random sampling was then used to select individual households in each cluster. From each cluster 40 households had to be interviewed. Using mapping lists from the City's Surveyor Offices, the number of households in each suburb was determined by counting the number of households appearing on the mapping list and divided by the number of households needed from each cluster (40). The areas to be sampled were chosen based on the accuracy of the mapping lists obtained from the City's Surveyor Office. From these mapping lists it was determined that Logan Park had 144 households and thus every third household would be interviewed. The area sampled in Mbare had 197 households and thus every fourth household would be interviewed and the area sampled in Msasa Park had 190 households and every fourth household would be interviewed.

^kSource: Centre for Statistical Consultation. Sample Sizes Proportion. Stellenbosch University. 2009.

4.3.3 Inclusion and exclusion criteria

A “household” was defined as any group of people residing at a site and sharing the same eating and sleeping arrangements.

Households that were included in the study sample had to meet all of the following criteria:

- Households with or without a food garden
- Households with a person 15 years or older staying in the house at least four days a week

Households that were excluded from the study sample had to meet the following criteria:

- Institutional households such as hotels, schools, hostels, hospitals etc.
- Households with no person older than 15 years staying in the house for at least four days a week

If a household did not meet the inclusion criteria then the interviewer would have move on to the next household. Where there were more than one household present on site the household that agreed to take part in the study would be interviewed. Respondents were selected based on who was present at the household during the interview and who agreed to take part in the study.

4.4 DATA COLLECTION TOOL

A household food garden questionnaire was used to collect data. This questionnaire had four different sections;

Section A: Demographic Questionnaire: collecting information on populations characteristics.

Section B: Household Dietary Diversity: collecting information on food groups consumed by households in the 14 days period prior to the interview.

Section C: Household Food Garden Scale: collecting information on characteristics and use of household food gardens in the 14 days prior to the interview.

Section D: Household Food Insecurity Access Scale: collecting information on the food security conditions experienced by households in the 14 days period prior to the interview.

This questionnaire was investigator administered.

4.5 RESEARCH ASSISTANT TRAINING

Research assistants for this study were selected from a local university. The researcher selected three second-year students who had some exposure to research data collection. Research assistants were trained for 5 days in administering the questionnaire with mock interviewing exercises.

The training program was based on information provided in key documents on how interviews were expected to proceed and ways to avoid leading participants^{100, 101, 104}. For example one of the key points interviewers had to observe and make clear to the participant when asking questions in the dietary diversity section of the questionnaire was to only include foods intended for consumption by all members of the household including food made outside of the home, any deviation from this had to be documented.

For the HFIAS interviewers were trained to ask a question and give the participant time to answer. They would only explain a question when the participant requested further explanation. They were instructed to avoid influencing the participant's response.

4.6 DATA COLLECTION PROCEDURES

4.6.1 Collection of data

The research team would meet at a determined location each day of data collection and each person would receive their set of clean questionnaires for their targeted households. The team consisted of one principal investigator and three research assistants. The team was divided into two groups of two members each. The principal investigator would alternate between the two teams for each day that data was being collected in a particular area. The principal investigator would observe each assistant for the first two household visits. This was done as a way of ensuring assistants were conducting interviews as trained.

Households were organised lining either side of a street. One group would interview households on one side of the street and the second group would interview households on the opposite side of the street. This would continue until the street area included in the mapping list was exhausted, the team would move to the next street and continue the process of interviewing. When the number of households required from that suburb was reached, the team would stop the interviews and meet for consolidation of information from questionnaires.

4.6.2 Interviewing

The interviewers were expected to introduce themselves and explain the purpose of their visit. If the participants consented, the interviewer would begin the interview by supplying the participant with a consent form which they would go through and sign once they understood it. The interviewer would ask the participant which language they wanted to use for the interview; the choice was between Shona and English. The interviewer would then give a brief explanation about the questionnaire and the types of questions it contained. The interviewer would begin to ask questions in the questionnaire and recorded the response in code form. When the interview was complete, the interviewer would thank the participant and leave a copy of the signed consent form with the participant.

4.6.3 Securing questionnaires

Each research group had three plastic folders, one designated for questionnaires and consent forms, one for signed consent forms and lastly one for completed questionnaires. After each interview, the interviewer would place the consent in its designated folder and the completed questionnaire in its designated folder.

In consolidating data, both interviewers in the team were expected to be present with the set of questionnaires they had administered to ensure accuracy in data input. The interviewers would go through the questionnaires they had completed, checking for any errors in their recording. For each questionnaire data was entered into an excel spread sheet by the principal investigator and the interviewer responsible for administering that questionnaire would check the data entered against the information they recorded to check for any errors in inputting data.

4.6.4 Duration of data collection

Data collection was conducted in February 2013. The mean time taken to administer the questionnaire was 26 minutes. Data collection was conducted over 10 working days. This was to ensure data would be collected with accuracy and it would also ensure sufficient time for accurate entry into the excel spreadsheet.

This 10 day period ensured accuracy in that the research team would interview 12 households each day. This would mean each group would interview 6 households per day. The research team would begin data collection at 8:30 am and finish data collection at 13:00 pm. The assumption was this would provide sufficient time for the interviewer to walk from household to household interviewing participants. The length of time provided seemed sufficient for the interviewer to carry out their duties without getting exhausted such that they would begin making errors in data collection. Interviewing a limited number of households each day meant the interviewer would be able to pay close attention to each participant and the responses that participant would provide.

After data collection the team would take a break and then reconvene to begin entering data into excel. The research team would then discuss logistics for the following day before adjourning for the day.

4.6.5 Sample coverage

The study sample consisted of 120 households from three different suburbs. Forty households were to be interviewed per suburb however seven households dropped out of the study (two households from Mbare, three households from Msasa Park and two households from Logan Park) after data collection was completed resulting in a sample size of 113. This constituted a response rate of 94.2%.

The main reason for dropping out of the study was the concern that the participant's anonymity and confidentiality would not be ensured (1 household from Mbare and 2 Households from Logan Park). Some participants were concerned that the study may be politically affiliated and may bear future repercussions which could not be determined (1 Household from Mbare and 2 from Msasa Park). Other participants were disappointed that the study did not offer future incentives (1 House from Mbare and 1 from Msasa Park).

4.7 ETHICAL CONSIDERATIONS

This study was conducted in accordance with the ethical guidelines and principles of the International Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

This study protocol was submitted for ethical approval to the Health Research Ethics Committee, the Faculty of Medicine and Health Sciences, Stellenbosch University and approval was received on the 12th of November 2012; Ethical Approval Number: S12/08/228 (Addendum C). Approval to conduct the study was also sought from

Harare's Department of Housing and Community Services (Addendum D) which is the head office for local district offices and approval was received.

Participation in the study was voluntary. Those who agreed to take part in the study signed their name on an informed consent form (Addendum E) which was kept separate from the data collected in the study. The consent form was explained in detail to the participants in this study and sufficient time was given to participants to read the consent form. It was written in both English and Shona. If a participant could not read, the principal investigator or research assistant read the consent form to the participant. If a participant could not write they were allowed to sign the form with an "X". No participant was allowed to take part in the study without signing a consent form. The participant received a copy of the consent form after signing it.

Participant anonymity was maintained by ensuring that no names of any kind were documented on the questionnaire. Each participant received a questionnaire with an assigned random number for the purpose of data capturing.

Confidentiality - Each participant was informed that the information they provide could be used in public presentations or scientific publications and that their identity would not be exposed. The consent forms and questionnaires for participants who pulled out of the study were withdrawn from the data entry and destroyed as per their requests.

CHAPTER 5: MAIN STUDY DATA ANALYSIS

5.1 INTRODUCTION

This chapter details the manner in which data was analysed and the results that were drawn from this analysis.

5.2 DATA ANALYSIS

Data for the main study was analysed using STATA. A statistician from the Biostatistics Unit at Stellenbosch University's Faculty of Medicine and Health Sciences was consulted for analysis of data.

The first step in data analysis was to clean the data. This was done by rechecking all the entries against their corresponding questionnaire. This was followed by checking if any values were missing or if any values existed where there should not be a value.

Summary statistics were used to describe the variables. Distribution of variables was presented with frequency tables. Means were used as the measures of central location for ordinal and continuous responses and standard deviations as indicators of spread.

Descriptive statistics were mainly used in analysing data from the demographic section of the questionnaire. These descriptions were used to provide information on the characteristics of the population.

Data collected in this study was ordinal and was not normally distributed, so to examine the relationship and the strength of the relationship between the variables, Spearman's rank correlation was used. This would produce a correlation coefficient. Spearman's correlation measures the strength of an association between two variables measured on at least an ordinal scale.

Spearman's rank correlation was used in assessing the relationship between the different scores obtained from the questionnaire. Spearman's rank correlation was used in correlating the household food garden score and i) dietary diversity score; ii) household food insecurity access score and iii) food purchasing score. It was also used in correlating dietary diversity scores with food purchasing scores.

The Mann-Whitney U test was used to test for differences between scores for the two subgroups in this study. The relationship between categorical variables was analysed using Fisher exact tests. A p-value of $p < 0.05$ was used to represent statistical significance in hypothesis testing.

CHAPTER 6: MAIN STUDY RESULTS

6.1 POPULATION CHARACTERISTICS

6.1.1 Language

The total number of households drawn from each suburb was 38 from Logan Park, 37 from Msasa and 38 from Mbare. This gave a total sample size of 113 households. As indicated in Table 6.1, Shona was the more frequently used language of communication within households, 92 % (n = 104) of households reported using Shona.

Table 6.1: Language used for communication in households (n = 113)

Household Language	n	Percent
English	8	7.1 %
Shona	104	92.0 %
Ndebele	1	0.9 %
	113	100 %

6.1.2 Household size and age

The average size was 5 members per household. The mean number of both males and females per household was 3 (± 1.6 and 1.5 respectively), this result did not differentiate between adults and children. The mean age of the population was 30 years (± 12.5).

6.1.3 Suburb and land ownership

There was no weighting done on the sample population thus households were evenly distributed amongst the three suburbs included in the study i.e. 40 households per district. A significant number of households 61 % (n = 69), owned the property on which their household was located. The remaining households were leasing the property or the property was state owned as shown in Figure 6.1.

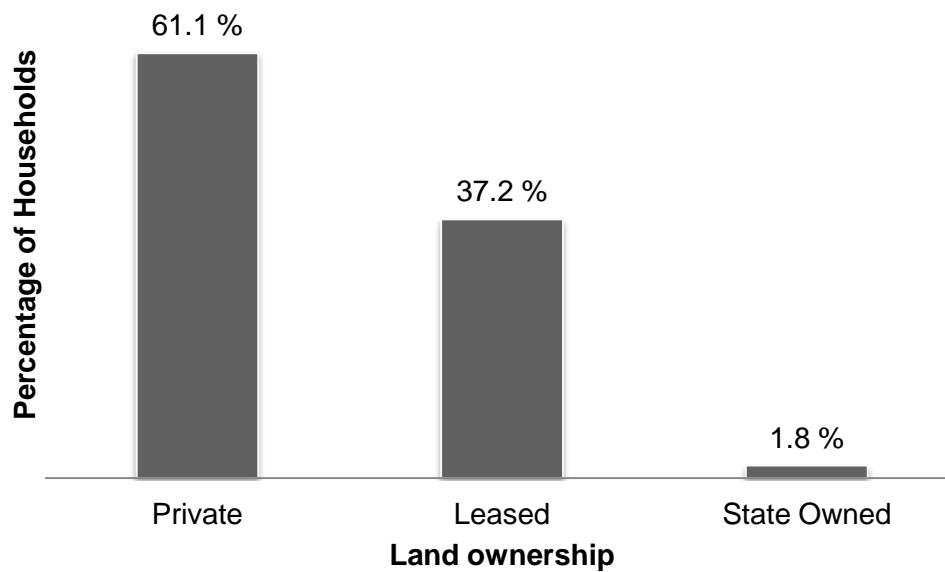


Figure 6.1: Percentage of households according to type of land ownership (n = 113)

Food gardens were more frequently found in households who owned their property in comparison to households who were leasing their property ($p < 0.001$) (Table 6.2). In households which had food gardens, 81.5 % of them were on land which was privately owned. For those household without food gardens, 66.7 % these household occupied leased property. The two households occupying state owned land had a food garden.

Table 6.2: Comparison of landownership and occurrence of food gardens (n = 113)

	Privately Owned	Leased	State Owned	Total
No Food Garden	33.3 % (n = 16)	66.7 % (n = 32)	0 %	100 % (n = 48)
Have a Food Garden	81.5 % (n = 53)	15.4 % (n = 10)	3.1 % (n = 2)	100 % (n = 65)
	69	42	2	113

6.2 DIETARY DIVERSITY

Findings from dietary diversity questionnaires showed that households generally reported having highly diverse diets; the mean dietary diversity score was: 11.9 (± 1.18). The mean dietary diversity score for household with food gardens was 12 (± 1.13), the mean dietary diversity score for households without food gardens was 11.8 (± 1.24). There was no significant difference between the dietary diversity scores for households with food gardens or those without food gardens ($U = 1353$, $p = 0.205$)

All households had consumed cereals and meat and meat products in the 14 days prior to the interview. Vegetable and fruit consumption was also high as over 90 % of household confirmed they had eaten dark green leafy vegetables, other vegetables and fruits in the 14 days prior to the interview as can be seen in Figure 6.2.

The least frequently consumed food was fish with only 57.5 % (n = 65) of participants reporting that their household has consumed fish in the 14 days prior to the interview. Around 80 % of the population of the population consumed tubers and roots, eggs and legumes, nuts and seeds.

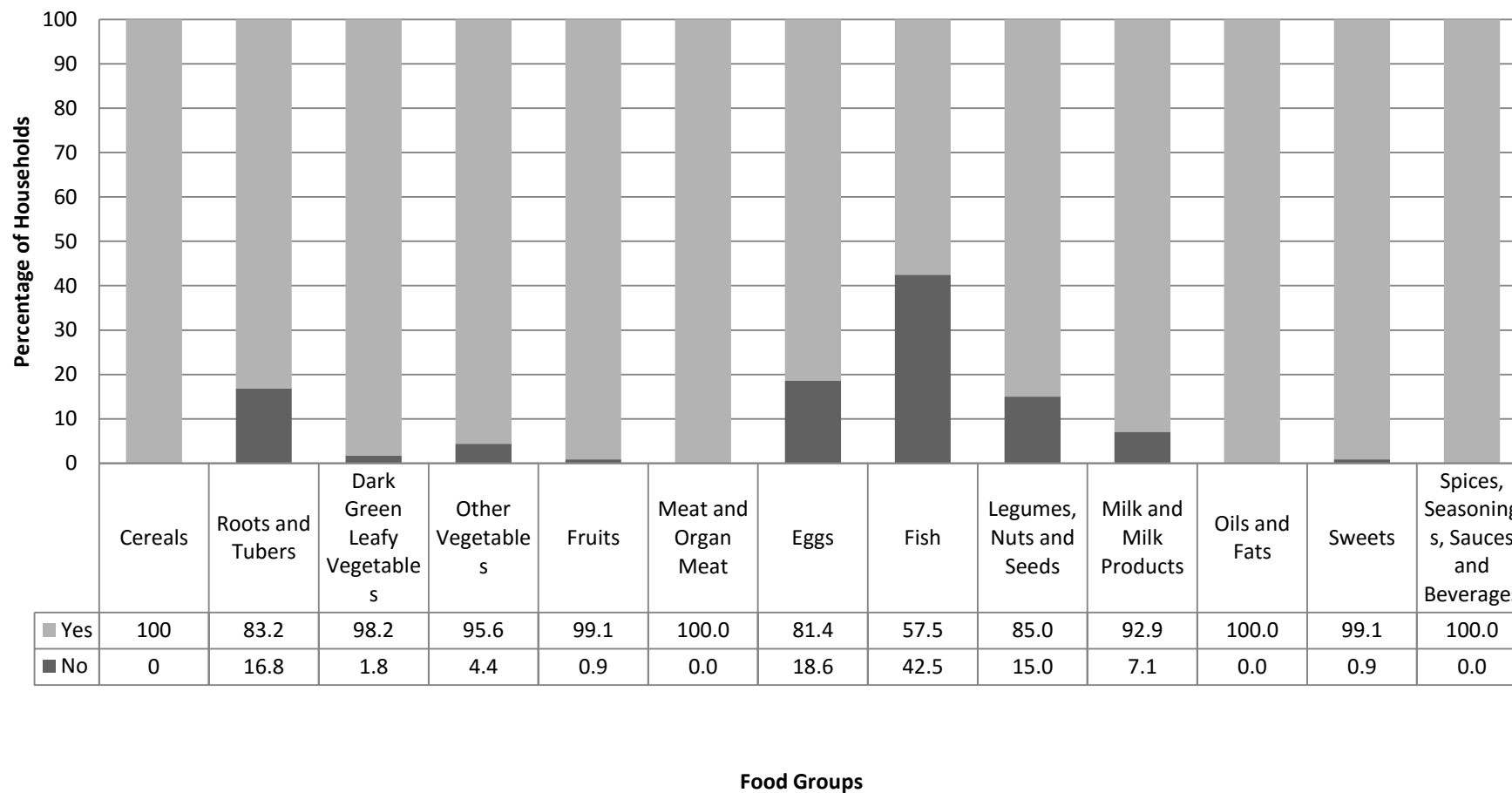


Figure 6.2: Percentage of households according to the thirteen groups in dietary diversity score questionnaire (n = 113)

6.3 HOUSEHOLDS AND FOOD GARDENS

6.3.1 Households with food gardens

The questionnaire showed that 57.5 % (n = 65) of households had a food garden. The most frequently reported reasons for having a food garden as shown in Figure 6.3 were to have easier access to vegetables (30.8 %; n = 20) and to save money which can then be diverted to other uses (30.8 %; n = 20). Some households reported both easier access to vegetables and savings generated from own food production as their reason for having a household food garden (13.9 %; n = 9). Other reasons for having food gardens were households wanted to feel independent of the need to purchase food, households felt food they grow is more nutritious than purchased foods, households used their food garden as a source of income, households had extra land and using this land as a garden seemed more effective than leaving it idle and lastly households had food gardens for recreational purposes.

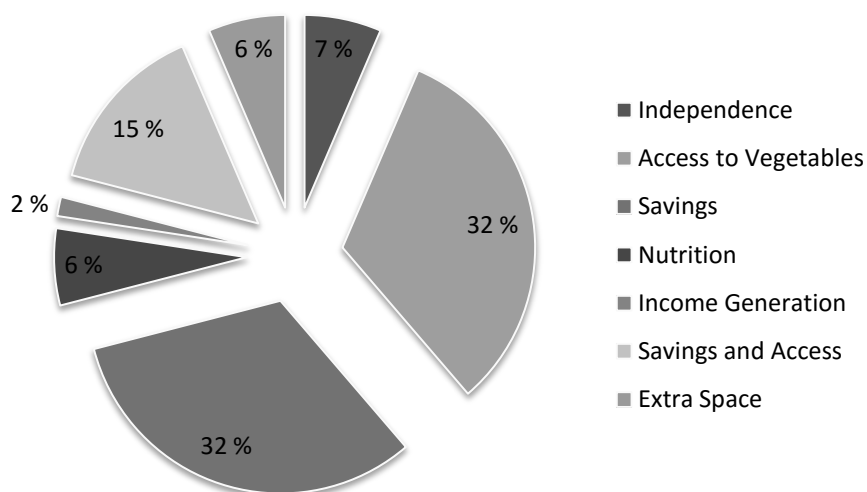


Figure 6.3: Percentage of households according to reason for having food gardens (n=65)

Sixty percent (n = 39) of households had only one type of crop (types of crops¹ included green leafy vegetables, other vegetables such as onions or tomatoes and in some cases fruits such as guavas or bananas) in their garden of which 95 % of them had only leafy green vegetables in their garden. This highlighted the bias by food garden-owning households towards growing green leafy vegetables. Only 12.3 % (n = 8) of household had four or five types of crops in their garden, (Table 6.3). No households reported having more than 5 types of crops in their garden. Households tended to have “on-plot” food gardens, while less than 14 % (n = 9) had both the “on-plot” and “off plot” gardens.

The majority of household food gardens were self-funded, with 89.2 % (n = 58) of households paying for the maintenance of their food gardens with their own money. Other sources of funding/support for household gardens were “family outside the household”, “friends” and “neighbours”. The most frequently reported purpose for crops grown in household gardens was own consumption (76.9 %; n = 50), and the remainder of household used their crops for both own consumption and selling for profit.

Of the 65 households who had food gardens only 12 households were rearing livestock. Seventy five percent (9/12) of the livestock rearing households had one type of livestock (types of livestock ranged from chickens, rabbits, quail, turkey) and only 25 % (3/12) had between two and three types of livestock.

It was observed that household livestock rearing was biased towards chicken rearing. 50 % (6/12) of the households were rearing livestock for their own consumption and for selling/income generation. Only 1 household was rearing livestock for the sole purpose of selling it for income. The remainder were rearing livestock for own household consumption.

¹ Types of crops/livestock meant the different categories of vegetables or livestock a household was growing or rearing e.g. rabbits and chickens or carrots and tomatoes

Table 6.3: Percentages of households according to number of different crops or livestock in their food gardens (n = 65).

Number of Crop and Livestock Types	Percentage of Households	
	Crops	Livestock
None		81.5 % (n = 53)
1	60.0 % (n = 39)	13.9 % (n = 9)
2-3	27.7 % (n = 18)	4.6 % (n = 3)
More than 3	12.3 % (n = 8)	0 0 %

6.3.2 Frequency of Use of Household Food Gardens

Households were asked how often they ate produce from their household food gardens (Table 6.4). Fifty eight percent (n = 38) reported eating crops from their garden more than 10 times in the 14 days prior to the interview. Only 4.6 % (n = 3) of households did not eat any crops from their garden within the 14 days prior to the interview.

Shown in Table 6.4 the frequency of livestock consumption by households which were rearing did not vary significantly. Sixteen percent (n = 2) of the households had not consumed any livestock from their garden, and 33.3 % (n = 4) consumed livestock from their garden between three and 10 times within the 14 days prior to the interview.

Table 6.4: Percentages of households with food gardens according to number of times they consumed crops or livestock from their garden

Frequency of Consumption	Crop Consumption (n = 65)	Livestock Consumption (n = 12)
Never	4.6 % (n = 3)	16.7 % (n = 2)
Between 1 and 3 times	15.4 % (n = 10)	25.0 % (n = 3)
Between 3 and 10 times	21.6 % (n = 14)	33.3 % (n = 4)
More than 10 times	58.5 % (n = 38)	25.0 % (n = 3)

6.3.3 Other activities

Households with food gardens rarely had any other activities that they carried out in their gardens other than growing crops or rearing livestock. Out of the 65 households with food gardens only 11 had another activity that they carried out in their garden namely composting.

6.3.4 Water and Household Food Gardens

A large number of households with food gardens (Figure 6.4) (63.1 %; n = 41) used tap water as the main water source for their garden. The remaining households used in descending order; well (18.5 %; n = 12), borehole (12.3 %; n = 8), waste and rain water (3.1 %; n = 2).

Cumulatively 91 % of households reported having tap water shortages. The most reported frequencies for tap water shortages were those who experienced shortages between 3 and 10 times 35.4 % (n = 23) and also more than 10 times in the previous 14 days 38.5 % (n = 25). A relatively large percentage (40 %; n = 65) of households had no alternative water source. Households made use of borehole water (13.9 %; n = 9) and well water (15.4 %; n = 10) as alternative sources of water. Only 4.6 % (n = 4) used rain water as an alternative source of water for their garden.

Households were questioned on their use of wastewater as a source of water for their garden, this proved to be an uncommon practice as 70.8 % (n = 46) of households never used it to water their garden, 12.3 % (n = 8) of households did however use it often to water their garden.

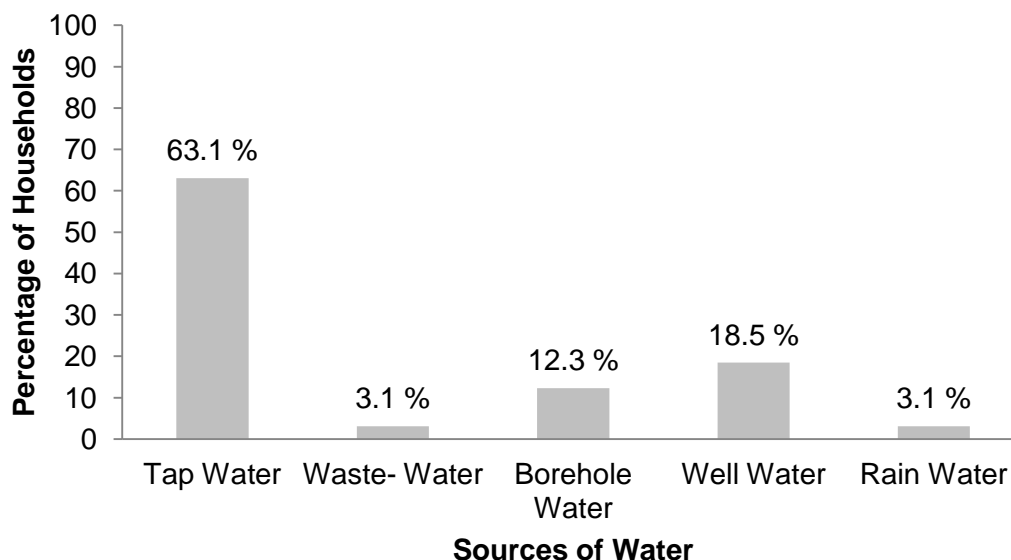


Figure 6.4: Percentage of households according to the main water supply for their food garden (n = 65).

6.3.5 Household without food gardens

Figure 6.5, shows that in the 48 households which did not have food gardens, land ownership (37.5 %; n = 18) was the more frequently reported reason for not having a food garden; they either did not own the land they were residing on or in other cases the rules imposed on their lease prohibited them from having a food garden.

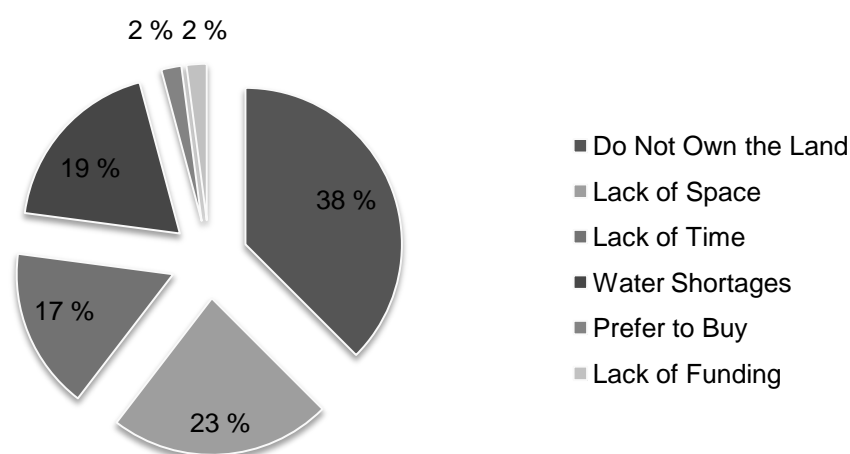


Figure 6.5: Percentage of households according to reason for not having a food garden (n = 48)

6.4 FOOD PURCHASING

All households tended to purchase meat, fruit and vegetables frequently as seen by a mean food purchase score for all households was 4.27 (\pm 1.53). There was no significant difference between the food purchase scores of households with food gardens and those without food gardens ($U = 1100$, $p = 0.006$).

Over 90 % of households practiced some level of purchasing of fruits and vegetables and/or meat and meats products in the 14 days prior to the interview (Table 6.5). The largest percentage of households (39.8 %; 45/113) purchased fruits and between three and 10 times in the 14 days prior to the interview. Only 7.1 % (8/113) had not purchased and fruits or vegetables in the 14 days before the interview. Fifty percent ($n = 57$) of households purchased meat and meat products more than three times in the previous 14 days and only 5.3 % ($n = 6$) of households did not buy any meat or meat products in the previous 14 days.

Table 6.5: Percentage of households according to the number of times they purchased fruits and vegetables and meat and meat products ($n = 113$).

Frequency of Purchase	Fruit and vegetables	Meat and meat products
Never	7.1 % ($n = 8$)	5.3 % ($n = 6$)
Between 1 and 3 times	18.6 % ($n = 21$)	15.0 % ($n = 17$)
Between 3 and 10 times	39.8 % ($n = 45$)	29.2 % ($n = 33$)
More than 10 times	34.5 % ($n = 39$)	50.4 % ($n = 57$)

Households were categorised according to their food purchase score; 49.6 % ($n = 56$) of households were classified as having high purchasing habits, 41.6 % ($n = 47$) as having medium purchasing habits and 8.9 % ($n = 10$) as having low purchasing habits.

6.5 OTHER MEANS OF OBTAINING FOOD

Households were questioned on whether they had other means of obtaining food other than purchasing or growing from their household food garden. As shown in Figure 6.6, 55.8 % (n = 63) of households did not have any other means of obtaining food. Other households obtained food via relatives in the rural areas (24.8 %; n = 28), from neighbours (16.8 %; n = 19) and a few had food gardens in the rural areas (2.65 %; n = 3).

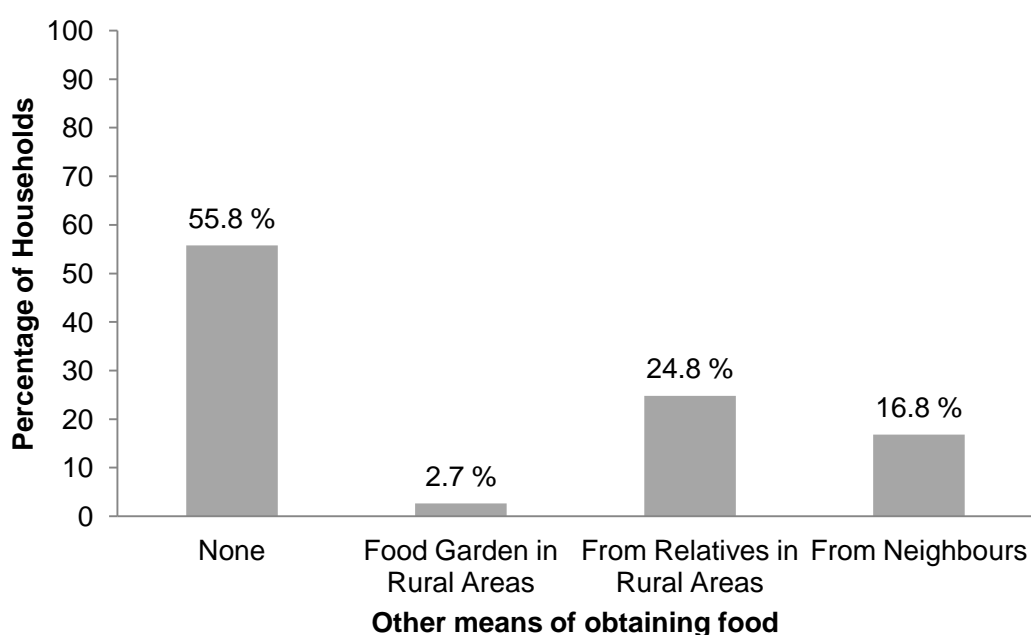


Figure 6.6: Percentage of households according to other means they have of obtaining food(n = 113).

6.6 HOUSEHOLD FOOD INSECURITY

6.6.1 Household Food Insecurity Related Conditions

The mean household food insecurity access scale score was 4 (\pm 4.9). There was no significant difference between the scores seen in households with food gardens and those without food gardens ($U = 1309$, $p = 0.141$).

Based on their responses, 58.4 % (66/113) reported that they were unable to eat the kind of foods they preferred because of a lack of resources (Figure 6.7). With each increasing level of severity of food security, the number of household experiencing that particular condition reduced. Only 10 % (n = 12) of households experienced the condition of not having any food at all in the household from a lack of resources and an even smaller percentage, namely 4.4 % (n = 5) experienced the condition of going the whole day and night without eating anything because there was not enough food.

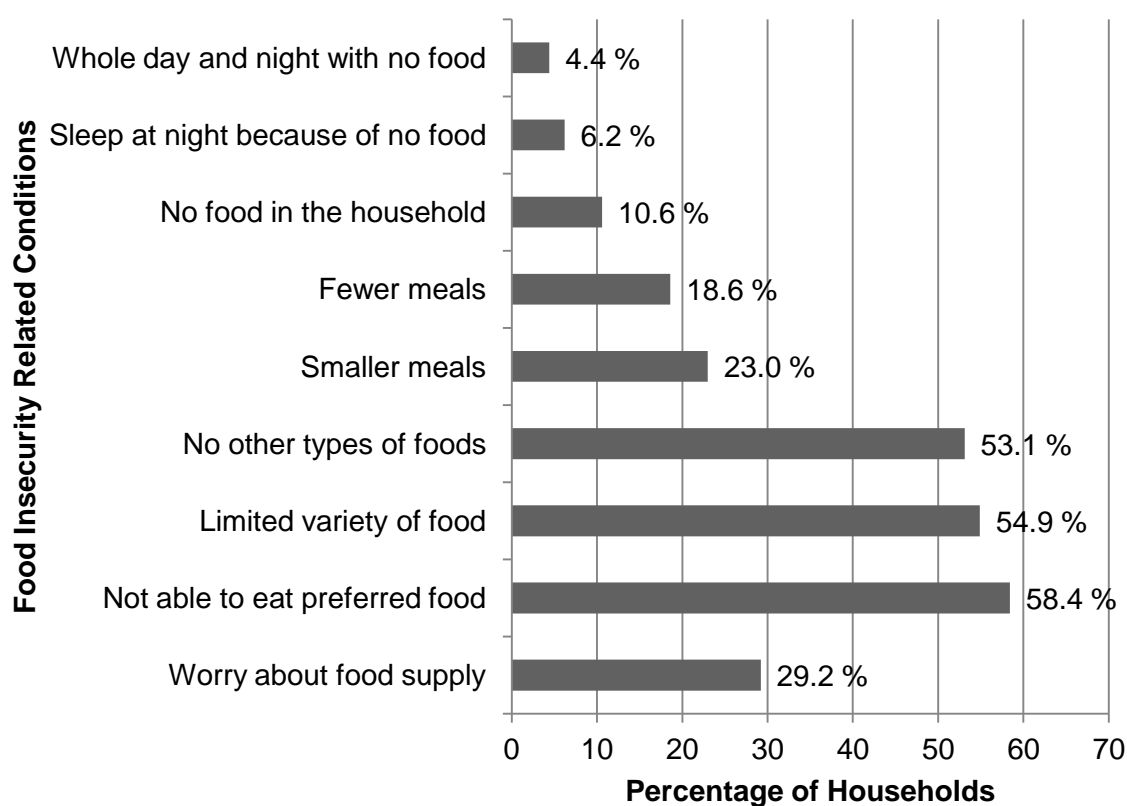


Figure 6.7: Percentage of households according to food insecurity related conditions(n = 113).

6.6.2 Household Food Insecurity Related Domains

Households in the study experienced different domains of food insecurity namely anxiety of food supply, insufficient quality and insufficient quantity; 29.2 % (n = 33) of them experienced anxiety and uncertainty about household food supply, 69.9 % (n = 79) experienced insufficient quality in the diet in terms of variety and preferences of the type of food they consumed and lastly 25.7 % (n = 29) experienced insufficient quantity in their diet.

6.6.3 Household Food Insecurity Related Categories

Based on their household food insecurity access scores, households were placed into categories classifying their food security status from food secure to severely food insecure as displayed in Figure 6.8. Cumulatively 70.8 % (n = 100) of households were food insecure though varying in severity with of these 11.5 % (n = 13) were severely food insecure.

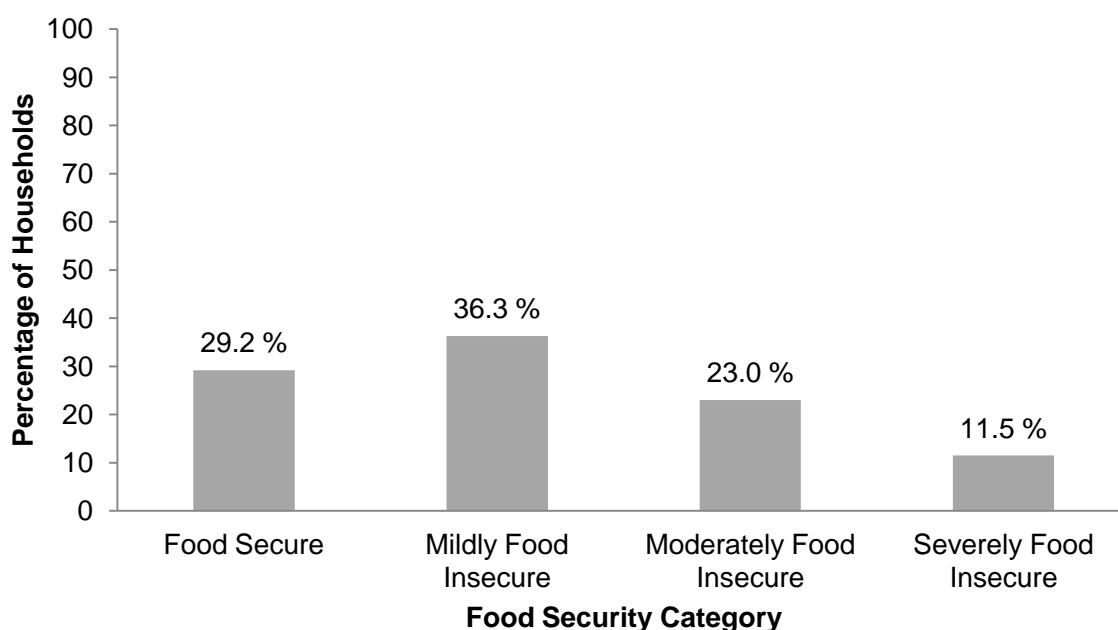


Figure 6.8: Percentage of households according to food security category(n = 113)

6.7 RELATIONSHIP BETWEEN HOUSEHOLD FOOD GARDENS AND HOUSEHOLD FOOD SECURITY AND DIETARY DIVERSITY

To examine the relationship between food gardens and food security, the household food garden scores for households with food gardens were correlated with their respective household food insecurity access scores. There was a very weak negative non-significant association between household food garden scores and household food insecurity scores ($\rho = -0.222$, $n = 65$, $p = 0.076$). This suggested that as household food garden scores increased, the household food insecurity scores for households would decrease.

In household with food gardens, spearman's correlation found a very weak, positive and non-significant relationship between household food garden scores and dietary diversity scores ($\rho = 0.152$, $n = 65$, $p = 0.228$). As household food garden scores increased, dietary diversity scores increased minimally.

6.8 RELATIONSHIP BETWEEN HOUSEHOLD DIETARY DIVERSITY AND FOOD INSECURITY

A very weak negative and non-significant correlation exists between dietary diversity scores and household food insecurity access scores for all households ($\rho = -0.137$, $n = 113$, $p = 0.149$). This suggested that as the dietary diversity scores of a household increased, their food insecurity scores decreased.

6.9 RELATIONSHIP BETWEEN LEVEL OF FOOD PURCHASES AND HOUSEHOLD FOOD SECURITY, DIETARY DIVERSITY AND FOOD GARDEN SCORES

A very weak negative correlation was observed between food purchase scores and household food insecurity scores ($\rho = -0.163$, $n = 113$, $p = 0.085$) suggesting that if households purchased food more frequently, there a marginal increase decrease in their food insecurity scores.

A very weak positive and non-significant relationship existed between food purchases scores and their dietary diversity scores ($\rho = 0.1186$, $n = 113$, $p = 0.2110$). As the food purchase scores of household increased, their dietary diversity scores also increased. In households with food gardens, no significant association between household food garden scores and food purchase scores ($\rho = 0.073$, $n = 65$, $p = 0.563$).

CHAPTER 7: DISCUSSION

7.1 INTRODUCTION

Questions are being raised by academics and development organisations on whether developing countries and their cities in Asia, Africa and Latin America will be able to cope with the challenge of employing and feeding a rapidly growing urban population shadowed by increasing city boundaries and a reduction in land available for food production.¹²⁰ In all these debates, urban agriculture (UA) is increasingly celebrated as playing a significant role in promoting food security, income opportunities and economic growth in developing countries. Urban agriculture is increasingly being posed as a key contributor to improving food security and reducing poverty in developing countries.⁴⁴ Households in Harare are also involved in urban agriculture under the assumption of improving food security.

Urban agriculture is gaining support from decision makers and academics as a means of ensuring food supply informally in urban areas however there is limited evidence to support these claims.^{17,67,73} This chapter will discuss findings from this study against the backdrop of literature on urban agriculture and the right to food.

7.2 POPULATION CHARACTERISTICS

7.2.1 Number of households involved in urban agriculture

Agriculture is inextricably linked to the growth of cities, as the establishment of permanent human settlements was typically associated with permanent nearby agricultural activities.¹²⁰ The production of food in and around cities continues to be a common practice.

Urban agriculture occupies more than 21,000 ha in Cagayan de Oro City (Philippines), in Havana (Cuba), about 12 percent of urban land is dedicated to agriculture and more than 11,000 ha are used for agricultural production in Jakarta (Indonesia).^{120,121,122} These numbers are however not without criticism, some

scholars are concerned that the actual scale of urban agriculture is difficult to assess because the limited evidence available is often qualitative and sometimes anecdotal.¹²³ This study revealed that slightly more than half of the households which participated in the study had food gardens. This number is similar to those obtained in an African Food Security Urban Network (AFSUN) study which showed 60 percent of the households they sampled in Harare were involved in urban household food production.⁴²

Quantifying urban agriculture can be complicated as witnessed in this study, where only the numbers of households involved in urban agriculture were quantified after attempts to quantify the size of household food gardens failed during the pre-test study. This was because the majority of households had never measured the size of their food gardens. Urban agriculture is indeed difficult to quantify and this may be in part due to the multi-faceted nature of urban agriculture. There are many aspects which can be quantified such as the number of households involved, the size of their gardens, the amount of produce they grow and all these are influenced by different factors. Though it is difficult to quantify, the fact remains that for some households, it remains an important activity.⁴⁹

7.3 HOUSEHOLD FOOD GARDENS AND HOUSEHOLD FOOD SECURITY

7.3.1 Contribution of household food gardens to food security

Urban agriculture is strongly viewed as a part of the solution to urban food insecurity, particularly in developing countries. This study however did not find a significant relationship between household food security and having a food garden. This study shared findings with Hilbruner and Egan's multi-variant study conducted in the small city of Dinajpur, Bangladesh where practicing urban agriculture and the odds of being food secure proved insignificant.¹²⁴ Even closer to home is the study by Frayne et.al. which also showed insignificant associations between urban agriculture and food security in Southern African cities, including Harare.¹²⁵

These findings are however in conflict with the usual trend in most studies. A systematic review by Warren and co-workers on studies examining the relationship between household food security and dietary diversity revealed that, in the majority of studies, there was a tendency towards a positive and significant association between urban agriculture and food security.¹²⁶ These conflicting findings show the need to develop a standardized methodology to investigating urban agriculture and food security. While this study attempted to quantify the relationship between urban agriculture and food security, methodological shortcomings limited the power of the comparison with other studies.

7.3.2 Motivation behind household food gardens

Klemusu, Maxwell and Nugent provide evidence that urban and peri-urban agriculture is undertaken by farmers for three reasons, namely cash (mainly from selling vegetable and livestock), food subsistence (savings on food expenditure) and as a survival or risk buffering strategy.¹²⁰ Relevant to this study are food subsistence and risk buffering. The motivations behind food gardens in this study included access to vegetables and savings in household food expenditure. Findings suggest that the majority of households in this study who are involved in urban agriculture do so for subsistence and/or use it as a buffer against shocks to their food supply. This is not unusual as other studies show that the majority of the produce grown in urban areas in the developing countries goes to subsistence or is used as a survival strategy.⁶⁹

When we take into consideration the motivation behind food gardening and the insignificant association between food gardening and food security shown in this study, the significance of food gardening may not lie within the quantifiable aspects assessed by this study but in the qualitative aspects (such as the social impact of food gardening) which were not explored here. Olivier puts forth the idea that the food security benefits of urban agriculture may extend beyond satisfying temporary food needs, they may lie in qualitative aspects, such as attitudes towards healthy eating and other social benefits.¹²⁷

Urban agriculture is said to promote a sense of community and self-determination.¹²⁸ This may explain why it continues to be part of urban society globally. Food gardening may be providing households in this study with a sense of control or autonomy in terms of their access to food. This subjective aspect cannot be ignored as it is in line with the empowerment aspect of a human rights based approach. .

7.3.3 The state of food insecurity and urban agriculture in Harare

In this study we found that nearly three quarters of all households were food insecure, with one tenth of households being severely food insecure. Such high levels of food insecurity are not a new occurrence in Harare. In Tawodzera's 2009 study on Rural-Urban Transfers and Household Food Security in Harare's crisis context, nearly all of the 200 sampled households were food insecure with varying levels of severity.¹²⁹ This is despite more than half of the households in Tawodzera's study having food gardens. Urban agriculture may be preventing households which are already food insecure or at risk of being food insecure from slipping further into food insecurity and ill-health. It does however not solve the problem of generalized food insecurity.^{120, 42} The weak association between food gardening and food security despite a large number of households being involved in the activity provides a different perspective to the idea of urban agriculture as a risk buffering strategy; Food gardening may not be contributing significantly to food security, but households involved in it may perceive it as having a positive effect on their food security.

7.3.4 The way forward

From a right to food perspective, the methodology used in this study did not provide sufficient evidence to support urban agriculture as a strategy for realising the right to food, however the City's residents are still involved in food gardening. This may be for reasons that were not explored in detail in this study. These residents are still claiming their right to be able to feed themselves in dignity, therefore Harare's city officials should respect this practice and do away with by-laws which allow for slashing of crops at the discretion of city officials. This action would be in line with the dimensions of the human rights based approach, which emphasise the promotion of

tolerance, inclusion and non-discrimination. By showing tolerance towards the practice of urban agriculture, City officials are fulfilling the “respect” obligation of the right to food.

It is understandable why Harare’s City officials have not implemented any strategies to support urban agriculture, when findings such as the ones in this study suggest that urban agriculture has no significant effect of food security; and other findings suggest that the benefits of urban agriculture are made evident primarily in situations where institutional support is provided.¹²⁶ In light of conflicting evidence, institutional support should rather be directed at activities which benefit all citizens such as increasing awareness of all Harare residents about their right to food and the different ways in which they can claim this right and allowing them to take part in the decision making processes surrounding their right to food.¹²⁵

7.4 HOUSEHOLD FOODS GARDEN AND DIETARY DIVERSITY

7.4.1 Contribution of household food gardens to dietary diversity

This study showed a positive but non-significant association between household food gardens and dietary diversity. In contrast, empirical evidence provided by Zezza and Tasciotti in a review of studies on urban agriculture and dietary diversity shows that engagement in farming in urban areas is positively and significantly associated with greater dietary diversity.⁴⁹

Households in this study tended to grow one type of crop (two thirds of food garden owning households), usually indigenous cruciferous vegetables. This is a trend also observed in other parts of Zimbabwe, particularly in the city of Bulawayo, where Moyo also noted the partiality to growing vegetable of the brassica olaracea family.¹³⁰ If households are biased to growing one crop then surely they would experience monotony in terms of variety of vegetables from their garden, therefore limiting the contribution food gardens would have towards their dietary diversity.

That said, the association between household food gardens and improved dietary diversity in this study remains insignificant, thus any interventions aimed at improving

dietary diversity should be directed to all households regardless of whether or not they have a garden. In the long term, dietary diversification ensures a healthy diet that contains a balanced and adequate combination of macronutrients (carbohydrates, fats, and protein), essential micronutrients and other food-based substances such as dietary fiber.¹³¹ The City of Harare or other relevant entities can facilitate the strengthening of dietary diversity by carrying out programmes aimed at informing all households about the importance and maintenance of dietary diversity through the main source of food access namely food procurement.

7.5 LIMITING FACTORS OF URBAN AGRICULTURE

The findings on some of the factors that seemed to affect food gardening in this study will be discussed in brief.

7.5.1 Land tenure

Nearly two thirds of households interviewed owned the land on which they were residing. The remaining portion of households was occupying leased land. Throughout urban Africa, millions of low-income residents have no legal title to the homes they live in, let alone to the plots many of them use to grow fruit and vegetables.¹³³

There were more food gardens in those households who owned their land in comparison to households who were leasing. Crush et al. had similar findings in a study done on the place of urban agriculture in Southern African cities, households that owned their property were more likely to engage in urban food production.⁴² In households which did not have food gardens in this study, the most frequently reported reasons for not having food gardens were related to land ownership and size. Either households did not own the land on which they resided or/and they did not have enough space for a food garden.

Households which had food gardens in this study were biased towards “on-plot” food gardens, only fourteen percent of households also had “off-plot” gardens. This trend could be explained by a number of reasons, namely: The current laws governing the practice of urban agriculture are accommodating of “on-plot” crop production, restrictive on any livestock rearing, while “off-plot” gardening can be disallowed at the discretion of city officials. This means at any time, land being used for “off-plot” gardens is under threat from competing use or the influence of city officials who do not agree with urban agriculture. With such conditions the landless urban farmers are discouraged from actively pursuing or investing in it.

The right to food requires states to provide an enabling environment in which people can use their full potential to produce or procure adequate food for themselves and their families.³⁰ From a human rights perspective, the issue of urban agriculture becomes one of equality and non-discrimination. In Harare’s case, the by-laws are accommodative of subsistence urban agriculture activities which are usually practiced on “on-plot” food gardens, usually on privately owned land. They are however prohibitive to and exclude the landless, who are often the urban poor from participating in it.

7.5.2 Financial resources

Financial resources may also be limiting the intensity with which households can practice urban agriculture; this study revealed that household food gardens were often self-funded. A study carried out in Accra (Ghana) on options for financing urban agriculture, factors limiting credit access are lack of collateral, lack of ownership of assets, poor financial management, the risky nature of farming and the inability of clients to prepare viable project proposals.¹³⁴ Considering that nine out of ten of food gardening households had “on-plot” food gardens and four out of five of these grew crops solely for household consumption, it would be impractical for financial institutions to offer credit for urban agriculture to households who are growing food for what appears to be subsistence use. Until urban agriculture is proven to be an income generating practice, investing financially into it would be ill-advised.

7.5.3 Water resources

Water is an important component to the right to food, especially for food production thus it should be made accessible to those desiring to grow their own food. Water supply challenges were an issue in the study population, the majority of households with food gardens experienced tap water shortages of varying degrees which would affect their crop or livestock production. In some of the households without food gardens, water shortages were reported as being the reason they could not take part in urban agriculture. Of the households involved in urban agriculture in this study, almost half did not have an alternative water source if they experienced tap water shortages. The failure by the City of Harare to provide adequate water for its residents can be considered a violation of not only the right to water but the right to food, the right to health and the right to development. However, the solution is not simply making water available.

In urban areas, households use potable water in their gardens, which is costly for both the city and the end users. There are two key points when considering the use of water. First, not all applications require the same quality water, and second, not all “used” water requires the same level of treatment before it can be reused.¹³⁵ Wastewater was rarely used in this study for watering food gardens, only a tenth of households with food gardens used wastewater as a source of water for their gardens. The current water management system in Harare is already experiencing challenges, therefore city officials need to consider the idea of reusing water to improve water supply. According to Nalasco, water management practices such as rainwater harvesting, grey water^m-to-landscape diversion, sheet mulchingⁿ, swales^o and basins^p and controlled drip irrigation systems^q are ecologically sound and have proven to conserve considerable amounts of water.¹³⁶

^mGreywater is all wastewater generated in households or office buildings or from streams without fecal contamination. Source: <https://en.wikipedia.org/wiki/Greywater>

ⁿ Sheet mulching: is an agricultural no-dig gardening technique that attempts to mimic natural forests' processes. Source: https://en.wikipedia.org/wiki/Sheet_mulching

^o Swale is a low tract of land, especially one that is moist or marshy. Source: https://en.wikipedia.org/wiki/Swale_%28landform%29

^p Basin is an extent or an area of land where surface water from rain, melting snow, or ice converges to a single point at a lower elevation. Source: https://en.wikipedia.org/wiki/Drainage_basin

In operationalizing the right to food, states are allowed to use ways which they deem sustainable to improve access to water provided the quality of drinking water is preserved.¹² This leaves provision for the use of harvested rain-water, grey water and wastewater in agriculture. And as such, the Government of Zimbabwe including the City of Harare should take advantage of this allowance by considering methods of water saving and recycling in their efforts to improve access to water in a country plagued with water shortages.

7.6 HOW ARE HOUSEHOLDS GAINING ACCESS TO FOOD?

7.6.1 Economic access to food

All households were purchasing some food from the market (formal and informal). Nearly half of households in the study did not have food gardens and relied mostly on purchasing food from the market for access to food. Both these findings can be explained by three factors; the first being that a large number of households did not have food gardens and relied on food purchasing; secondly of the households with food gardens a small number reared livestock implying that the remaining households also relied on purchasing to access meat and other animal source foods, and lastly there is a limited number of livestock and crops that households could rear within the confines of an urban area therefore some crops particularly cereals and meat and meat products still needed to be obtained by purchasing.

Food purchasing is considered economic accessibility to food, it will remain the main means of obtaining food in urban areas and thus people should have purchasing power sufficient to procure food from the market.¹³⁷ The economic rebound experienced by Zimbabwe has slowed to around 3 % in 2014. As the economy has continued to weaken, many businesses have closed and employees have been laid off. The manufacturing sector saw a drop in activity between 2011 and 2014: at least 4 610 companies closed down, resulting in a loss of 55 443 jobs.¹³⁸ Considering that

^qis an irrigation method that saves water and fertilizer by allowing water to drip slowly to the roots of plants, either onto the soil surface or directly onto the root zone, through a network of valves, pipes, tubing, and emitters. Source: https://en.wikipedia.org/wiki/Drip_irrigation

all households in this study relied on some level of purchasing to ensure access to food, the current prevailing economic environment may impede sufficient access to food.

Given that a large percentage of the sample population experienced food insecurity in a prevailing environment with a weak economy, the fulfilment of the right to food by the Government of Zimbabwe may shift from one of facilitation to become one of provision of food to those vulnerable groups whose numbers may increase should the economy remain weakened.

7.7 OTHER FINDINGS

7.7.1 An unusual relationship between food security and dietary diversity

There is however a quandary in the findings. A large number of households were food insecure. This varied between mild, moderate and severely food insecure with a large percentage falling between mild and moderately food insecure. However, households still reported highly diverse diets. Literature shows that households with low levels of dietary diversity are likely to have low levels of consumption per person and low caloric availability. Increases in dietary diversity are associated with increases in consumption caloric availability, and calories from staples and non-staples.¹³⁹

These findings may be as a result of alterations in recall periods for the different tools used in the study. A lengthy recall period for the household dietary diversity question may have resulted in higher dietary diversity scores as household would have accessed a wider variety of food over 14 days in comparison to the 24 hour recall period advised for use in the tool.

7.8 CONCLUDING REMARKS

Conceptually, urban agriculture in the sampled areas of Harare may seem like a solution addressing all the components encompassing food security and dietary

diversity however the methods used in this study did not show any significant association with food security or dietary diversity. Harare residents are however allowed to claim their right to food by whatever means they deem fit and if urban food gardens provide them with such an opportunity then efforts should be made not to go against their existence. The contributions of urban agriculture may be noticeable to those households who practice it albeit not necessarily in the popular sense of quantifiable and statistically significant contributions.¹²⁷

Poulsen et al. are of the opinion that a lack of supportive policies may be constraining the potential of urban agriculture, making it appear incapable of eliminating the pressure urban households face in obtaining food.¹⁴⁰ However considering the conflicting evidence regarding urban agriculture and the numerous methodologies used is assessing its benefits including the methods used in this study, the City of Harare does not have a strong evidence base to support urban agriculture. Efforts should be made to create a more standardized way of measuring urban agriculture and its effects on food security and dietary diversity which combines both quantitative and qualitative aspects.

CHAPTER 8: CONCLUSION

In this study household food gardens were not significantly associated with food security. Nevertheless, some the findings of this study did suggest that in the sampled population of Harare, which included a substantial number of severely food insecure households, household food gardens may be serving as a means to provide minimal food subsistence and may hold a more subjective significance such as giving household a sense of self-determination.

The benefits of urban agriculture require further research using standardised methods which go beyond simple quantification and correlation. That said, Harare's residents still use it, claiming their right to feed themselves in dignity. Therefore urban agriculture should be respected as a means of obtaining food and the City's socially selective by-laws which are a violation of the right to food which must be revised.

Household food gardens were not shown to correlate with household dietary diversity despite other studies showing that household food gardens have been associated with improved dietary diversity. If it is true as proposed by Zezza and Tasciotti that urban and peri-urban agriculture contributes to improved health among the urban population by providing highly nutritious and fresh foods, then in terms of dietary diversity they present an opportunity which requires further exploration.⁴⁹ In the meantime efforts to improve dietary diversity in Harare should be take on a facilitation role focused on food that is accessed through procurement.

Webb and Kasumba find that UA practised informally in low-income areas makes an insignificant contribution to food security.¹⁴¹ This is especially the case when key assets such as knowledge, land and financial resources are limited.^{142, 143} For developing countries such as Zimbabwe who are resource constrained, active support of the urban agriculture including making land available and financial support need to be undertaken with caution while more concise evidence is made available on the contributions of urban agriculture.

8.1 OVERALL CONCLUSION:

There was no association between household food gardens and household food security or dietary diversity. On the basis of these findings, urban agriculture cannot be considered a solution to food insecurity or a method of addressing the right to adequate food in the southern districts of Harare, Zimbabwe. Urban agriculture may have a considerable role to play in combating household food insecurity in Harare, Zimbabwe but this may not lie primarily in its potential economic or food supply benefits but rather in its social benefits.

From a human rights perspective, urban agriculture can be viewed as an entitlement in that people in Harare are using it to for subsistence and possibly as a risk-buffering strategy and these people are entitled to claim their right to feed themselves in dignity. Looking at the motivations behind food gardens, they provide households with a sense of empowerment. Based on the observations urban agriculture cannot be promoted as a strategy to realise the right to adequate food in Harare but it can be respected as a mean of obtaining food.

In addition, a regulatory framework for urban agriculture needs to be formulated which shifts from prohibitive by-laws to more tolerant stance. In designing these strategies, legal frameworks and policies, all actors, including governments, aid agencies and local officials, have a responsibility to ensure full participation by the people they seek to benefit.¹⁰ Harare residents should be able to claim their right to food through practicing food gardening. When the authorities act in contravention of the regulations, residents should hold them accountable. Under these circumstances, the City of Harare can be viewed as realising the right to food for its inhabitants

8.2 RECOMMENDATIONS

The following can be considered when viewing the use of urban agriculture as a strategy to achieving the right to food in Harare, Zimbabwe:

- Urban agriculture does not have to be prohibited by the City of Harare. The residents of Harare have traditionally been involved in this practice. By-laws restricting the practice should be abolished by Harare's city council. In their place, practical recommendations and regulations covering the manner in which urban agriculture can be practiced and where it can be practiced. Safety and conservation measures must be designed to exercise some level of control on the practice.

8.3 LIMITATIONS OF THE STUDY

There are some limitations observed in the design and analysis of this study, which may have affected the quality of data and findings.

- There were a number of flaws in the study design namely;
 - The sample size was not weighted/proportionate to the density of the population in each suburb.
 - The tools used in the study were manipulated by changing the recall periods usually advised for these tools. This may also account for the high levels of dietary diversity seen in findings and the discrepancy between high dietary diversity scores and high levels of food insecurity.
 - Due to resource constraints only purposely selected areas of Harare were sampled and findings could not be generalized to all the areas of Harare.
 - The questionnaire used in the study combined different tools. The section capturing information on household food gardens were investigator designed thus only face and content validity could be obtained for the questionnaire.
 - The information we received from the city's Surveyor office was out of date and did not accurately represent the number of households in each suburb; there were different numbers of households on the ground than were shown on paper and this distorted the random selection of

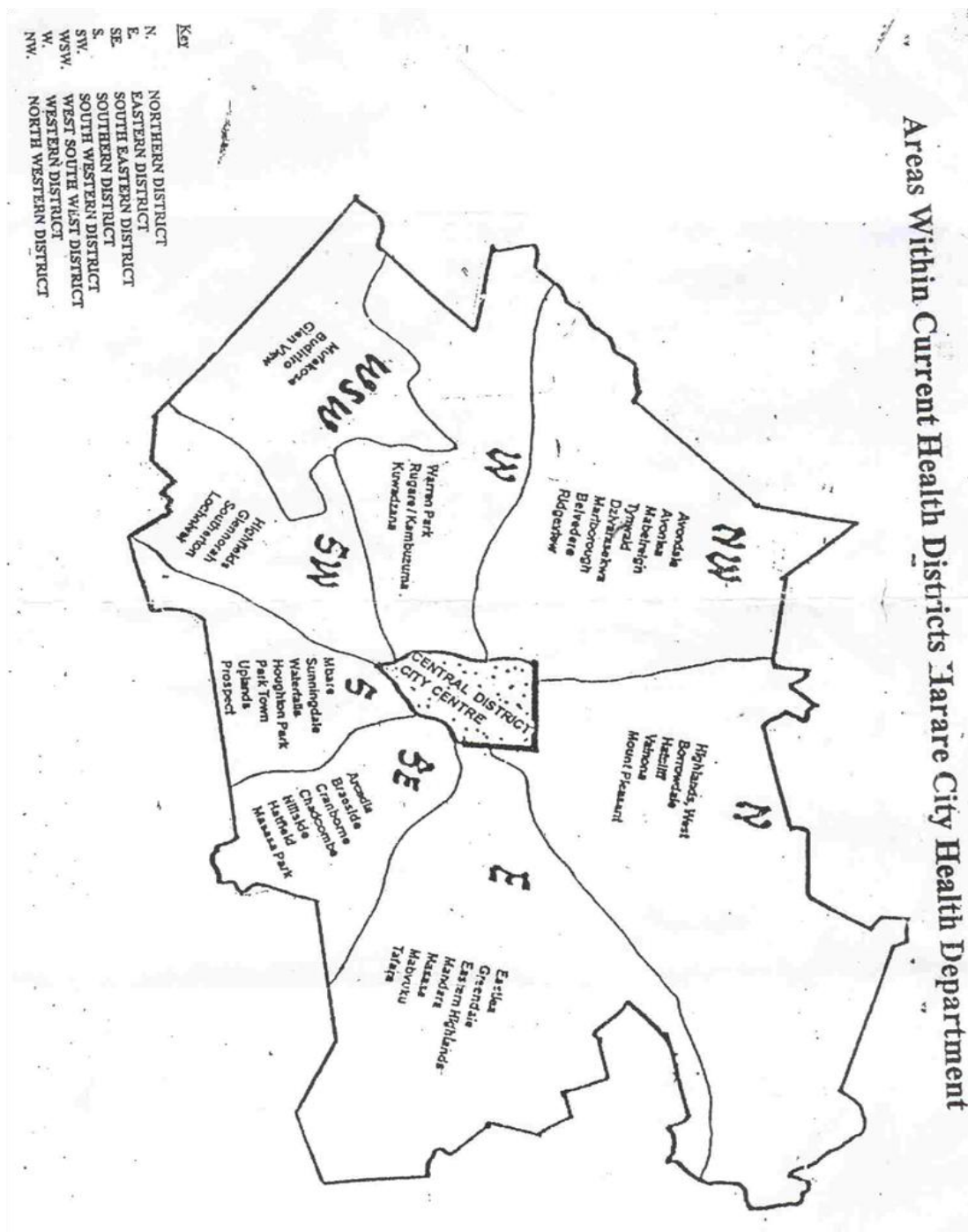
households. In hindsight, a physical household listing and mapping exercise would have helped avert this issue.

- The study did not collect information on incomes of households, market access and caloric intake, nor nutritional status, which limited the scope of findings in terms of their physiological and monetary benefits.
- The study was cross-sectional; it did not take into consideration the issue of seasonality in urban agriculture.

8.4 RECOMMENDATIONS FOR FURTHER STUDIES

- This study was limited to the southern area of Harare. A larger study area, using proportional sampling, would be beneficial as findings could then be generalised to Harare as a whole. This study focused only on the practices of households and therefore the position of Harare City Officials was not obtained. A more holistic approach would be to interview these officials and get their perspective.
- Further studies should be conducted using standardised and validated tools which can be applied to different settings to ensure that findings can be comparable between the studies. These studies should collect both quantitative and qualitative data to provide insight on the extent and contribution of food gardens and the knowledge households possess regarding food gardens and the attitudes toward food gardens.

ADDENDUM A: MAP OF HARARE'S HEALTH DISTRICTS¹⁴⁴



ADDENDUM B: STUDY QUESTIONNAIRE

Household Garden and Food
Security Questionnaire

Participant Code

General Information for the Investigator

This document is a questionnaire created for the purpose of capturing demographic, dietary diversity, garden use (excluding flower gardens) and household food security data. It is divided into four sections which must all be answered according to the instructions given at the beginning of each section. It is to be administered by the interviewer who will record the respondent's coded answer in the code column unless where no such code is supplied, in such a case the interviewer will record the respondent's verbal answer.

Note:

- Before the interviewer can administer this questionnaire, ensure that the respondent is aware of the purpose of this study and has granted consent to participate by signing the consent form.
- Under no circumstances in this document are you expected to reveal the respondent's identity or any information which may lead to this effect. The respondent will be assigned the random number indicated on the front page of this document.

Mashoko pamusoro petsvakiridzo ino anoverangwa nemutsvaki.

Mibvunzo iri mutsvakiridzo ino iripo pakuunganidza umbowo pamusoro pevanhu, kusiyana siyana kwezvanodya, mashandisirwo emagadheni avo kukudza zvirimwa (pasina kusanganisira maruva) uye kuwana zvekudya kwedzimba. Tsvakiridzo ino iri muzvikamu zvina uye chimwe nachimwe chinofanirwa kupindurwa maererano nenzira dzakatarwa pakutanga kwechikamu chimwe nachimwe. Munhu achabvunza mibvunzo iyi achanyora pasi mhinduro dzinenge dzapihwa muchinzimbo chakagadzirirwa izvozvo. .

Rangarira:

- Mutsvaki asati aita tsvakiridzo ino, anofanirwa kuona kuti waari kubvunza ari kuziva zviri kuitirwa tsvakiridzo ino uye kuti abvuma kupindura mibvunzo iyi nekusaina fomu rekubvuma kuita izvi.
- Nyangwe zvidini, hazvibvumirwi kuburitsa pachena kuti apindura mibvunzo ndiani kana kuburitsa pachena umbowo hungakonzere kuti munhu uyu azivikanwe. Achapindura mibvunzo anopihwa nhamba yese yese inenge iri papeji yekutanga.

Data Collection Information:

Name of Interviewer/ Zita remutsvaki	
Date of Interview/ Zuva retsvakiridzo	
Time taken to complete interview/Nguva Yatirwa kuita tsvakiridzo	
Language preferred by participant/Chirudzi chasarudza nemunhu adavira mibvunzo	

SECTION A:

Demographic Information:

This section gathers general information about the characteristics of the household.

	Question	Answer	Code
A1	What is the main language used in the household?	1= English 2= Shona 3= Ndebele 4= _____ Other <i>(specify)</i>	
A2	What type of suburb is the household located?	1= Low 2= Medium 3= High	
A3	Type of land ownership?	1= Privately owned 2= Leased 3= State owned 4= _____ Other <i>(specify)</i>	
A4	Number of people (adults and children) in household? <i>(People who live in that house only and live there permanently, exclude visitors)</i>	No of Females = No of Males =	
A5	What are the ages of the different Male household members? <i>(Write down the age in years of each male household member in the spaces given)</i>		
A6	What are the ages of the different Female household members? <i>(Write down the age in years of each female household member in the spaces given)</i>		

CHIKAMU CHEKUTANGA:

Pamusoro pemupinduri:

Chikamu ichi chinounganidza umbowo pamusoro pamariro akaita mhuri yenyu uye pamunogara

	Question	Answer	Code
A1	Ndechipi chirudzi chinonyayo shandiswa mumba	1= Chirungu 2= Shona 3= Ndebele 4= Other (<i>specify</i>) _____	
A2	Vanogara musuburb rakaita sei?	1 = Kwepamusoro 2 = Kwepakati nepakati 3 = Murukisheni	
A3	Ndiani muridzi wenzvimbo yamunogara?	1= Nderenyu 2= Ndepewamwe 3= Hurumende 4= Other (<i>specify</i>) _____	
A4	Vangani vanhu (vakuru zvese nevana) mumba? (<i>Vagari vemuimba iyoyo yega, vanogara ipapo nguva dzose, mmusingasanginisire vaeni</i>)	Vechidzimai = Vechirume =	
A5	Vanhurume vemumba menyu vane makore mangani? (<i>Nyora makore evanhurume vemumba mumapoka akapihwa</i>)		
A6	Vanhukadzi vemumba menyu vane makore mangani? (<i>Nyora makore evanhukadzi vemumba mumapoka akapihwa</i>)		

SECTION B:

Dietary Diversity Score Card:

Que:*In the last 14 days or 2 weeks has anyone (adults or children) in your household eaten food from the following food groups.*

(Before each food group always ask the question: “Did anybody eat any...”?)

NB: Supply the respondent with examples of foods which fall under each food group.

No	Food Group	Examples	Yes: Y No: N
B1	Cereals	Maize, rice, wheat, sorghum, millet or any other grains or foods made from these such as bread, noodles, porridge and sadza.	
B2	Any Roots or Tubers	Any potatoes, pumpkin, butternut, sweet potato, cassava or other foods made from roots or tubers	
B3	Dark Green Leafy Vegetables	Dark green leafy vegetables, such as askale, spinach, covo, rape, tsunga.	
B4	Other Vegetables	Other vegetables such as onion, carrots, cabbage, lettuce.	
B5	Any fruits	Any fruits, including local and wild fruits and 100% fruit juice made from these fruits. Fruits such as apples, bananas, mangoes, mazhanje.	
B6	Any Meat or Organ meat	Beef, pork, lamb, goat, rabbit, game, chicken, duck, other birds, insects, liver, kidney, heart or other organ meats or blood-based foods	
B7	Eggs	Eggs from chicken, duck, guinea fowl or any other egg	
B8	Fish	Fresh or dried fish.	
B9	Legumes, Nuts and Seeds	Dried beans, dried peas, lentils, nuts, seeds or foods made from these such as peanut butter.	
B10	Milk and Milk products	Milk, cheese, yogurt or other milk products	
B11	Oils and Fats	Oil, fats or butter added to food or used for cooking	
B12	Sweets	Sugar, honey, soft drinks or	

		sweetened juice drinks, sugary foods such as chocolates, candies, cookies and cakes	
B13	Spices, Seasonings, Sauces and Beverages	Salt, spices (black pepper, coriander, condiments (soy sauce, hot sauce), coffee, tea, alcoholic beverages	
Final Score			

Chikamu chechipiri

Kadhi riri maererano nekusiyana-siyana kwezvinodyiwa:

Mubvunzo: *Mumazuva manomwe apfuura, mumba menyu mune munhu (vakura kana vadiki) akadya here chikafu chinobva mumapoka ekudya anotevera.*

(Kumberi kweboka rega rega isa mubvunzo wekuti... "Makadyiwa here...."

NB: Mupinduri anofanirwa kupihwa mienzaniso yezvekudya zvinowanikwa muboka rimwe narimwe rezvekudya.

No	Boka rezvekudya	Mienzaniso	Hongu: Y Kwete: N
B1	Ma Cereals	Chibage, mupunga, gorosi, njera, mapfunde kana zvimwewo zvekudya zvinogadzirwa kubva mune izvi zvakafanana nechingwa, manoodles, bota, sadza.	
B2	Midzi kana zvimwe zvemuvhu	Mbatata, madhumbe, manhanga, mbambaira, bhatanati, mufarinya, nezvimwewo zvekudya zvinobva mune izvi	
B3	Muriwo wemashizha	Mashizha anosanganisira emusango nemamwewo akaita sekovho, repi netsunga	
B4	Mamwewo mavheji	Hanyanisi. makerotsi, cabbage, lettuce nezvimwewo	
B5	Michero	Michero yese yese ichisanganisira yemusango nezvinwiwa zvakagadzirwa nemuto wemichero chete. Zvakafana ne maple, mabanana, mazhanje kana mango.	
B6	Nyama	Nyama yemombe, yenguruve, yehwai, mbudzi, tsuro, dhadha, dzimwe shiri, tupuka, chiropa, itsvo, mwoyo	
B7	Mazai	Mazai anobva kuhuku, madhadha	

		nehanga kana mamwe mazai	
B8	Hove	Hove nyoro kana dzakaomeswa	
B9	Bhinzi, nzungu nemhodzi	Bhinzi, pizi, nzungu, mhodzi, nezvimwe zvekudya zvinogadzirwa kubva mune izvi zvinosanganisira dovi	
B10	Mukaka nezvinobva mumukaka	Mukaka, chizi, yogati nezvimwewo zvinobva mumukaka	
B11	Mafuta	Mafuta, majarini, zvinowedzerwa munezvekudya kana zvinoshandiswa pakubika	
B12	Zwiwitsi	Tsvigiri, huchi, zvinonwiwa zvinotapira, zvekudya zvinotapira zvinosanganisira chokoreti, zwiwitsi, makeke	
B13	Masipaisi nezvinwiwa zvinopisa kana kudhaka	Zvekurunga zvinosanganisira munyu nemasipaisi soy sauce, hot sauce, kofi, tii, zvinwiwa zvinodhaka	
Zvibodzwa			

SECTION C:

Household Food Garden Score Card:

This section will gather information about the way households use their garden for those who have gardens and how households who do not have gardens acquire their food.

Instruction: Ask the participant the questions in the question column and proceed to the next relevant. Take note of additional instructions within the questions or response options.

No	Question	Response Options (Fill response in code column)	Code
C1	Does your household have a food garden?	N = No: <i>Proceed to Que C2</i> Y = Yes: <i>Proceed to Que C3</i>	
C2	Why does your household not have a food garden?	Record response here: <i>(Proceed to Que C4)</i>	
C3.0	Why does your household have a food garden?	Record response here: <i>(Proceed to Que C3.1)</i>	

No	Question	Response Options (Fill response in code column)	Code
C3.1	Which type of food garden does your household have?	1= "On-Plot" Garden <i>(explain the term on-plot)</i> 2= "Off-Plot" Garden <i>(explain the term off-plot)</i> 3= Both "On-Plot" and "Off- Plot" Garden	
C3.2	Who funds/supports your food garden	1= Self	

		2= Family members outside the household 3= Friends 4= Neighbours 5= Local organisations, charities or NGO's 6= Government 7= Religious organisations 8= Other (specify)	
C3.3	How many varieties/different types of crops does your household grow?	1 = None (if "none", move to que 3.6) 2 = 1-3 types 3 = 4-5 types 4 = more than 5 types	
C3.4	What is the main purpose of your crop production?	1 = Own- Consumption 2 = Sell 3 = Own consumption and Sell 4 = Exchange for other foods	
C3.5	In the last 2 weeks/14 days how often did you eat any crops/vegetables from your food garden?	1 = Never 2 = Rarely (1-2 times in 2 weeks/14 days) 3 = Sometimes (3-10 times in 2 weeks/14 days) 4 = Often (more than 10 times in 2 weeks/14 days)	
C3.6	How many different types of livestock does your household keep	1= None (if "none" move to que 3.9) 2 = 1 type 3 = 2-3 types 4 = more than 3 types	
C3.7	What is the main purpose of your animal production?	1 = Own- Consumption 2 = Sell 3 = Own consumption and Sell 4 = Exchange for other foods	

C3.8	In the last 2 weeks/14 days how often did you eat any livestock/ livestock products (e.g. eggs, milk, liver, e.t.c.) from your garden?	1 = Never 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/ 14 days</i>)	
C 3.9	What other activities does your household carry out in your food garden? (<i>other than growing crops/ vegetables and keeping livestock</i>)		
C3.10	What is the main source of water for your food garden?	1 = Tap water 2 = Wastewater (<i>water that has been used for other household activities such as bathing,laundry e.t.c</i>) 3 = Borehole Water 4 = Well Water 5 = _____ Other (<i>specify</i>)_____	
C3.11	In the last 2 weeks how often did you use tap water your food garden	1 = Never 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/ 14 days</i>)	
C3.12	In the last 2 weeks how often did you experience tap water shortages/restrictions?	1 = Never 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/</i>	

		14 days)	
C3.13	What is your alternative/other source of water for your food garden?	1 = None (<i>move to que 3.15</i>) 2 = Tap 3 = Wastewater 4 = Borehole Water 5 = Well Water 6 = _____ Other (specify) _____	
C3.14	In the last 2 weeks how often did you use your alternative/other water source your food garden	1 = Never 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/14 days</i>)	
C3.15	In the last 2 weeks how often did you use wastewater for your food garden? <i>explain the term wasterwater(water that has been used for other household activities such as bathing,laundry e.t.c)</i>	1 = Never 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/14 days</i>)	

No	Question	Response Options (Fill response in code column)	Code
C4	In the past 2 weeks (14 days) how often have you or any household member purchased any fruit or vegetables for consumption in the household	1 = Never (<i>0 times in 2 weeks/14 days</i>) 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/14 days</i>)	
C5	In the past 2 weeks (14 days) how often have you or any household member purchased any meat or meat products (e.g.	1 = Never (<i>0 times in 2 weeks/14 days</i>) 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>)	

	eggs, milk, liver e.t.c.) for consumption in the household?	3 = Sometimes (3-10 times in 2 weeks/14 days) 4 = Often (more than 10 times in 2 weeks/14 days)	
C6	What other means does your household use to acquire fruit, vegetables and meat and meat products? (other than through purchasing or growing crops and keeping livestock in the case of those with gardens e.g. receiving foods from those in the rural areas)		

CHIKAMU CHECHITATU:

Kadhi pamusoro pabindu rezvekudya zvemumba:

Chikamu ichi chichaunganidza mhinduro dzinoratidza kushandisa kunoita mhuri bindu ravo rezvekudya kune vane bindu, nekuti mhuri dzisina bindu dzinowana sei zvekudya mumba.

Bvunzai mupinduri mibvunzo inotevera kana mapihwa mhinduro endai kune mubvunzo wakakodzera kutevera. Mucherechedze kuti kumberi kwemubvunzo kana kwemhinduro pane zvimwe zvamunotarirwa kuita.

No	Mubvunzo	Mhinduro (Nyorai kodhi yemhinduro mundima iri pamberi peino)	Kodhi
C1	Mhuri yenyu ine bindu rezvekudya here?	K = Kwete: <i>Enda kuQue C2</i> H = Hongu: <i>Enda kuQue C3</i>	
C2	Sei mhuri yenyu isina bindu rezvekudya?	Nyora mhinduro munzvimbo yakapihwa: (<i>Enda kuQue C4</i>)	

C3.0	Sei mhuri yenyu ine bindu rezvekudya	Nyora mhinduro munzvimbo yakapihwa: (<i>Enda kuQue C3.1</i>)	
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Table 1:

No	Mubvunzo	Mhinduro (Nyora kodhi yemhinduro mundima iri pamberi peino)	Kodhi
C3.1	Mhuri yenyu ine bindu rakaita sei?	1= Bindu repamba 2= Risiri repamba 3= Repamba nerisiri pamba	
C3.2	Ndiani anokupai zvekushandisa mubindu renyu rezvekudya?	1= Vanhu vemumba menyu 2= Hama dzisiri dzemumba menyu 3= Shamwari 4= Vavakidzani 5= Local organisations, charities or NGO's 6= Hurumende 7= Religious organisations 8= Other (<i>specify</i>)	
C3.3	Munorima mhando ngani dzezvirimwa mubindu renyu rezvekudya?	1 = Hatina (<i>vakati "hatina" enda ku que 3.6</i>) 2 = 1-3 3 = 4-5 4= dzinopfuura 5	
C3.4	Zvirimwa zvamunowana zvinozoshanda sei?	1 = Zvinodyiwa nevanhu vemumba menyu 2 = Munotengesa 3 = Zvinodyiwa nevanhu vemumba menyu uye nekutengeswa 4 = Munochinjana nevanhu vanechimwewo	

		chikafu	
C3.5	Mumasvondo maviri apfuura makadya zvakakarima mubindu menyu kangani?	1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	
C3.6	Mhuri yenyu inochengeta mhando ngani dzezvipfuyo?	1= Hatina(<i>vakati "hatina" enda ku que 3.9</i>) 2 = 1 3 = 2-3 4 = Dzinopfuura 3	
C3.7	Zvipfuyo zvamunowana zvinozoshanda sei?	1 = Zvinodyiwa nevanhu vemumba menyu 2 = Munotengesa 3 = Zvinodyiwa nevanhu vemumba menyu uye nekutengeswa 4 = Munochinjana nevanhu vanechimwewo chikafu	
C3.8	Mumasvondo maviri apfuura makadya zvipfuyo zvakapfuya kana zvinobva muzvipfuyo zvenyu (mazai, mukaka, chiropa nezvimwewo)	1 = Hatina 2 = Kashoma shoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	
C 3.9	Ndezvipi zvimwe zvamunoita mubindu renyu rezvekudya? (<i>zvirikunze kweturima mbesa nemuriwo kana kupfuya zvipfuyo</i>)		
C3.10	Mvura yamunonyanyo shandisa mubindu renyu rezvekudya munoiwani kupi	1 = Pa tap 2 = Waste water (<i>mvura inenge yashanda mamwe mabasa emumba zvakafanana ne kugeza muviri, kusuka mbatya, kusuka</i>)	

		<p><i>midziyo</i>) 3 = Mvura yemuchibhorani 4 = Mvura yemugodhi 5 = _____ Other (<i>specify</i>)_____</p>	
C3.11	Mumasvondo maviri apfura makashandisa mvura yepaTap kangani mubindu renyu rezvekudya	<p>1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)</p>	
C3.12	Mumasvondo maviri apfura makashaya mvura yepaTap kangani?	<p>1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)</p>	
C3.13	Ndeipi imwe mvura yamunoshandisa kudiridza bindu renyu rezvekudya?	<p>1 = Hatina (<i>enda ku que 3.15</i>) 2 = YepaTap 3 = Wastewater 4 = Mvura yemuchibhorani 5 = Mvura yemugodhi 6 = _____ Other (<i>specify</i>)_____</p>	
C3.14	Mumasvondo maviri apfura makashandisa mvura imwewo kangani mubindu renyu rezvekudya?	<p>1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)</p>	
C3.15	Mumasvondo maviri apfura makashandisa wastewater kangani mubindu renyu rezvekudya? <i>taura zvinoreva izwi rekuti "wastewater"- (mvura inenge yashanda mamwe mabasa emumba zvakafanana ne kugeza muviri, kusuka mbatya, kusuka midziyo)</i>	<p>1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)</p>	

Table 2:

No	Mubvunzo	Mhinduro (Nyorai kodhi yemhinduro mundima iri pamberi peino)	Kodhi
C4	Mumasvondo maviri apfuura mumba menyu mune munhu here akatenga michero kana muriwo wemashizha/zvirimwa zvekudya mumba?	1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	
C5	Mumasvondo maviri apfuura mumba menyu mune munhu here akatenga nyama kana zvimwe zvinodiwa zvinobva muzvipfuyo zvekudya mumba?	1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	
C6	Ndedzipi dzimwe nzira dzinoshandiswa nemhuri yenyu kuwana michero, muriwo, nyama nezvimwe zvinobva muzvipfuyo? (<i>zviri kunze kwekutenga ne kuchetenga bindu kana vane bindu e.g. kupihwa nevari kumamisha</i>)		

SECTION D:

Household Food Insecurity Access ScaleCard:

This section will gather information on the eating habits of the households.

This section is intrusive and contains questions which the participant may not be comfortable answering; please let them know that they can answer freely as their personal identity will not be revealed to anyone.

No	Question	Response Options (Fill response in code column)	Code
D1	In the past 2 weeks (14 days), how often did you worry that your household would not have enough food?	1 = Never (<i>0 times in 2 weeks/14 days</i>) 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/ 14 days</i>)	
D2	In the past 2 weeks (14 days), how often were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	1 = Never (<i>0 times in 2 weeks/14 days</i>) 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/ 14 days</i>)	
D3	In the past 2 weeks (14 days), how often did you or any household member have to eat a limited variety of foods due to a lack of resources?	1 = Never (<i>0 times in 2 weeks/14 days</i>) 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/ 14 days</i>)	
D4	In the past 2 weeks (14 days), how often 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?	1 = Never (<i>0 times in 2 weeks/14 days</i>) 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/ 14 days</i>)	
D5	In the past 2 weeks (14 days), how often did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	1 = Never (<i>0 times in 2 weeks/14 days</i>) 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/ 14 days</i>)	

D6	In the past 2 weeks (14 days), how often did you or any other household member have to eat fewer meals in a day because there was not enough food?	1 = Never (<i>0 times in 2 weeks/14 days</i>) 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/ 14 days</i>)	
D7	In the past 2 weeks (14 days), how often was there ever no food to eat of any kind in your house because of lack of resources to get food?	1 = Never (<i>0 times in 2 weeks/14 days</i>) 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/ 14 days</i>)	
D8	In the past 2 weeks (14 days), how often did you or any household member go to sleep at night hungry because there was not enough food?	1 = Never (<i>0 times in 2 weeks/14 days</i>) 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/ 14 days</i>)	
D9	In the past 2 weeks (14 days), how often did you or any household member go a whole day and night without eating anything because there was not enough food?	1 = Never (<i>0 times in 2 weeks/14 days</i>) 2 = Rarely (<i>1-2 times in 2 weeks/14 days</i>) 3 = Sometimes (<i>3-10 times in 2 weeks/14 days</i>) 4 = Often (<i>more than 10 times in 2 weeks/ 14 days</i>)	

Any Comments:

CHIKAMU CHECHINA:

Mawaniro ezvekudya mudzimba:

Chikamu ichi chichaita tsvakiridzo yekuona kudya kunoita vanhu mumba mavo.

Chikamu ichi chine mibvunzo inoita kuti munhu arikupa mhinduro asanzwe kusununguka. Udzai munhu achapindura mibvunzo kuti ngaapindure akasunguka sezvo zita rake harimboshandiswi mutsvakiridzo ino.

No	Mubvunzo	Mhinduro (Nyorai kodhi yemhinduro mundima iri pamberi peino)	Kodhi
D1	Mumasvondo maviri apfuura (mazuva 14), kangani kamakashushikana semhuri muchitya kushaya kudya kwakakwana?	1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	
D2	Mumasvondo maviri apfuura (mazuva 14), kangani kamakatadza semhuri kudya izvo maida kuburikidza nekushaiwa mawaniro?	1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	
D3	Mumasvondo maviri apfuura (mazuva 14), kangani kamakatadza kudya zvakasiyana siyana nokushaiwa mawaniro?	1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	
D4	Mumasvondo maviri apfuura (mazuva 14), kangani kamakadya zvamanga musinganatsoda pamusaka pekushayiwa mawaniro edzimwe mhando dzezvekudya?	1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	
D5	Mumasvondo maviri apfuura (mazuva 14), kangani kamakatadza semhuri kudya muchiguta nepamusana pekuti paiva pasina zvekudya zvakakwana?	1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	
D6	Mumasvondo maviri apfuura (mazuva 14), kangani	1 = Hatina	

	kamakadza semhuri kudya mbuva dzakakwana pazuva nekuda kwekushaiwa?	2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	
D7	Mumasvondo maviri apfuura (mazuva 14), kangani ako paive pasina kana chekudya mumba menyu nekuda kwekushaya mawaniro?	1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	
D8	Mumasvondo maviri apfuura (mazuva 14), kangani kamakarara nenzara nekuda kwekushaya?	1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	
D9	Mumasvondo maviri apfuura (mazuva 14), kangani kamakaswera nekurara nenzara semhuri kana umwe wemumhuri nekuti paive pasina zvekudya?	1 = Hatina 2 = Kashoma (<i>kamwe kana kaviri</i>) 3 = Dzimwe nguva (<i>pakati pekatatu nekagumi</i>) 4 = Kakawanda (<i>kanopfuura kagumi</i>)	

Ongororo:

THANK YOU

NOTE: *THE IDENTITY OF THE PARTICIPANT WILL REMAIN CONFIDENTIAL. ANY FINDINGS FROM THIS QUESTIONNAIRE MAY BE PUBLISHED IN A SCIENTIFIC JOURNAL OR USED IN A PUBLIC PRESENTATION BUT THERE WILL BE NO REFERENCE TO THE PARTICIPANTS PERSONALLY*

TATENDA

CHIZIVISO: *MASHOKO PAMUSORO PEMUNHU ACHAPINDURA MIBVUNZO ACHACHENGETWA MUCHIVANDE UYE HAAZOSHAMBADZWI. MHINDURO DZICHAPIHWA DZINOGONA KUTSIKISWA MUBHUKU KANA KUSHANDISWA MUKUDZIDZISA VANHU ASI MAZITA EVANENGE VAPA MHINDURO IDZI HAATAURWI*

ADDENDUM C: ETHICAL APPROVAL LETTER



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Approval Notice New Application

12-Nov-2012
CHIKOTO, Lomer Lynette

Ethics Reference #: S12/08/228

Title: The impact of household food gardens on household food security in an urban area in Zimbabwe

Dear Ms Lomer CHIKOTO,

The **New Application** received on **24-Aug-2012**, was reviewed by members of **Health Research Ethics Committee 1** via Expedited review procedures on **12-Nov-2012** and was approved.

Please note the following information about your approved research protocol:

Protocol Approval Period: **12-Nov-2012 -12-Nov-2013**

Please remember to use your **protocol number** (S12/08/228) on any documents or correspondence with the HREC concerning your research protocol.

Please note that the HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

After Ethical Review:

Please note a template of the progress report is obtainable on www.sun.ac.za/rds and should be submitted to the Committee before the year has expired. The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.

Translation of the consent document to the language applicable to the study participants should be submitted.

Federal Wide Assurance Number: 00001372
Institutional Review Board (IRB) Number: IRB0005239

The Health Research Ethics Committee complies with the SA National Health Act No.61 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

Provincial and City of Cape Town Approval

Please note that for research at a primary or secondary healthcare facility permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Contact persons are Ms Claudette Abrahams at Western Cape Department of Health (healthres@pgwc.gov.za Tel: +27 21 483 9907) and Dr Helene Visser at City Health (Helene.Visser@capetown.gov.za Tel: +27 21 400 3981). Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.

For standard HREC forms and documents please visit: www.sun.ac.za/rds

If you have any questions or need further assistance, please contact the HREC office at 0219389657.

Included Documents:

Protocol
Checklist
Declaration
CV
Application Form
Synopsis

Sincerely,

Franklin Weber
HREC Coordinator

ADDENDUM D: PERMISSION LETTER TO DEPARTMENT OF HOUSING AND COMMUNITY SERVICE



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29 March 2012

To Whom It May Concern

Dear Sir/Madam

This letter certifies that **Lorner L Chikoto** (student number: 15020339-2007) is currently registered at Stellenbosch University for a Master of Nutrition degree. She has completed her theoretical modules, and is currently required to finalise her research proposal, and subsequently the execution and write-up of her research project (as part of the final "Research Project" module).

Please do not hesitate to contact me should you require more information.

Yours sincerely,

Mrs Janicke Visser
Postgraduate Programme Coordinator: Human Nutrition



Fakulteit Gesondheidswetenskappe • Faculty of Health Sciences

*All D.O.s.
Pse. assist.
M. 405*

Verbind tot Optimale Gesondheid • Committed to Optimal Health
Division of Human Nutrition • Department of Interdisciplinary Health Sciences
PO Box 19063 • Tygerberg 7505 • South Africa
Tel.: +27 21 938 9259 • Faks/Fax: +27 21 933 2991
Webblad / Web page: www.sun.ac.za/nutrition; www.sun.ac.za/nicus

ADDENDUM E: PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

TITLE OF THE RESEARCH PROJECT:

The Impact of Household Food Gardens on Household Food Security in an Urban Area in Zimbabwe.

REFERENCE NUMBER:

PRINCIPAL INVESTIGATOR: Lorner. L. Chikoto

ADDRESS: 18B Caledon Avenue, Hatfield, Harare, Zimbabwe.

CONTACT NUMBER: (+2634) 576720, +263772724457.

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

This study has been approved by the **Health Research Ethics Committee at Stellenbosch University** and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

What is this research study all about?

- *This study will be conducted in the suburbs of Mbare, Prospect and Msasa Park. A total of 120 households will be asked to participate from these areas, 33 households from each area will be interviewed by a field worker who will ask them a number of questions listed in the questionnaire they will have with them.*
- *This study aims to gather information on food gardens in the area and how people use them. The fieldworker will ask some question about:*
 - *The number, gender and ages of people who live in the household*
 - *How and what the people in your household eat.*
 - *How you use your backyard garden if you have one.*
 - *How you obtain your vegetables, meat and animal products If you have ever had times in which you could not obtain all the food you wanted*
- *We will need to interview 33/34 households in this area. To make sure we interview the households without favour, we have to interview every _____ household in this area. Your household has been chosen because your house is the _____ household in this area.*

Why have you or any household member been invited to participate?

- *You have been invited to participate in this research because you are a resident of this area.*

What will your responsibilities be?

- *Your responsibility will be to answer all the questions asked by the fieldworker to the best of your knowledge.*

Will you benefit from taking part in this research?

- *This research will help people responsible for planning the activities people can carry out in the residential areas understand how people get food for their households and whether they use their gardens for food.*

Are there any risks involved in taking part in this research?

- *There are currently no risks associated with taking part in this study.*

Who will have access to your records?

- If you agree to take part in this study your identity will not be revealed or shared with anyone. Your contact details will not be required This form will be kept separate from all your answers
- The information you give in this study may be published in a scientific journal or used in a public presentation but there will be no reference to you personally.

Will you be paid to take part in this study and are there any costs involved?

- You will not be paid to take part in this study.

Is there anything else that you should know or do?

- You can contact the Health Research Ethics Committee at +2721-938 9207 if you have any concerns or complaints that have not been adequately addressed by your study staff
- You will receive a copy of this information and consent form for your own records.

Declaration by participant

By signing below, I agree to take part in a research study entitled; **The Impact of Household Food Garden on Household Food Security in an Urban Area in Zimbabwe.**

I declare that:

- I have read or had read to me this information and consent form and it is written in a language in which I am fluent and comfortable.

- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.

Signed at (*place*) on (*date*)
2012.

.....
Signature of participant

.....
Signature of witness

Declaration by investigator

I (*name*) declare that:

- I explained the information in this document to
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter. (*If an interpreter is used then the interpreter must sign the declaration below.*)

Signed at (*place*) on (*date*)
2012.

.....
Signature of investigator

.....
Signature of witness

Declaration by interpreter

I (*name*) declare that:

- I assisted the investigator (*name*) to explain the information in this document to (*name of participant*) using the language medium of English/Shona
- We encouraged him/her to ask questions and took adequate time to answer them.
- I conveyed a factually correct version of what was related to me.
- I am satisfied that the participant fully understands the content of this informed consent document and has had all his/her question satisfactorily answered.

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

.....
Signature of interpreter

.....
Signature of witness

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