The Marginalization of indigenous vegetables at household level in Figtree.

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Acronyms

AVRDC– Asian Vegetable Research and Development Center

ALVs– African Leafy Vegetables

AIV- African Indigenous Vegetables

DD– Dietary Diversity

DDIF– Dietary Diversity of Indigenous Foods

FAO– Food Agricultural Organization

HFIAS– Household Food Insecurity Access Scale

HHS– Household Hunger Scale

NEMA–National Environmental Management Laws Amendment

NUS- Neglected Underutilized Species

WHO– World Health Organization

ZIMVAC– Zimbabwe Vulnerability Assessment Committee

Abstract

Household nutrition security and the individual nutritional status respond to trends in food consumption in Zimbabwe. The objective of this study was to investigate the status of indigenous vegetables at household level in the Figtree community. A mixed method approach using household survey and semi-structured interviews were used to gather data in 57 households. Study findings suggest that households marginalize indigenous vegetables because of various individual perceptions, poor knowledge systems, and "exotic" food consumption patterns. More than 50% households were experiencing chronic to severe food insecurity while approximately 23% were food secure. A one-way repeated measures analysis of variance (ANOVA) concluded that some indigenous vegetables are "liked" significantly more than others are, $F (5, 190) = 9.597$, $p < 0.001$, *partial* $\eta^2 = 0.202$ *although bush okra and spider flower were equally liked. In terms of indigenous vegetable consumption patterns, post hoc tests pairwise comparisons using the Bonferroni correction showed statistically significant ratings among all spider flower comparisons* ($p < 0.05$) *except bush okra* ($p > 0.05$). *The post-colonial theory adopted in the study explained that the change on eating patterns as well as individual choices on preferring certain types of foods has led to the marginalization of indigenous vegetables. These results imply that there is a marginalization of indigenous vegetables in diets of people living in Figtree at household level.*

CHAPTER ONE: INTRODUCTION

1.0 Introduction

Indigenous, neglected and underutilized crop species are referred to by different names portraying their socio-economic value and status. For example, they are called orphan crops, neglected crops, underutilized crops, forgotten crops, and minor crops, traditional and indigenous foods (Sebit 1995). They grow in wild and disturbed environments with minimal or no input requirements such as plant care, pesticides and fertilizers. The lack of interest in scientific and social research of these indigenous species has resulted in lack of government policy on protecting their diversity. They are ignored and underutilized despite their perceived and documented human-health benefits in fighting malnutrition (Padulosi, S., Amaya, K., Jäger, M., Gotor, E., Rojas, W. and Valdivia, R., 2013). Underutilization has been linked to negative publicity, the old-fashioned and 'famine food' status meant for poor rural households. In newly urbanized communities of developing countries, modern and exportable or imported food stuffs are ranked above indigenous foods (Padulosi et al 2013). Traditional foods are generally rich in micronutrients and derived from traditional crop species that are more accessible to rural communities. The aim of this study was to investigate the extent of household marginalization of indigenous vegetables in the Figtree community located in south of Zimbabwe. In this way, an advanced understanding relating to the marginalization of indigenous vegetables despite their high nutritious benefits will be made known. Therefore, the study employed a mixed method approach that is both qualitative and quantitative in evaluating the perceptions and views on indigenous vegetables held by the people as well as their reasons for marginalizing the vegetables.

1.1 Background

Padulosi et al (2013) state that neglected and underutilized species (NUS) especially indigenous foods have received little attention or neglect in comparison to their exotic relatives despite their superiority in micronutrient composition. Tragically, chronic micronutrient deficiency commonly referred to as "hidden hunger" still affects around 2 billion people worldwide while more than 1 billion people world-wide are undernourished (FAO 2013). It is clear that there is need to close the gap between availability and acceptability of indigenous foods rich in micronutrients in food systems in malnourished communities at the household level (Dempewolf, H., Eastwood, R.J., Guarino, L., Khoury, C.K., Müller, J.V. and Toll, J., 2015). ZimVac (2018) reports that household nutrition security and eventually the individual nutritional status responds to trends in food consumption in Zimbabwe. In such scenarios, Ghosh-Jerath et al (2016) states that traditional foods and dietary diversity are cost-effective options that ameliorate malnutrition, as they are rich sources of nutrients for better health. Notably, in Gambia, indigenous foods are important sources of calcium in human health (Adebooye and Opabote, 2004). However, health benefits of these indigenous foods have been largely unexplored and overshadowed by their exotic relatives in greater demand (Ghosh-Jerath, S.S., Magsumbol M.S, Kamboja, P. and Goldberg, G., 2016).

Demi (2014) posits that ignoring African indigenous foods and the decline in consumption has eroded most of the first generational foods of Africans. In the same narrative, Bodirsky and Johnson (2008) declare that colonial policies of assimilation destroyed indigenous knowledge systems by undermining the integrity of traditional indigenous food ways. In contemporary world, indigenous plants are being lost at an alarming rate and are now neglected and under-

utilized crop species (NUS) (Mbhenyane 2017). According to Croft et al (2014), rural people often scorn the crops of their ancestors in favor of a few commercially dominant crops and, in the process, forget the accumulated knowledge of the properties and uses of these traditional crops. Despite the benefits of indigenous foods, they have not received recognition in Southern Africa (de Bruin 2018). In Central Kenya, Bundi (2012) found that consumption of African leafy vegetables (ALVs) species is generally low despite their widespread distribution and cultivation. Demi (2014) argues that the selection and promotion of specific crops and animal species as the authentic human food has contributed to the marginalization of indigenous crops.

Consumption patterns or trends of indigenous foods suffer poor documentation in national dietary intake surveys. There is no documented attempt to assess the significance of wild or cultivated indigenous vegetables in Zimbabwe on the alleviation of household malnutrition (Mushita 2016). According to Maroyi (2013), few studies have focused on different plants as traditional vegetables and, in Zimbabwe, they receive little recognition from the government and communities, consequently, remain unpopular. Maroyi (2013) highlights that there are more than 6000 underutilized species in Zimbabwe and some of these are extremely drought tolerant and can grow where no other known cereal grain crops can grow. Studies in Shurugwi District of Zimbabwe by Maroyi (2013) revealed that traditional vegetables contribute to nutritional security of local communities and in some families they are the only food source. In the context of Figtree community where there is evidence of indigenous vegetables especially during the rainy season, there is need to investigate the extent of indigenous vegetable marginalization.

1.2 Problem statement

Wild vegetables are the most significant group of traditional indigenous foods with a long history as an accompaniment to the staple maize diet in Zimbabwe. Despite the health benefits associated with indigenous vegetables, they remain marginalized or "resisted" resulting in their marginalization. Various scholars note that most of the indigenous foods are seen as poverty crops and poor people's food. According to Modi (2009), most people ignore food resources that are available in marginal areas in favor of costly exotic diets. In addition, Maroyi (2013) states that indigenous and traditional vegetables in Zimbabwe remain ignored as well as their utilization is lacking because they receive little recognition from the government. Mushita (2016) confirms the limited utilization of indigenous crops in Zimbabwe, although eating healthy is contemporary to eating indigenous foods. On the other hand, lifestyle choices that favor exotic Western foods correlate with high prevalence of chronic illnesses (WHO 2004). Due to rapid change of eating habits to Western processed food among Africans, the youth consider indigenous foods as outdated (Pisa et al 2011). Therefore, there is need to establish explanation on the rejection of these highly nutritious and accessible indigenous foods. In this view, the focus of the study is to address the question on the uptake of nutritious and health-promoting indigenous vegetables at household level.

1.3 Research questions

The research study aimed to gain more in-depth knowledge on the marginalization of indigenous foods at household level using mixed methods research. The goal was to explore the marginalization of indigenous vegetables with qualitative interviews in a pragmatic but explanatory sequential design. The research questions of the study are to:

1. Determine the extent to which individuals hold to particular attitude or perspective on the marginalization of the indigenous wild vegetables using questionnaire surveys.
2. Explore individuals' views as well as knowledge on the indigenous vegetables and seek reasons leading to their status as marginalized using an interpretivism approach.

1.4 Research objectives

1. To understand why individuals under-consume indigenous vegetables
2. To document people's perceptions on marginalizing indigenous wild vegetables and their views and knowledge on indigenous wild vegetables.

1.5 Significance of the study

Various scholars have shown in their studies the extent of marginalization as well as underutilization of indigenous vegetables. For example, Maroyi (2013) point out that indigenous and traditional vegetables in Zimbabwe remain ignored. In addition, Mushita (2016) confirms the limited utilization of indigenous vegetables and crops in Zimbabwe. Although there have been studies done on the marginalization, underutilization and rejection of indigenous vegetables, less has been stated on why people marginalize the vegetables. In such a case, significance of the study is shown as it sheds more insight on the extent of marginalization of indigenous vegetables alongside with reasons explaining the marginalization. As evident in literature, there is lack of adequate documentation of indigenous vegetables and their wide utilization. In accordance, the study fills the gap that is revealed in literature in terms of research and documentation of the indigenous vegetables marginalization in the context of Figtree community. The use of a sociological viewpoint in understanding the marginalization of indigenous vegetables also fills in the knowledge gap concerning the utilization of indigenous vegetables.

According to Ghosh-Jerath et al (2016), the health benefits of many of indigenous vegetables have been largely unexplored and research on the nutritive value of underutilized species or local varieties deserves a higher priority in research. From available literature on indigenous vegetables, the researcher learned that there is extensive marginalization of the vegetables as well as negative views concerning the vegetables. Therefore, this study is of importance because the research findings will uncover the extent of indigenous vegetables marginalization. Of which in turn will gain recognition also from the government seeking to incorporate indigenous vegetables on a wider scale for individuals that lack knowledge on the vegetables.

1. 6 Overall study Organization

The structure of the thesis begins with Chapter one as the foundation of the study. Thus, it outlined the introduction and background that informed the study, the research question and objectives that guided this study. The statement of the problem and significance of the study then follow all of this. Chapter two focuses on the literature relating to the study objectives and the researcher reviewed available literature and unearthed issues concerning rejection and marginalization of indigenous vegetables by various scholars. This helped the researcher to identify knowledge gaps and sought to bridge such gaps.

Chapter three presents the theoretical framework that is, post-colonial theory. The theory is unpacked and explained before placing it into the context of indigenous vegetables marginalization. Consequently, chapter four presents the methodology adopted in the study which included the methodological approach, study site, sampling procedures, data collection methods, data analysis, and the ethics followed by the researcher in the research process. Chapter five presents the findings from the data collected in the research. Lastly, chapter six discusses the

findings from the research whereby, the discussion is in line with the literature available as well as the theoretical framework. Conclusions are presented in the last section.

1.7 Chapter Summary

The chapter began by giving an introduction and background of the study. Also, the chapter went on to highlight the problem statement, research questions and objectives of which establish the foundation of the study. Lastly, the significance of the study expressed the importance of the study to the available literature through uncovering the extent of indigenous vegetables marginalization

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

The chapter reviews available and existing literature on indigenous vegetables and their marginalization or underutilization. Bryman (2016) notes that reviewing the existing literature establishes what is already known about the topic so as to act as justification for the investigation and developing an argument. This chapter captures theoretical conceptual issues on the indigenous vegetables. The existing literature revealed common consensus that indigenous vegetables are marginalized and underutilization. Therefore, the manifestation of knowledge gaps on these vegetables were sought to be covered by the study.

2.1 Conceptualization of Indigenous vegetables

The review of literature revealed the lack of proper single definition concerning the indigenous vegetables and this has led to different definitions proposed by scholars. It is clear that indigenous vegetables are open to different names as there is lack of consensus definition for them. In an attempt to bridge this lack of proper definition, Sebit (1995) referred to them using terms such as “orphan”, “neglected” and “forgotten” indigenous foods. Carr (1956) found out different types of African foodstuffs and relishes prepared from a wide variety of indigenous, wild and cultivated vegetables. Furthermore, most of these vegetable relishes are excellent supplementary food to the staple cereal stiff porridge or *sadza*. Amaza (2009) firmly believe that several edible plants remain neglected even though they are beneficial and a good source of food for people to meet balanced dietary needs. Guarino (1997) and Naylor et al (2004) agree that plant species such as the indigenous vegetables are a marginalized good source of micronutrients among the rural people lacking access to food. Therefore, all of this shows that the lack of proper

definition of the vegetables contributes to their marginalization because they lack prioritization and result in their poor status in society.

In addition, "indigenous vegetables" are easy to obtain locally from the environment and are cheap or affordable. The terms indigenous and traditional vegetables in this study refer to vegetables that have been part of the food systems in Africa and Zimbabwe for generations. They are chiefly procured either through wild harvesting farming or and utilized based on traditional wisdom and knowledge (Kuhnlein et al 2009). Mavengahama (2014) points out these indigenous vegetables have different local names. Indigenous and African vegetables are those vegetable species that either originated in Africa or have stayed on the continent for such a long time in history that they are now indigenized (Syfert et al 2016).

Indigenous vegetables grow in disturbed land areas contributing about 10% of the world's higher plants (Guarino 1997). Nnamani et al **(**2009) maintains the fact that in food insecure households indigenous foods remain marginalized despite having superior nutrient profiles over exotic foods (Chweya and Eyzaguirre 1999; Odhav 2007). According to Gido et al (2013), the diversity of AIVs is gradually eroding and many varieties are likely to disappear completely because they are neglected and under-utilized. Abukutsa and Onyango (2005) point out that African Indigenous Vegetables (AIVs) are considered old-fashioned, "poor man's food" and therefore shameful to consume (Gotor and Irungu 2010). The genetic erosion of African Indigenous Vegetables is a result of intensive promotion of exotic varieties by research institutions and development agencies (Schippers 2002; Abukutsa 2007). One may point out that researchers have focused on the status of the indigenous vegetables revealing their underutilization and lack of awareness on

the nutritional benefits. However, the gap on reasons explaining such underutilization of available vegetables remains in literature of which led to the formulation of the research problem and questions.

Strengthening indigenous food value-chains will culminate in the preservation of indigenous knowledge systems, beneficiation to natives and creation of healthy foods (Adesulu and Awojobi 2013; Nnamani et al 2009). A few studies investigated the consumption patterns of AIVs but they lack in the evaluation of their share in household diets (Ruel et al 2005; Kimiywe et al 2007; Amaza 2009; Bundi 2012). Croft et al (2014) explains that the cultural backgrounds influence the consumption of different varieties. Indigenous vegetables represent inexpensive but high-quality nutritional sources especially for poor people prone to malnutrition in different societies. However, Gudrun (2004) explains this by suggesting that the "grey" literature explaining the importance of African Indigenous Vegetables is scarce and this has led to lack of interest in rural communities that previously valued them as hunger-escape food alternatives. Laker (2005) argues that although this is the situation, their disappearance is attributed to the prevalence of drought, changes in food habits, declining vegetable habitats and loss of indigenous knowledge due to lack of systematic transmission of knowledge from one generation to the next.

2.2 Sociological conceptualization on marginalization of indigenous vegetables

According to Crawford (1990), food practices emerge from history representing aspects of identity. Hence, Demi (2014) states that throughout history and in contemporary times, people adopt different food items, modes of food preparation, and ways of serving as well as eating particular foods which were previously not part of their food culture. Furthermore, Padulosi et al (2013) is in agreement with the view that the adoption of western ways as explained by modernization theory, indigenous foods suffer from a negative image. As such, the vegetables

are deemed old-fashioned, often known as “famine food” and associated with the rural poor, particularly in the eyes of newly urbanized populations in developing countries, who may prefer modern, exportable or imported food stuffs. Modernization theory has been used by various scholars in explaining the change from a traditional or indigenous society to a Western or modernized society of which has impacts on the consumption of indigenous vegetables and favoring Western types of foods.

It has been noted that modernization inspires change in a society. Demi (2005) argues in a way that implies colonialism in the name of modernization or civilizing Africa separated people from their indigenous land as well as indigenous vegetables. Through such contact between Europe and Africa resulted in the diffusion of ideas and values of which they still exist and exacerbated by globalization (Shah 2017). As a result, there are changes from traditional ways of life and eating habits. On the other hand, modernization theory employed by other scholars to explain the marginalization of indigenous vegetables overlooks the power of an individual in choosing the type of foods they prefer to eat. Therefore, such sociological analysis has not yet established fully the explanation for marginalization of indigenous vegetables because there is need for greater emphasis on the individual power in freely choosing certain types of foods over indigenous vegetables.

2.3 Methodological Approaches used on indigenous vegetables analysis

In terms of methodology, some of the research studies have shown prioritization of qualitative methodology over quantitative methodology. Research studies done by de Bruin (2018), Demi (2014), Sebit (1994), Chetty (2013) and Wemali (2014) all employed qualitative research methodologies on investigating indigenous vegetables. Bua and Onang (2017), Modi (2009),

Ineke et al (2007) and Mavengahama (2013) utilized qualitative approach and incorporated quantitative methods of collecting data so as to obtain necessary data on the role of African indigenous vegetables for food and nutrition security. However, mixed methods approach lacks full prioritization on investigating the marginalization of indigenous vegetables. The aim of the study was to reveal the extent of indigenous vegetables marginalization through quantitative methodology and qualitative approach was necessary in capturing people's reasons and perceptions. In the midst of indigenous vegetables marginalization and underutilization there is requirement for bringing understanding as to why the vegetables no longer play a vital role in people's diets at household level.

Various researchers have placed more focus on pointing out that indigenous vegetables are marginalized using qualitative and quantitative methodologies separately whilst ignoring the use of mixed methods approach to explicate why there is marginalization of available indigenous vegetables. The use of one methodology such as quantitative research may quantify information on the marginalization and legate major issues that are relevant to the study such as individual views. The study intended to gain data on the types of foods consumed at household level to bring out the lack of indigenous vegetables consumption resulting in their marginalization through quantitative methodology. Therefore, the analysis of indigenous vegetables marginalization required the use of mixed methods approach because the study focused on societal and individual level to understand individuals' perceptions on indigenous vegetables.

2.4 Knowledge on indigenous vegetables and lack of knowledge on Preparation

Many scholars agree on that the marginalization of indigenous vegetables is attributed to lack of knowledge and how they are prepared in terms of drying as well as cooking (Abukutsa and

Onyango 2005; Ineke et al 2007). Abukutsa and Onyango (2005) maintain that the marginalization of indigenous vegetables in Sub-Saharan Africa is due to inadequate information on the nutritional value and appealing food preparation. Ineke et al (2007) bemoans the ignorance of children about traditional foods well known to their fathers.

Information about food cereal crops, roots and tubers are available, but ignoring their roles in alleviating micronutrient deficiency (Sebit 1994). Due to all of this, Ineke et al (2007) findings are in contradiction with other scholars who agree on that knowledge on indigenous vegetables is found to be more in the female domain and implying lack of knowledge on the male side. In such a case, the focus of the research also aimed at confirming and revealing whether knowledge acquired by women or men is part of the reasons resulting in the marginalization of indigenous vegetables by the other gender since there are male-headed households.

Lack of knowledge on the preparation of the indigenous vegetables as well as cooking methods contributes to their marginalization. Mavengahama (2014) identified short shelf life and spoilage as major constraints to their handling, preparation and cooking (Smith and Ezyaguirre 2007). Nevertheless, urban dwellers prefer freshly harvested vegetables and they are ignorant on proper drying of indigenous vegetables (Smith and Ezyaguirre 2007). Urbanites believe that nutritional and palatability of indigenous vegetables are impaired during drying, for example, it destroys vitamin C while further food preparation and processing steps destroy other nutrients (Flyman and Afolayan 2006). Ezyaguirre (2007) encourages scientific research to focus on breeding cultivars or landraces that will be cultivated throughout the year. Consequently, the research seeks to confirm on whether lack of knowledge contributes to the marginalization of indigenous vegetables in the case of the Figtree community.

Some of the indigenous vegetables like spider flower need value addition to reduce the astringent taste without compromising nutritional value amongst cultural groupings (Flyman and Afolayan 2006; Nyembe 2015). According to Ineke et al (2007), in the Eastern Cape, South Africa the knowledge on how to dry some of the different vegetables seem to have been lost. Furthermore, Ineke et al (2007) suggests that high incidence of war and unrest in 1960s to 1990s in some parts of South Africa was responsible for loss of indigenous knowledge systems. Generally, the younger generations dislike indigenous vegetables because of the bitter taste and poor in palatability of which reveal the lack of knowledge among younger generation. In villages, the elderly understand knowledge systems on the vegetables better than the younger generations (Modi et al 2006). Furthermore, Modi et al (2006) revealed that old people have more knowledge on indigenous vegetables than young people do. Therefore, various scholars point out that the knowledge systems on indigenous vegetables are becoming scarce as new generations are emerging. In such a case, age is associated with lack of adequate knowledge concerning indigenous vegetables whereby in most cases the younger generation is viewed as less interested in gaining knowledge on the vegetables. This justifies the need to investigate whether at household level every head of household lacks such knowledge.

2.5 Marginalization of indigenous and African wild vegetables

Chipurura et al (2013) maintain that indigenous vegetables or herbs are a part of community dietary resources that are mostly without formal markets to counter their marginalization and this leave them prone to extinction or underutilization. For example, Mbhenyane (2017) link marginalization of AIVs to loss in biodiversity, whereby their survey reported a 79% loss of traditional vegetable species. Others attribute loss of biodiversity to civil wars (Alexandratos et

al 2012), human settlement, fires and extreme dry spells (FAO 2013; NEMA 2009; Von Grebmer et al 2015). In Uganda, lack of funding impedes germplasm collection, conservation, protection and utilization of AIVs (Cernansky 2015). However, this does not entirely explain the marginalization of the vegetables because it leaves unanswered questions concerning other areas whereby indigenous vegetables are available.

Traditional vegetables are "poverty food" associated with "backward" uncivilized diets (Ineke et al 2007**)**. These "name tags" lead to unwillingness to learn and eat them resulting in a shift in food use. In addition, the name tags such as "backward knowledge" and rural or "poverty food" lead to lack of interest in these traditional plants (Ineke et al 2007; Ezyaguirre 2007). Kebede and Bokelmann (2017) lament the lack of value-addition efforts in the AIVs value-chain. Mushita and Thompson (2016) point out that policy makers continue to ignore indigenous food systems and researchers have not built enough literature to support value-chains (Dweba and Mearns 2011). The per capita consumption of AIVs has not been fully elucidated as well as their preservation and production levels (Mushita and Thompson 2016). There are literature reports detailing a steady decline in dietary intakes of indigenous vegetables following the upsurge in simplified diets because of declining availability (Okeno 2003; Ruel et al 2010). However, in Buhera, Zimbabwe indigenous vegetables are available and surprisingly consumed as they are rich in iron, calcium and vitamin C than conventional vegetables (Maroyi 2013). It can be noted that this is not the case in every society. In line with Chipurura et al (2013), there is need to explore reasons that have led to marginalization of these highly nutritious vegetables. This is because in some areas these vegetables are totally ignored despite availability and nutritious benefits. Orech (2005) suggests that such efforts must begin by systematic collection and

conservation of indigenous wild vegetables altogether. The lack of willingness from individual to national level towards the conservation and protection of these species has led to extinction of genetic resources (Adebooye and Opabode 2004).

Flyman and Afolayan (2006) note that there is need to focus on consumed species that are semi-domesticated. Plant breeding efforts have promoted the cultivation of exotic species over indigenous relatives resulting in the domestication of poor and low yielding landraces of indigenous vegetables (Vorster et al 2007). Lack of improved seed cultivars is a limiting factor to commercialization of cultivating indigenous vegetables (Adebooye et al 2005). Traditional vegetables are adapted to local harsh climatic conditions and poor soils better than exotic relatives that rely highly on chemical pesticides and fertilizers (Altieri et al 1987). Indigenous vegetables are becoming popular in breeding programs, source of income and improved nutrition and food supply (Grivetti and Ogle 2000; Padulosi et al 2002). Indigenous vegetables are nutritionally superior to some of the cultivated ones (Ineke et al 2007). However, some authors suggest that protection of indigenous vegetables may only become sustainable through promoting their utilization (Eyzaguirre 1997). Although various researchers have shed light on the lack of conservation and promotion of the vegetables leading to their marginalization, little research has been done on explaining constant marginalization in areas whereby people have access to the vegetables.

Abukutsa (2011) states that the level of African indigenous vegetables exploitation has not been attained fully in alleviating, malnutrition and food safety. However, Cernansky (2015) postulates that in Nairobi, indigenous vegetables were once sold almost exclusively at hard to find

specialized markets. Although these plants have been favored by some rural populations in Africa, they are largely ignored by seed companies and researchers, as a result they continue to lag behind commercial crops in terms of productivity and sometimes quality (Cernansky 2005).

The colonial impact on people's indigenous food practices was cataclysmic and the effects are still reverberate today (Demi 2005; Chetty 2013). Modernization and globalization has resulted in the simplification of human diets and reliance on a few staple crops whilst indigenous vegetables are discriminated through interaction of different cultures (Welch and Graham 1999). Gockowski et al (2003) found out that most young consumers in urban centers did not even know what they were and those who knew them had a negative attitude towards their consumption because they considered them as not trendy and unfashionable when compared to fast foods like French fries. During the colonial era, adventurers and slavers brought many exotic crops and vegetables to Africa. Local growers accepted the exotic crops at the expense of losing traditional vegetables (Muhanji et al 2011). The change in types of foods consumed is still evident because indigenous vegetables suffer discrimination compared to exotic vegetables that are more common in household consumption. Accordingly, this relates to the research question of the study on why people marginalize the vegetables from their own perspectives.

2.6 Indigenous food systems and Colonialism

Colonization was portrayed as an extension of civilization and this ideology justified cultural superiority of the Western world over non-western world. During colonialism everyone in colonized states had an assigned cultural identity and the colonizers proffered theories of national superiority. The introduction of new food systems were adopted and forced on colonized states and this led to the loss of local and indigenous food systems. Thus, in the process indigenous foods specifically indigenous vegetables were marginalized. Indigenous foods or

vegetables were no longer important to be incorporated into the new Western food systems introduced by the colonialists and were considered inferior. In Zimbabwe, the local people considered all indigenous foods as part of their culture and this was altered by colonialism. Frantz Fanon, a philosopher wrote that "colonialism is the systematic denial of all attributes of humanity of the colonized people". Grey and Patel (2015) discern an alternative progression on indigenous food systems and colonialism that is, initially the destruction of indigenous food systems as a tool of war (conquest); followed by forced conversion to a Settler diet (assimilation).

In contemporary world, local people are faced with difficulties of source communities to prepare and market their own menus or to control the interpretation as well as alienation of their cuisines; and often the inaccessibility of the ingredients, made available for mainstream dining (Grey and Patel 2015). In Zimbabwe food has been associated as part of culture and this was altered by the colonialists who forced indigenous people to adopt the western lifestyle and food systems whilst marginalizing local foods for example, indigenous vegetables. This was shown through undermining indigenous foods and separating local people from their land during colonialism.

2.7 Consumption of Indigenous foods according to class

Furthermore, middle-income earners believed that most of the vegetables grow on disturbed areas flooded with untreated sewage along open sewer lines or near sewage treatment plants. The low-income earners, on the other hand, consumed these vegetables regularly (Gockowski et al 2003). In some instances, AIVs are associated with certain ethnic groups or regions. Most consumers hardly consume AIVs due to lack of reliable information regarding their nutritive value and limited availability. Gockowski et al (2003) report that in Cameroon, ALVs remain important dietary components although household expenditure on ALVs declines as total

expenditure grew suggesting that consumption decreases with increasing income (Gockowski et al 2003). Cernansky (2015) notes that people throughout East Africa recognize the socio-economic benefits of indigenous vegetables and that their public demand has boomed.

Rubaihayo (2002) found that indigenous vegetables are common in poor households between harvests or when harvests fail, and these vegetables are not available for consumption all the time but are seasonal. Rubaihayo (2002) noted that indigenous vegetables increase dietary diversity especially for poor households. According to de Bruin (2018), there is a divide between wealthier people being able to explore indigenous vegetables as well as foods, whereas for the poor it is more for food security. Despite that when sold in markets, AIV prices are usually cheap, making them easily accessible to the very poorest but they are not highly preferred or prioritized as the main foods in household diets (Kebede and Bokelmann 2017). Despite that Sub-Saharan Africa is known as a natural habitat for more than 45,000 species of plants, of which about 1,000 are edible green leafy or fruit vegetables that happen to be the mainstay of traditional diets, this is slowly declining especially in urban areas (Mac-Calla 1994). Due to this, the research is situated on explaining this situation of indigenous vegetables not being incorporated as part of household diets despite class.

2.8 Different uses of indigenous foods

The traditional African vegetables have multiple socio and economic uses such as food, cash, medicinal, cultural and ornamental purposes (Abukutsa-Onyango, 2014; Ebert, 2014). In addition, indigenous plants are important income generating foods in impoverished societies. Despite all of this, they are ignored if not rejected in most cases. Other economic benefits include contribution to income and creation of employment opportunities especially women participating in the production as well as marketing activities of the vegetables (Shackleton et al 2000;

Weinberger and Msuya 2004; Schippers 2000; Gockowski et al 2003). Shei (2008) argues that native West African vegetables are not well known and documented for them to be exploited fully. Thereby, there is need for awareness on uses and conservation of many other native West African vegetables especially those that are presently facing the threat of extinction (Shackleton et al 2000). This will allow recognition of the marginalized vegetables so that they are utilized and incorporated in household diets.

Indigenous plants command different statuses in various indigenous clans and culture groups whereby some are food while others are medicinal plants. The general rule regarding food and medicine as noted by Messer (1977) is to allow one's food to be their medicine and the medicine to be one's food. Hence, beliefs associated with health benefits of food extend the value of that food, particularly plant-based food, to the realm of traditional medicine (Messer 1977; Messer 1984). Noteworthy uses of different parts of the marginalized plants include treatment of various ailments or disorders like fever, cold, cough, asthma, abdominal pains, blood pressure, and liver related problems and protects against chronic diseases (Hilou et al 2006). Despite the benefits, some varieties contain poisonous chemical compounds that have led to many individuals being reluctant to utilize indigenous vegetable plants (Orech et al 2005).

The high protein and vitamin contents in these vegetables can eliminate nutrition-related deficiencies among children, pregnant women and the poor (Dweba and Mearns 2011). People suffering from diseases such as high blood pressure, HIV/AIDS, cancer and hypertension are encouraged to consume African indigenous vegetables because of their medicinal value (Dweba and Mearns 2011). Reportin g on the Moringa plant *(Moringa oleifera)* in 1937, the British

botanist Dalziel John MacEwen observed that the roots, leaves and twigs, as well as the bark of the tree are used in traditional medicine. Due to association with diseases, most people continue to reject these plants (Ayodele 2005). Regardless of all these benefits provided by indigenous vegetables, they continue to suffer stigmatization leading to their marginalization in different areas despite documented food insecurity access, poor dietary diversity and hunger at the household level in Zimbabwe.

2.9 Chapter Summary

The chapter provided information on existing knowledge on indigenous vegetables. Thus, the main aim of reviewing the available literature was to establish what is already known in relation to the topic of interest, research methodologies and theories adopted by other researchers in studying indigenous vegetables. The process of reviewing the available literature enabled the researcher to identify unanswered research questions such as individuals' reasons leading to the marginalization of indigenous vegetables. The available literature revealed that there is less documentation on the marginalization of indigenous vegetables from a sociological perspective. Therefore, the study sought to bridge the above literature gap and add more knowledge on the marginalization of indigenous vegetables. This will also help in uncovering a way forward to incorporate and acquire recognition from the government for these indigenous vegetables to be accepted equally as the exotic vegetables at national level. The study aim on understanding of the extent of marginalization of the indigenous wild vegetables will create more awareness on the rejection of indigenous vegetables and for people to include these vegetables when available into their diets for better health because they are highly nutritious.

CHAPTER THREE: THEORETICAL FRAMEWORK

3.0 Introduction

So (1990) cited in Abdelrahman (1994) considers the importance of theory and declares that it is difficult for researchers in the social sciences to conduct empirical studies without one. A theoretical framework helps in the explanation and understanding of phenomena. In this study, the theoretical framework based on post-colonial school of thought was used to explain the marginalization of indigenous wild vegetables in the community of Figtree. Post-colonial theory as a critical theory analyses history and culture as well as discourse of European imperial power. According to various theorists post-colonialism is modeled on postmodernism and both share certain concepts of departing from a certain era to the next. However, it has been noted that theoreticians do not always agree on a common set of definitions. Byron (2006) points out that the definition of post-colonial would only mean that the colonial rule ceased by its all means whilst given that the political independence is even an illusion for these ex-colonies. Thus, colonialism continues in a neo-colonial mode after taking different forms. Despite the lack of consensus on definition, Alatas (1997) pointed out one of the major concepts of post-colonial theory on that it addresses how western cultural knowledge was applied to subjugate a non-European people into a colony of the European mother country. In this case, various scholars agree that in defining the theory we can discuss about previously-mentioned experience of various kinds such as slavery, suppression, representation, difference, racial and cultural discrimination.

3.1 Post-colonial theory

Post-colonial theory aim at destabilizing theories by means of which colonialists “understand” and “know” the world. Fanon (1963) defines colonialism as a source of violence and focuses on its psychological effects on human conscious since he believed that only a psychoanalytical interpretation of the black problem can lay bare the anomalies of the effects of colonialism. In light of the marginalization of indigenous vegetables in contemporary society it can be explained as well as traced back to the colonial era whereby colonial subjects were expected to adopt new food systems and western diets. Therefore, post-colonial theory establishes intellectual spaces for subaltern peoples to speak for themselves in their own voices (Fanon 1963). In this way it produces cultural discourses of philosophy, language and society as well as balancing the imbalanced us-and-them binary power relationship between the colonist and the colonial subjects. Edward Said a cultural critic is considered as “the originator and inspiring patron-saint of post-colonial theory and considered the one who laid the cornerstone of this theory.

During and after colonialism there was great loss of traditional and cultural patterns of consumption whereby local people marginalized their indigenous vegetables. In the same vein, individuals began to adopt Western types of foods and at the same time embracing Western cultural consumption patterns. Of which the post-colonial theory is suitable in analyzing individual views, perceptions and reasons that explain the marginalization of indigenous vegetables. As the study focuses on the marginalization of indigenous vegetables, it seeks to unravel the reasons held by individuals that explain or justify the marginalization of the vegetables.

Said as cited by Brydon (2006) considers the false image of the Orient fabricated by Western thinkers as the primitive "other" in contrast with the civilized West. He believes that the

consequences of colonialism are still persisting in the form of chaos, coups, corruption, civil wars, and bloodshed, which permeates many ex-colonies. Therefore, Post-colonial theory is committed to addressing the plague of colonialism. The powerful colonizer has imposed a language and a culture, whereas those of the Oriental peoples have been ignored or distorted (Hamadi 2014). Some works of post-colonial novelists reveal how being free from the repression of colonialism, build their own image, and write their history outside the frame they have for long been put into (Hamadi 2014). Hamadi (2014) state that the relationship between Occident and Orient is a relationship of power and of domination. The Orient are always seen as not only primitive but thoughtless and unreliable whilst their culture continues to be undermined. Said explores how European culture gained strength and identity by defining itself as against the Orient (Hamadi 2014).

Most authors contend that post-colonialism theory calls for justice and seeks to speak to social and psychological suffering, exploitation, violence and enslavement done to the powerless victims of colonization around the world by challenging the superiority of dominant perspectives and seeking to re-position and empower the marginalized and subordinated. As the research focused on revealing the extent of indigenous vegetables marginalization post-colonial theory was appropriate because it seeks to speak to the vast social and psychological suffering, exploitation, violence and enslavement done to the powerless victims of colonization around the world. Of which the marginalization of indigenous vegetables can be explained by the post-colonial theory that depicts a picture on how colonialism has led to the loss of cultural identities of indigenous people in the name of civilization. As the theory challenges the superiority of the

dominant Western perspective, it seeks to re-position and empower the marginalized and subordinated. This is through explaining the effects of colonialism that are still felt today.

“Subaltern” is one of Spivak’s most-cited concepts despite being frequently misinterpreted she used in order to draw attention to the representation of the Third World within Western discourse. Spivak (1999) deals with the problem of "how the third world especially former colonies are represented within Western discourse" (Brydon 2006). She further argues that even now the powerless are unable to express themselves, and that the experiences of such groups are inevitably distorted by the perspectives of the elite, such as academics, who are describing them. In addition to this, more light is shed on the relationship between culture and imperialism. In his thought Fanon and many of the post-colonial writers, consider violence, has ruled over the ordering of the colonial world, as a destruction form of native social forms without reserving the systems of reference of the economy, the customs of dress and external life (Fanon 1963). To Fanon (1963), this violence affirmed the supremacy of white values and the aggressiveness which has permeated the victory of these values over the ways of life. In the case of the research the theory explains that colonialism led to different kinds of subjugation like identity and led to the marginalization of indigenous and local people‘s food systems. It has been noted that some aspects of colonialism and pervasive effects have persisted remarkably even after the end of the colonial rule (Brydon, 2006).

Therefore, post-colonial theory helped in gaining clear understanding on what initially led to the marginalization of indigenous vegetables as the theory focuses on colonialism as a driving force behind the marginalization of the vegetables in the past. For example in the study, some of the

people lacked knowledge on the indigenous vegetables of which can be explained by the marginalization of the vegetables during the colonial era. As a result local people were isolated from their culture specifically their indigenous foods.

3.2 Limitations of the Theory

According to Slemon (1995), postcolonial theory is problematic for researchers because of its "lack of consensus and clarity". Therefore, this has led to some scholars suggesting that the lack of proper definition for the theory is problematic to understand what the theory seeks to explain (Brydon 2006). It has been highlighted by Slemon (1995) that the post-colonial theory is based on the discourse of Edward Said post-colonialism. However, one may point out that in achieving the goal of the research, the theory of post-colonialism is imperative in understanding the marginalization of indigenous vegetables. Therefore, post-colonial theory surpasses the above-mentioned limitations of the theory because the study sought to explain the marginalization of indigenous vegetables from individual perspectives. Thus, the study intended to attain individual interpretations explaining the main research question of which post-colonial theory emphasize on colonialism initiating the marginalization as well as the undermining of indigenous cultures. Due to such limitations, the study focused on answering research questions that were answered by the post-colonial theory through explaining the findings of the research.

3.2 Chapter Summary

The chapter focused on the theoretical framework of which Postcolonial theory was employed in the research study. Through tracing the interactions between colonizers and former colonies and deals with issues such as identity, language, representation and history, the theory gives insight on how language and culture were replaced or superseded by European traditions in former colonial societies and the theory considers the effect of colonialism's aftermath. All in all, the

theory discussed on the above chapter explains the continuation of the marginalizing of indigenous vegetables and the relevance of the theory to the study.

CHAPTER FOUR: RESEARCH METHODOLOGY

4.0 Introduction

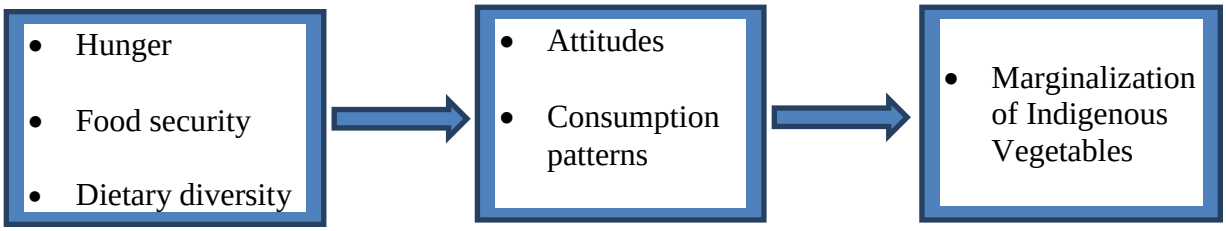
Bryman (2016) notes that research methodology is a framework used for generating evidence that is selected to answer the research questions. A research design also provides a framework for collecting and analyzing data. Various scholars have noted that a reliable methodology adds value and significance to the whole study process. Therefore, this chapter highlights the study design, study site, sampling size, data collection methods, data analysis methods and ethical issues.

4.1 Mixed methods research design

The study involved collecting and integrating of qualitative and quantitative data in a mixed methods approach. The study sought to quantify the marginalization of indigenous vegetables (quantitative research) using a set of questionnaires and explain the reasons leading to their marginalization (qualitative research) using qualitative semi-structured interviews. A mixed methods approach is appropriate in this study because previous studies by (Sebit 1994) indicated that there is a clear connection between quantitative and qualitative research strategies in giving a better understanding of reasons for marginalization of indigenous vegetables.

This study used an explanatory sequential design, it involved collecting and analyzing quantitative data first and then followed by collecting and analyzing qualitative data to corroborate or explain quantitative findings as cited in (Bryman 2016). According to Bryman (2016), the prioritization of either the quantitative or the qualitative element depends on the

study's research questions. In the study, there was a proposed explanation for the relationship between marginalization of indigenous vegetables and hunger/food security/dietary diversity implying:



The sequence insinuates that hunger/food security/dietary diversity has an impact on individuals' attitudes and household consumption pattern of indigenous vegetables, which in turn has a possible effect on the marginalization of indigenous vegetables.

4.2 Study Site: Figtree Community

According to Snail (2011), different factors are considered when selecting a study site for doing research. One of the factors is the accessibility of the place that conforms to the study demands time, and cost factors. Figtree is a village in the province of Matabeleland South, Zimbabwe. It is located about 37 km south-west of Bulawayo on the main Bulawayo-Plumtree road. As a farming and resettlement area, it is growing into an urban village. It was a suitable study area as a growing community of which made the place suitable for the research because of the availability of different indigenous vegetables in surrounding areas. More to this, Figtree was chosen as the study cite because it is where the researcher lives of which it was an advantage in gaining entry and identifying respondents living in the Figtree community. In terms of proximity, the researcher was able to reduce time on travelling to the study area and cut travelling costs.

4.3 Study participants, interviewees, and selection/sampling

Systematic sampling quantitative research was used in the unbiased selection of respondents and interviewees (Babbie 1989). Also, convenience sampling was used in the selection of respondents for qualitative research. Respondents in the quantitative questionnaire survey belonged to households found in three Figtree communities: Garikayi/Hlalanikuhle, Masotsha Primary School and Masdel farm located in the following Global Positioning Systems (GPS) coordinates: (S20^{0}21′16.4″, E28^{0}21′00.1″), (S20^{0}23′55.5″, E28^{0}19′44.9″) and (S20^{0}26′02.8″, E28^{0}19′21.0″) respectively. In systematic sampling, every third household in a community was chosen systematically for inclusion in the sample from a total of 103 households found in the Figtree community. Seven households from each residential area comprised 57 respondents were selected. To ensure against human bias the researcher selected the first household at random by selecting a random number between 1 and 5. The households however, were arranged according to numerical order. Quantitative (closed-ended) questionnaires and qualitative (open-ended) interviews were used to collect quantitative data and qualitative data, respectively.

In the study, the researcher began collecting quantitative data in a survey given to 57respondents of which consisted of both female and male-headed households. According to Crawford (1990), a well-designed questionnaire must meet the research objectives. The researcher adopted and modified well-established questionnaires in (i) dietary diversity (DD) according to FAO (2011), (ii) household food insecurity and access (HFIAS) according to Coates et al (2007), (iii) household hunger scale (HHS) according to Ballard et al (2011) and (iv) dietary diversity of indigenous foods (DDIF) according to FAO (2011). These questions are universal instruments or proxies of gathering household food consumption data (Coates et al 2007; Gandure et al 2010;

Maxwell et al 2014; Vaitla et al 2017; IPC Global Partners 2012). DD and DDIF scores on food security were based on a 24-hour recall of 11 foods groups and 5 indigenous food groups, respectively, shown in Table 1, that a household ate or drank during the day and night, whether at home or outside the home. HHS estimated how many respondents or households in the past four weeks (30 days) they or any household member went the whole day and night without food because of lack of resources to get food. HFIAS was based on whether respondents or any household member in the past four weeks ate some foods that they did not want to eat because of a lack of resources to obtain other types of foods. The scoring for the four indicators are as prescribed in Table 1 and 2.

Table 1

Categorical Scales/Scores/Indicators classifying food consumption

Indicator	**Food groups**
Dietary diversity of indigenous foods (DDIF) N = 5	Cultivated indigenous fruits, cultivated indigenous vegetables, wild fruits, wild indigenous vegetables, seasonal indigenous relish. *FAO (2011) classification system* Consume ≤ 3 indigenous food groups: Chronic food insecurity to Acute food insecurity Consume ≥ 4 indigenous food groups: Food secure to Moderate food insecurity
Dietary diversity (DD) N = 11	Cereals, vegetables, fruits, meat, eggs, fish, legumes, milk, oils and fats, sweets, spices and beverages. *FAO (2011) classification system* Consume ≤ 6 food groups: Chronic food insecurity to Acute food insecurity Consume ≥ 7 food groups: Food secure to Moderate food insecurity

Table 2

Categorical food scores/indexes/values for household food consumption

Household scale	**Household categories**
Household hunger scale (HHS) N = 3	*Ballard et al (2011) classification system* • Category 0-1: Little to no hunger in the household • Category 2-3: Moderate hunger in the household • Category 4-6: Severe hunger in the household
Household food insecurity access scale (HFIAS) N = 4	*Coates et al (2007) classification system* • Category 1: Food secure • Category 2: Mildly food insecure access • Category 3: Moderate food insecure access • Category 4: Severely food insecure access

In light of the survey results of indigenous foods, a questionnaire survey to rate indigenous vegetables was conducted in households. Households were selected based on the assurance that participants cultivate, cook and eat any of the indigenous vegetables. Thus, head of households, mothers or caretakers were targeted. Respondents rated how much they "liked" each vegetable on an ordinal scale from "1" (least grade) to "10" (highest grade).

The questionnaires were self-administered and where possible the researcher administered others because some people had no formal education and lacked understanding of questions. Bless and Achola (1988) agrees that the direct administration of questions is a good method to rural areas of less industrialized countries due to low literacy. The survey generated contextual data about the types of foods consumed at household level. Due to the lack of studies that reveal facts on food preferences in the communities of Figtree, the use of questionnaire survey was fundamental to uncover people's food preferences.

Qualitative methods of data collection included semi-structured interviews involving face-to-face discussions on open-ended questions to maximize response rates. Semi-structured interviews were conducted with the respondents on an individual basis. The respondents were selected through convenience sampling. In this way, open-ended questions were administered in each household to every participant of which consisted of 18 respondents. This allowed respondents to give additional information on their feelings, attitudes and understanding of the topic under study. According to Bouma and Ling (2004), there is a big value in gaining qualitative information from key individuals. Semi-structured interviews were also used because of flexibility on the type and sequence of questioning (Wengraft 2001). Such an interview process provided information on respondents' reasons on the underutilization of the indigenous wild vegetables, their views and knowledge on the vegetables. During the interview process, tape-recording was done but where interviewees were uncomfortable being recorded, detailed notes were taken instead. According to Bryman and Bell (2014), tape-recorded interviews allow the researcher to preserve the words spoken by the interviewee and for the interviewer to return at any time to the source of information to re-check and re-listen to the interviews so as to improve the interview technique used.

4.4 Data Collection

In order to obtain clear data on the underutilization of indigenous wild vegetables at household level to reveal the extent of the marginalization of the vegetables information was obtained by using a combination of the following quantitative and qualitative methods. Both quantitative (closed-ended) and qualitative (open-ended) questions were used to collect data. All of this was

conducted in both Ndebele and English language. On the one hand, for the quantitative research strategy the researcher used questionnaires to collect data in order to find out the types of indigenous vegetables consumed and dietary diversity at household level. On the other hand, the qualitative strategy involved conducting one-on-one semi-structured interviews to get explanations on the findings leading to indigenous vegetable dietary diversity and consumption patterns as the data included the respondents' views, knowledge and reasons explaining the underutilization of the indigenous wild vegetables. In other words, the qualitative findings were employed in elaborating and explaining the quantitative findings in the explanatory sequential mixed method design. According to Bryman (2016) the exploratory sequential design entails the collection and analysis of quantitative data followed by the collection and analysis of qualitative data in order to elaborate on the patterns of relationships uncovered through quantitative research. In this study, qualitative element was used to gain further insight into the related quantitative findings. Overall, the value of integrating quantitative and qualitative data results is to improve the probing of issues pivotal to the marginalization of indigenous vegetables in Figtree.

4.5 Data Analysis

The quantitative data collected through questionnaires on the types of food consumed and dietary diversity at household level. The data was first subjected to Factor and Reliability Analysis using principal component analysis with varimax rotation, Kaiser-Meyer-Olkin (KMO), Bartlett's test of Sphericity and Cronbach's alpha in **Statistical Package for Social Sciences (SPSS) version 20** (Kirkpatrick 2013) to reduce the number of variables and to identify interrelationships between variables in the findings. Quantitative data presentation in tables or graphs was done to

display responses. Thenceforth, qualitative data interview responses were used in the explanation of quantitative findings on the underutilization of indigenous wild vegetables highlighting respondents' views and knowledge on indigenous wild vegetables using thematic analysis. The overall data analytic strategies for qualitative inquiry was performed according to Saldaña (2009), which included organizing raw/real data, coding of the data, creating categories for related codes, relating the categories, creating themes/concepts and merging themes and **ATLAS.ti 8** (Friese 2014) data analysis software package. Thematic analysis is a more accessible form of analysis and is a useful method for examining the perspectives of different research respondents as well as highlighting similarities or differences (Braun and Clarke 2006). According to Terrell (2012), quantitative and qualitative results are reported together in such a way that qualitative results are used to elaborate and validate quantitative findings. In analyzing the data collected on the underutilization of indigenous vegetables, the researcher used the mixed methods explanatory sequential design to collect data and the post-colonial theory to discuss and analyze the findings of the study.

4.6 Ethical issues

Bouma and Ling (2004) declares that a responsible researcher is considerate, does nothing to injure, harm or disturb the participants in research, keeps data collected on individuals and groups secure, accurately records information. In such a case, ethical issues are regarded as an essential aspect in research and needs to be considered attentively at every stage (Mugenda and Mugenda 2003). The first ethical step taken by the researcher was obtaining a supporting letter to conduct the fieldwork from the Department of Sociology of the University of Zimbabwe. The letter was used in assuring the respondents on the purpose of the research and that it was meant

for academic purposes only. Before the commencement of the interviews to each and every respondent, the researcher informed respondents on the necessary information on the study aims and the procedures so that they give information freely. Informed consent was obtained through explaining the details of the study aims. In this case, upon agreement to participate in the study, the researcher explained that there was no compensation of any form for their participation. After this, the researcher gave the respondents a form of informed consent to sign in the order of how interviews were carried out. Despite, encountering one respondent who initially refused to take part in the study as he thought the research was meant for humanitarian Non-governmental Organisation (NGO). However, upon explaining the purpose of the research he ultimately agreed to participate.

The researcher is required to protect the identity of every research participant from being known. Therefore, anonymity and confidentiality was prioritized from collecting data and presenting research findings. Confidentiality was essential because research questions involved people's dietary consumption and the types of foods they ate at household level. In such a case, some individuals might share their views and perceptions that they would not want known publicly. Confidentiality and anonymity was helpful in such a way that the respondents expressed themselves freely. In the study, the identity and names of the research participants were kept strictly confidential using pseudonyms.

Lastly, the researcher ensured there was no harm of the respondents in any type of way. From designing research questions, collection of data and presentation of findings the researcher was conscious of avoiding harm to the participants. During data collection, the researcher asked for

permission to take notes and use a voice recorder during interviews to make sure there was no intrusion and force on any individual. The data was presented without misrepresentation of the research respondents.

4.7 Chapter Summary

Overall, the chapter focused on the research methodology selected and the justification of the chosen research design. The mixed method approach was adopted in the study and utilized systematic sampling for selecting respondents. Questionnaire survey, semi-structured interviews also used as methods for data collection and the use of thematic analysis. Lastly, ethical issues were considered throughout the research process as mentioned in this chapter. Therefore, the chapter explains the rationale that informed the selection of the methodology.

CHAPTER FIVE: PRESENTATION OF FINDINGS

5.0 Introduction

This chapter captures and presents quantitative and qualitative findings on the extent of the marginalization of indigenous vegetables. Factor analysis of indigenous food consumption indicators from 57 households suggest that the collected quantitative data are suitable for household food insecurity analysis (Table 3). A reliability analysis of the data sets showed that most variables or items appear to be worthy of retention and the removal of any items should not be considered except for HHS as shown in Table 3.

Table 3

Summary of factor and reliability analysis findings on household hunger scale (HHS), household food insecurity access scale (HFIAS), dietary diversity of indigenous foods (DDIF) and dietary diversity (DD).

Indicator/Scale	Kaiser-Meyer-Olkin (KMO)	Bartlett's test of Sphericity	Cronbach's alpha	Number of items
DDIF	*Not done	*Not done	α = 0.930	25
DD	0.961 > 0.5	χ^2 (136) = 1131.226, p < 0.001	α = 1.000	17
HHS	0.566 > 0.5	χ^2 (3) = 51.811, p < 0.001	α = 0.904	3
HFIAS	0.779 > 0.5	χ^2 (36) = 334.093, p < 0.001	α = 0.931	9

*Not done because the matrix is not positive definite.

Qualitative methods of data collection included semi-structured interviews involving face-to-face discussions on open-ended questions to maximize response rates as stated in section 5.2.

5.1 Food insecurity indicators or scales

Household food insecurity access scale (HFIAS) estimates that more than 50% households in Figtree are chronic to severe food insecure. The food insecurity, premised on worry and lack of resources to obtain other food types. In Table 4, the dietary diversity (DD) and dietary diversity of indigenous foods (DDIF) scores show that Figtree is chronic to acute food insecure in food

categories detailed in Table 1 (section 4.2). In terms of DD, out of 11 food groups noted in Table 1, 54.8% of the respondents consumed less than or six food groups. 76.9% respondents consumed less than or three indigenous food groups of the available 5 indigenous food groups listed earlier in Table 2 (section 4.2).

Table 4

Summary of household hunger scale (HHS), household food insecurity access scale (HFIAS), dietary diversity of indigenous foods (DDIF) and dietary diversity (DD).

Indicator/Scale	**Acute food insecurity**	**Chronic food insecurity**	**Moderate food insecurity**	**Food secure**
HHS				
HHS criteria	Severe hunger in the household **(4-6)**		Moderate hunger in the household **(2-3)**	Little to no hunger in the household **(0-1)**
HHS findings N=57	0%		19%	81%
HFIAS				
HFIAS criteria	Category 4	Category 3	Category 2	Category 1
HFIAS findings N=40	37.5%	17.5%	22.5%	22.5%
DDIF				
DDIF criteria	Consume ≤ 3 indigenous food groups		Consume ≥ 4 indigenous food groups	
DDIF findings N=39	76.9%		23.1%	
DD				
DD criteria	Consume ≤ 6 food groups		Consume ≥ 7 food groups	
DD findings N=42	54.8%		45.2%	

In Table 4, the household hunger scale (HHS) indicate that 81% of the households are not in hunger. However, the hunger findings reflect that the current studies were not done during a food crisis.

Generally, most of the households are not consuming the indigenous vegetables both home and away and they are not deliberately cultivating them. Most of them ate indigenous vegetables both at and away from home as follows; home (30.5%), away (4.3%) and both less than (50%). Most household cropping systems were dominated by bush okra (46.2%), spider flower (35.9%) and

cowpea (35.9%) which were already in-season at the time of conducting this survey. Wild vegetables were very unpopular (7.7 – 17.9%) and least cultivated in cropping systems as detailed in Table 5.

Table 5

*Responses to a seventeen-item "Dietary Diversity of other Indigenous Foods and Indigenous Vegetables Questionnaire" (N = 57). *Listed in order as Scientific, English, Shona, Ndebele names.*

Indigenous Vegetables and Foods (N=23)	**% No**	**% Yes**	**Status in Cropping systems**
1. Wild Indigenous Vegetables* (N=3)			
Amaranthus hybridus, Pigweed, Mova guru, Imbuya	82.1	17.9	Minor
Bidens pilosa, Blackjack, Nhungunira, Ucucuza	92.3	7.7	Minor
Amaranthus thumbergii, Poor man's spinach, Mova, Imbuya	82.1	17.9	Minor
2. Cultivated Indigenous Vegetables* (N=6)			
Vigna unguiculata, Cowpea,Nyemba,Indumba	64.1	**35.9**	Main
Phaseolus vulgaris, Bean leaf, Munyemba, Imbhida yendumba	66.7	33.3	Main
Vigna unguiculata, Cow pea leaf, Nyemba, Indumba	69.2	30.8	Main
Cleome gynandra, Spider flower, Nyovhi/runi, Ulude	64.1	**35.9**	Main
Brassica napus, Spinach wild, Muboora, Ibhobola	76.9	23.1	Main
Corchorus olitorius, Bush okra, Nyenje/gusha, Idelele	53.8	**46.2**	Main
3. Cultivated Indigenous Foods* (N=4)			
Vigna subterranean, Bambara groundnut, Nyimo, Indlubu	71.8	28.2	Main
Ipomoea batata, Sweet potato, Mbambaira, Imbambayila	66.7	33.3	Main
Citrullus lanatus, Watermelon, Vise, Ikhabe	76.9	23.1	Main
Citrullus vulgaris, Cow pumpkin, Mushambarara, Amakhomane	84.6	15.4	Main
4. Wild Indigenous Foods* (N=10)			
Mimusops zeyheri, Red milkwood, Muchechete, Umpumbulu	82.1	17.9	Minor
Sclerocarya caffra, Marula, Mupfura, Amaganu	89.7	10.3	Minor
Colocasia esculenta, Yam (elephant ear), Madumbe, Amadumbe	92.3	7.7	Minor
Grewia flavescens, Donkey berry, Mubhubhunu, Ubhuzu	79.5	20.5	Minor
Strychnos cocculoides, Bitter monkey orange, Mutamba-Muzhinya, Umkhemeswane	74.4	25.6	Minor
Metuliferus Naudin, Spiny cucumber, Mugaka, Amagaka	84.6	15.4	Main
Sclemcarya caffra, Marula nut kernels, Shomhwe; Usomo, Inkelu	92.3	7.7	Minor
Coimbrasia belina, Mopane caterpillars, Madora, Amacimbi	66.7	33.3	Minor
Vitex payos, Chocolate berry, Mutsubvu, Umtshwankela	79.5	20.5	Minor
Berchemia zeyheri, Pink ivory, Munyii, Umnyiyi	74.4	25.6	Minor

The preference ranges from Blackjack (7.7%) to Pigweed (17.9%) and Poor man's spinach (17.9%). There is marginalization of indigenous vegetables in households of Figtree. This shows that indigenous vegetables are not highly accepted compared to the exotic vegetables as well as modern food types. In addition, results indicate that most people at household level do not prioritize their local indigenous foods, in particular, indigenous green leafy vegetables.

A total 39 adult respondents highly rated the spider flower and bush okra as displayed by the box and whisker plots in Figure 1. Pigweed, Blackjack and Poor man's spinach were the least popular. In other statistical analysis, the researcher ignored the three least popular vegetables due to constant low responses.

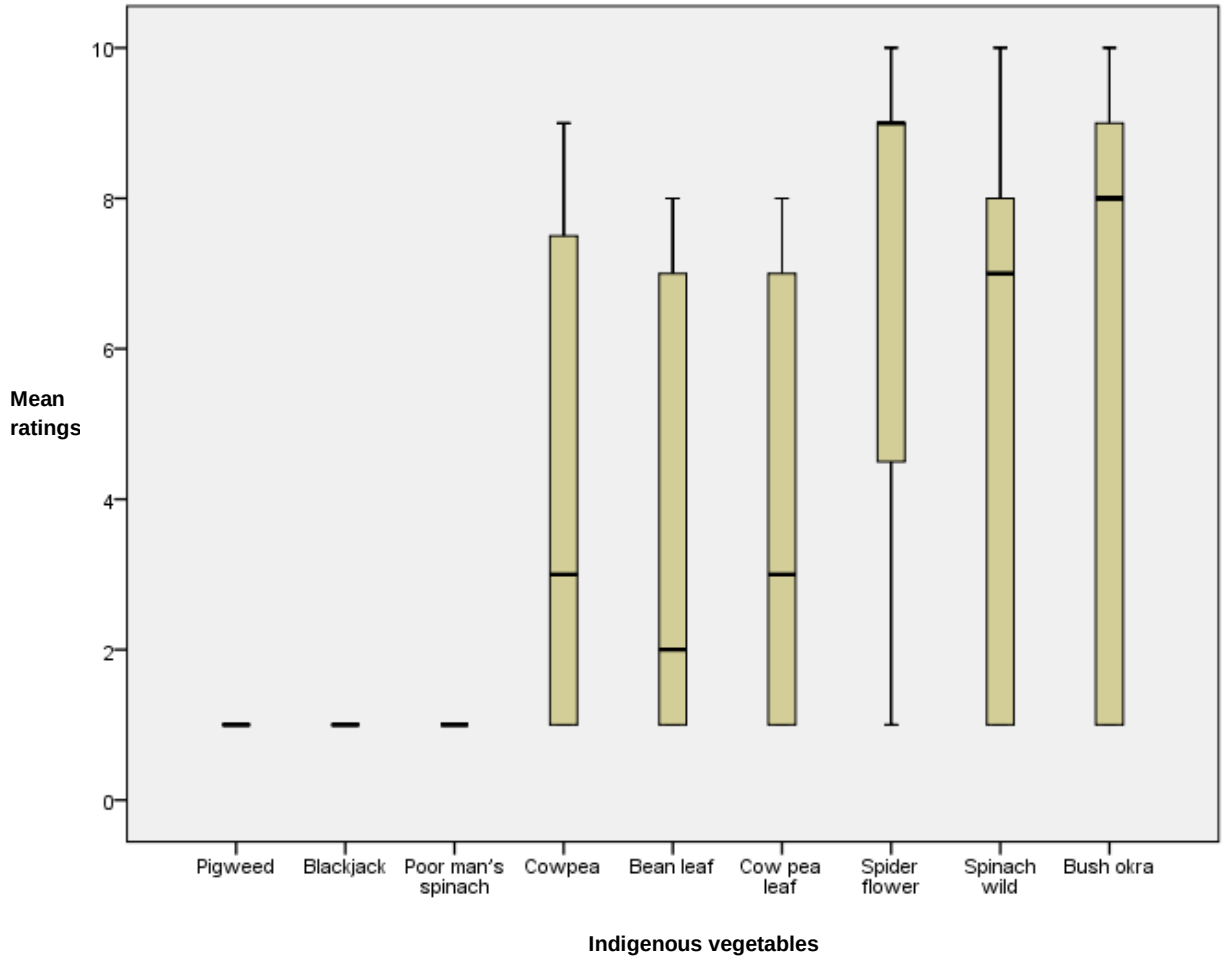


Figure 1 Box and whisker plots showing popularity ratings of indigenous vegetables in Figtree.

A one-way repeated measures analysis of variance (ANOVA) concluded that some indigenous vegetables are "liked" significantly more than others are, F (5, 190) = 9.597, $p < 0.001$, partial $\eta^2 = 0.202$. In the study communities, preference mean ratings followed a statistically significant ($p < 0.05$) chronological sequence from the highest rated spider flower to lowest rated bean leaf as shown in Figure 2;

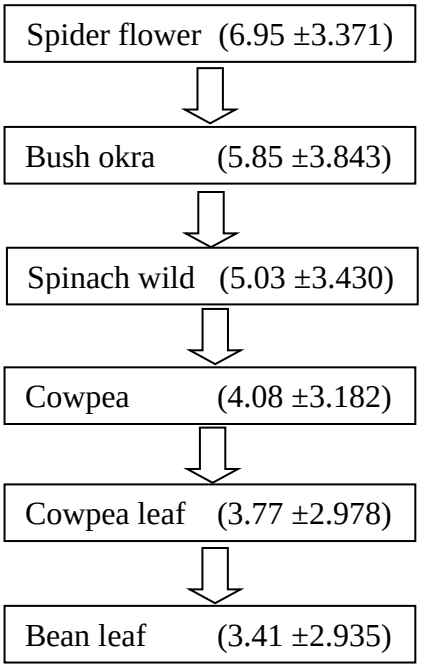


Figure 2 Chronological sequence of popularity ratings of indigenous vegetables (Mean ± standard deviation) found in Figtree.

Post hoc tests pairwise comparisons using the Bonferroni correction showed statistically significant ratings (Table 6) among all spider flower comparisons ($p < 0.05$) except bush okra ($p > 0.05$). This indicates that both bush okra and spider flower are equally liked in Figtree.

Table 6

Pairwise comparisons of the preference ratings of the selected six indigenous vegetables

(I) Vegetables	(J) Vegetables	Mean Difference (I-J)	Std.Error	Sig.[b]
Cowpea	Bean leaf	.667	.393	1.000
	Cowpea leaf	.308	.446	1.000
	Spider flower	-2.872*	.670	.002
	Spinach wild	-.949	.631	1.000
	Bush Okra	-1.769	.667	.174
Bean leaf	Cowpea	-.667	.393	1.000
	Cowpea leaf	-.359	.484	1.000
	Spider flower	-3.538*	.621	.000
	Spinach wild	-1.615	.614	.184
	Bush Okra	-2.436*	.731	.029
Cowpea leaf	Cowpea	-.308	.446	1.000
	Bean leaf	.359	.484	1.000
	Spider flower	-3.179*	.621	.000
	Spinach wild	-1.256	.527	.333
	Bush Okra	-2.077*	.661	.048
Spider flower	Cowpea	2.872*	.670	.002
	Bean leaf	3.538*	.621	.000
	Cowpea leaf	3.179*	.621	.000
	Spinach wild	1.923*	.592	.036
	Bush Okra	1.103	.722	1.000
Spinach wild	Cowpea	.949	.631	1.000
	Bean leaf	1.615	.614	.184
	Cowpea leaf	1.256	.527	.333
	Spider flower	-1.923*	.592	.036
	Bush Okra	-.821	.805	1.000
Bush Okra	Cowpea	1.769	.667	.174
	Bean leaf	2.436*	.731	.029
	Cowpea leaf	2.077*	.661	.048
	Spider flower	-1.103	.722	1.000
	Spinach wild	.821	.805	1.000

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Despite observing that households prefer spider flower and bush okra better than other available indigenous vegetables in Figtree, the question still remains to be answered on why households are marginalizing or not taking advantage of these available vegetables. In the background of all these findings especially on the chronic to severe food insecurity in households and the low dietary diversity scores, semi-structured interviews were conducted to give an insight into reasons behind the marginalization of indigenous vegetables in Figtree as spelt out in the following section (Section 5.2).

5.2 The marginalization of indigenous vegetables

Semi-structured interviews involving face-to-face discussions revealed various reasons behind perceptions, consumption patterns, knowledge systems, preferred vegetables and availability, preparation and cooking methods.

5.2.1 Perceptions

All the respondents pointed out that some of the vegetables are wild and difficult to cultivate or breed off-season. In dire circumstances, they go to the bush to look for them. One of the respondents explained the labor and time required to look for the vegetables in the bush. One of the respondents said:

> *Ukutholakala kwembhida leyi akukholula njengokuthi iyalinywa eduze. Kuyadingakala ukuthi umuntu abelesikhathi ahambe egangeni ukuyakukha leyombhida njengolude lembuya.* (These vegetables are not easily available in that it is planted nearby. It is requires a person to have time to go in the forest to collect these vegetables such as spider

flower (Cleome gynandra, Nyovhi/Runi, Ulude) and poor man's spinach (Amaranthus thumbergii, Mova, Imbuya)).

Six of the respondents were aware of the benefits of the indigenous vegetables and that these vegetables are nutritious whilst nine of all the respondents showed lack of knowledge on the benefits of the vegetables especially on the nutrients. One female respondent explained that as a mother she did not prepare these vegetables for meals because her children refused to eat them on the basis that they are for poor households.

A female respondent expressed her views and experiences concerning the vegetables as her reasons for not consuming them regularly. Thus, she said:

> *When I used to cook these indigenous vegetables, it was almost like cooking tree leaves. Moreover, I usually did not cook them the right way so I do not cook or eat them these days.*

Another respondent explained that she did not grow up eating these vegetables because she lived all her life in urban areas where she became more familiar with the urban dietary lifestyle. She added that she heard that these vegetables are unpalatable and from her own observations, they are not appetizing. She stated that only better preparation and cooking methods would convince her to include these vegetables as part of daily meals for her family.

One male responded that at school he learnt about health benefits of indigenous vegetables. He said that the low consumption of these vegetables was due to lack of accessibility in supermarkets. In addition, another respondent, Mr. Sibiya, mentioned that different plants have benefits, but they are mostly associated with poverty and the rural people, they are outdated, traditional and unwanted vegetables in urbanizing areas. Thus, he said:

These vegetables are outdated for people living in towns because we do not live in the rural areas where you can find people facing worse poverty and they rely more on these traditional vegetables to eat with sadza. In towns, many people do not want these vegetables in their everyday meals.

Another respondent clearly expressed that all indigenous vegetables are healthier than their exotic relatives are. Therefore, because of the need to fit into the urban dietary lifestyle most people favor the exotic vegetables they were not familiar with when growing up in the rural areas. He said:

I grew up eating these traditional foods in the rural areas as a child but I came to live in town. I also adapted to other types of food and these contain GMOs and chemicals like fertilizers but I know traditional foods are better with good nutrients than what we eat these days.

In addition, two respondents opined that traditional or indigenous are natural because there is nothing added or taken from the plants. One of the respondents also pointed out that in terms of health he knew that indigenous vegetables are "naturally healthier". Moreover, indigenous vegetables serve as alternative food in difficult times. However, this is more common in rural areas in today's world.

A male respondent mentioned the importance of these indigenous vegetables to his culture in which they are used to support livelihoods. He said:

Even though I am educated now, I have not forgotten the importance of traditional foods to my culture because these traditional indigenous foods define our own culture where

we come from. In most cases, these vegetables are being sold for money to live by in this difficult economic situation.

5.2.2 Consumption patterns

Out of 11 food groups, 54.8% of the respondents consumed less than or six food groups while 76.9% respondents consumed less than or three indigenous food groups of the available 5 indigenous food groups (Table 2 in section 4.2). It was clear that households are more concerned with the chewing and mouthfeel than vegetable processing, storage, cooking, digestion and absorption. These households felt the indigenous vegetables and especially spider flower (Cleome gynandra, Nyovhi/runi, Ulude) is so unpleasant that children always complain that they are unpalatable. Most households used terms like "bitter" and "salty" to describe the taste of the vegetables. Two of the respondents likened the texture of the vegetables to eating exotic vegetables spoiled with sand. Mrs. Hlali pointed out that:

> *Ulude luyababa njalo nxa uludla ngani luyabe lulenhlabathi uhlafuna.* (Spider flower (Cleome gynandra, Nyovhi/runi, Ulude) has a bitter taste whilst eating and it is as if it contains sand when chewing).

One of the respondents explained different tastes found from the indigenous vegetables of which are unpleasant to the tongue especially for her young children. In addition, she was fully aware of the bitter taste that also influenced her to reject the vegetables. Her children at some point in time refused to eat meals that included these vegetables such as spider flower in favor of meat, which tastes "good" and "better".

All the respondents mentioned the types of vegetables that also have different tastes such as bush okra of which they said that after cooking, it does not look "right" and two female respondents

pointed out that their children refuse to taste it because of the way it looks. Another respondent mentioned that bush okra is tasteless and slimy in appearance. One female respondent explained:

> *Idelele linzima ukulidla labantwana endlini ngoba liyanembuluka kubanzima ukubanika ukuthi belidle abalithandi vele.* (It is difficult to eat bush okra (Corchorus olitorius, Nyenje/gusha, Idelele) with my children because it is slimy and it becomes difficult to give them to eat, as they do not like it at all).

Respondents further added that the taste of other dried vegetables such as cowpea made it difficult and unpleasant to eat for the whole household especially for the respondents' children who constantly complain when eating indigenous vegetables. They said their taste is unpleasant to eat especially dried cowpea (Vigna unguiculata, Nyemba, Indumba) when compared to fresh vegetables.

5.2.3. Knowledge systems

Five female-headed households demonstrated knowledge on different indigenous vegetables because they grew up eating them and their mothers and grandmothers taught them how and when to harvest, prepare and cook them. On the other hand, one of the participants, a young mother explained that she did not have "much" or "enough" knowledge concerning the vegetables because as times have changed there is no need to know a lot about the vegetables that are found in the bush. She said that she did not receive any knowledge from her mother or grandmother.

Two households also mentioned the availability of some indigenous vegetables during certain seasons and this affected their need to include the vegetables in their diets from time to time. One of them explained that he was aware of the benefits that these indigenous vegetables have on the

human body and that even growing up they were knew that they are good for the body and they were made to eat them almost daily. Mr. Sibiya said:

> *Sakhula sikudla thina konke lokhu ekhaya ngoba kuyakhakuhle lokuqinisa imizimba yikho kulezinsuku kukhanya umehluko phakathi kwethu labantwana bakhathesi abasadli njalo abakwazi ukudla esakhula sikudla kudala badla okwakhathesi okugulisayo njalo okungakhi kuhle umzimba ngoba ulude le delele kuyakha umzimba*. (When growing up we used to eat these indigenous vegetables in the rural area because they help in the building and strengthening of the body and that is why there is a difference between our bodies and young generation because today they do not eat what we used to eat as they eat these foods that make them sick. Of which such foods do not build well bodies like the spider flower (Cleome gynandra, Nyovhi/runi, Ulude) and bush okra (Corchorus olitorius, Nyenje/gusha, Idelele)).

Thus, for other respondents who grew up in poor households mentioned that they were used to eating the indigenous vegetables growing up especially during "hunger" times or rainy season. Mrs. Chito pointed out clearly that in her household everyone thinks these vegetables are foods for the poor households. She added on and said:

> *I know that in the rural areas these vegetables are common because they survive on these but for us in village households there are modern lifestyles of which we live by today as well.*

A male-headed household elaborated that these vegetables also help in curing certain diseases and that their grandparents used them to cure diseases in children. Others expounded that other vegetables are wild or natural meaning that they are always present in the fields or bushes. Out of

the interviewed households, only one Mrs. Chayi lacked any knowledge on the types of indigenous vegetables as she said:

> *I know that there are indigenous foods and plants that grow randomly but I do not know any differences between the vegetables or to tell which is which but I know vegetables such as rape and spinach and those are the ones I eat.*

One of the respondents confessed that she did not have sufficient knowledge on the indigenous vegetables because she grew up in urban areas, there was no one to pass all the knowledge about these different types of indigenous vegetables, and that she knew three types of vegetables. She added on that if she grew up in the rural areas, she might have acquired more knowledge.

Two of the respondents, one male and the other a female explained their preferences on types of food they ate based on their knowledge about the indigenous vegetables. Thus, one of them said:

> *There are challenges when identifying the right indigenous foods, personally, I am very choosy when eating indigenous vegetables and I only eat when told by other people that they are the right vegetables.*

In addition, Mrs. Sala responded that:

> *Kunzima ukubakwazi ngokudla lokhu okutholakala egangeni ngoba kumele ubelolwazi ngembhida edliwayo akusiyo yonke edliwayo.* (It is difficult to know about these vegetables found in the bush because one must have the knowledge about the vegetables that are meant for consumption since not all of them are supposed to be eaten).

Furthermore, she said that it is hard to separate the edible vegetables from their poisonous feral relatives using visual assessment.

5.2.4 Preferred vegetables and availability

All the respondents said given a diverse dietary choice, they prefer non-indigenous vegetables to indigenous vegetables. 47.8% households deliberately cultivated indigenous vegetables while the remainder said they were not interested in cultivating them. 65.2% of the respondents ate indigenous vegetables both home and away while 30.5% at home and 4.3% away from home on a daily basis. In addition, 24% of the respondents like indigenous foods in Figtree communities. Three respondents mentioned that they ate some indigenous vegetables from time to time and once or twice in a month. Mr. Tapo noted that:

> *Leyi imbhida asiyidli nsuku zonke njalo nxa sithenga ukudla sihle sithenge izitshebo lokhu okwembhida enjengolude singakudla kanye kumbe kabili ngenyanga*. (We do not eat these indigenous vegetables every day, likewise when we buy food we buy different relish but these vegetables like spider flower (Cleome gynandra, Nyovhi/runi, Ulude) we might eat once in a month).

Two female respondents insisted on buying their groceries and meat excluding indigenous vegetables because they cannot survive on the vegetables only. Mrs. Rayi pointed out that:

> *Sithenga ukudla emashop njalo kumagrocery siyathenga inyama sonke iskhathi njalo okokutsheba ngeke sithi sihlala sisidla ulude lembuya*. (We buy food at grocery shops and part of the groceries we include meat all the time so we do not eat vegetables like spider flower (Cleome gynandra, Nyovhi/runi, Ulude) and poor man's spinach (Brassica napus, Muboora, Ibhobola)).

In terms of vegetables, the respondents spoke at length about their preference for exotic vegetables such as spinach and rape for their meals. Two of the respondents believed that it is

better to eat and buy foods that are easily accessible unlike the indigenous vegetables. In addition, due to changes in today's world, there is need to adapt, thus one Mrs. Popi said:

> *Thina sidla ukudla okuthengwa estolo ngoba kulula ukukuthola kulalokho okwembhida yolude. Njalo izikhathi sezitshintshile akusadingakali okokuhlala umuntu esidla lokhu ukudla kwakudala kumele lathi silandele ukutshintsha kwezinto*. (For us we eat food that is bought at the stores because it is easily available unlike these indigenous vegetables. Likewise, times have changed and it is not necessary for a person to keep on eating such vegetables of the past, we are supposed to follow the change).

Mrs. Popi further mentioned that they used to eat these vegetables during difficult times due to lack of money or late salary payments in her household that is when they tried to incorporate these vegetables in their diets. She added that this was in the past because now it was no longer an issue as they were able to buy and store different foods.

Two female respondents elaborated on that they ate foods found in the shops or supermarkets that they can buy. For them, it is easy to buy than to look for the vegetables in the communal areas. All the respondents explained that it was easy to buy non-indigenous foods most of the time one of the reasons being that these vegetables were not entirely sold alongside exotic vegetables.

One of the respondents explained that her preference for non-indigenous vegetables was due to allergies and this affected one of her children. She further pointed out that it is better to eat exotic foods completely because her child had an allergic reaction after consuming one of the indigenous vegetables.

Three respondents agreed on preferring relishes such as meat and chicken to eat alongside *sadza* as they are tastier and delicious compared to the indigenous vegetables. One of the three respondents mentioned that she preferred foods that taste good whether healthy or unhealthy, for her "good food tastes good" as well. She preferred non-indigenous vegetables such as rape and spinach with readily available seeds and seedlings. More to this, she added on that she had a small garden in her yard of vegetables so there was no need for cultivation of indigenous vegetables whilst she could grow the exotic ones for easy consumption for the whole household.

One respondent also mentioned that there was no need to eat these vegetables in every day meals and to make them the first preference but could be mixed with other types of foods to increase dietary diversity. Mrs. Bobo pointed out that:

> *Kuhle ukudla okutshiyeneyo kodwa akwenzi ukuhlala usidla ulude, idelele le bhobola sonke iskhathi njalo ukuhlanganisa ukudla lokhu lokunye kuhle lakho*. (It is good to eat different types of foods but not to keep on eating spider flower (Cleome gynandra, Nyovhi/runi, Ulude), bush okra (Corchorus olitorius, Nyenje/gusha, Idelele) and spinach wild (Brassica napus, Muboora, Ibhobola) all the time, also mixing these vegetables with other foods is good as well).

Mr. Sibiya similarly said by preferring certain types of foods makes them important than the others but he personally preferred both indigenous and exotic vegetables for healthy eating.

In addition, two respondents pointed out that they preferred what is already available and easily accessible. One of the two respondents further added that in surrounding areas during the rainy seasons these vegetables were less available because of animal grazing and browsing.

5.2.5 Preparation and cooking methods

The respondents stated that indigenous vegetables require special cooking steps and they become unpalatable when not cooked right. For example, spider flower is bitter to taste and one of the respondents Mrs. Chito, said:

> *Ukupheka imbhida leyi kuyahlupha ngoba kuyabe kudingakala ukubalolwazi lwakhona lokupheka njengolude luyahlupha ngoba lungani luyababa selidliwa njalo lufuna ukuphekwa ngendlela yakhona.* (Cooking these indigenous vegetables is difficult because there is need for knowledge on how to cook them especially spider flower (Cleome gynandra, Nyovhi/runi, Ulude). It is difficult since it has a bitter taste when eating so it needs to be cooked the right way).

Some of the respondents who cooked and ate indigenous vegetables blamed the long cooking hours for wasting firewood. One respondent expressed concern on the need to educate and connect the youth with the indigenous vegetables in terms of preparing and cooking them so that they can eat them. This is because if they have the knowledge to cook them, they will eventually consume them.

Three respondents expressed their knowledge on cooking these indigenous vegetables as important and used terms such as “very important”, “useful” and “helpful”. They all explained that the way these vegetables are cooked influence one to eat or reject them because all these vegetables have different tastes that require different ways of cooking. One of them further elaborated that one cannot cook all these vegetables the same way because they are very different. Mrs. Vero stated that:

My grandmothers taught me growing up on cooking vegetables and I still have that knowledge and information even though I do not use it always because I no longer eat the vegetables most of the time.

One female respondent pointed out that she had little knowledge on cooking or preparing the vegetables and gave reasons that such knowledge was possessed by her grandmothers in rural areas but she never lived there. In this way, she had no sufficient knowledge on how to cook these vegetables and the reason for not consuming them. Others pointed out that unlike exotic vegetables when preparing the indigenous vegetables it is a laborious process because some vegetables have smaller leaves that need to be separated before cooking them as well as too many recipes involved in cooking different vegetables. However, most of the male respondents expressed lack of knowledge on the preparation or cooking of the vegetables. In most households, women oversee cooking and preparing foods.

5.3 Chapter Summary

The above chapter presented the findings of the study and the researcher organized the findings into themes. Food insecurity indicators or scales indicated that more than half of the households are food insecure whilst not consuming the indigenous vegetables. Perceptions from the participants, consumption patterns, knowledge systems, preferred vegetables and availability, preparation and cooking methods were presented as the main findings of the study. All the names used for the participants were pseudonyms.

CHAPTER SIX: DISCUSSION OF FINDINGS AND CONCLUSION

6.0 Introduction

There is marginalization of the indigenous vegetables in Figtree and this chapter begins by explaining the findings using guiding themes, reviewed literature and postulates of the post-colonial theory and ends with a conclusion of the study. Factor and reliability analysis results (Table 3) suggest that the data sets were reliable and sampled adequately to reveal household food insecurity

6.1 Food insecurity indicators or scales

More than 50% households in Figtree are chronic to severe food insecure while approximately 23% are food secure. The socio-economic and drought conditions in Zimbabwe remain dire (ZimVac, 2018) and this situation has possibly worsened food insecurity access in households. Arimond and Ruel (2004) as cited in Gandure et al (2010) raises concerns that dietary diversity is associated with malnutrition in children. As such, this makes children in the Figtree community vulnerable to nutritional issues linked to insecure dietary diversity at the household level. The 23% are food secure represent households with abundant food availability albeit which does not include indigenous vegetables. Notably, 54.8% of the respondents consumed less than or six food groups out of 11 indigenous foods available while 76.9% respondents consumed less than or three indigenous food groups out of the available 5 indigenous food groups. There are low indigenous food options and combinations at household level in the Figtree community. Respondents believe that modern lifestyles brought a change in eating habits resulting in ignorance and lack of appreciation of the available benefits of the diversity of indigenous foods. Subramaniam and Bunka (2012: page 6) state, "Food insecurity affects households differently

depending on their production and consumption patterns...". Because of this, it is not surprising that food security is still an issue in drought-prone southern parts of Zimbabwe (ZimVac, 2018). In the studied communities, preference mean ratings followed a statistically significant ($p < 0.05$) chronological sequence from the highest rated spider flower to lowest rated bean leaf. A one-way repeated measures analysis of variance (ANOVA) concluded that some indigenous vegetables are "liked" significantly more than others are, $F(5, 190) = 9.597$, $p < 0.001$, partial $\eta^2 = 0.202$.

6.2 The marginalization of indigenous vegetables

6.2.1 Perceptions

In this research, one of the respondents Mr. Sibiya mentioned that different plants have benefits, but they are mostly associated with poverty. In South Africa, Ineke et al (2007) posit that locals call traditional leafy vegetables "poverty food". These labels have led to a shift in food use and less willingness by the youth to learn about and eat indigenous vegetables. In addition, other respondents think that indigenous vegetables are not part of the modern world but belong to the rural households. Such findings revealed the extent to which indigenous vegetables have been ignored and undermined even in contemporary world of which can be traced back to the colonial era and that the effects are still inherent today. This is because of the negative perceptions that the respondents had concerning the indigenous vegetables. According to the post-colonial theory, western cultural knowledge was applied to subjugate a non-European people into a colony of the European mother country at the same time undermining local peoples' cultural practices by introducing western practices. In light of the perceptions revealed by the respondents it is explained by Fanon (1963) who defines colonialism as a source of violence and that there are psychological effects on human conscious In this case, the post-colonial theory reveals that

indigenous people moved in and out of different contexts, cultures, and sets of ideas as they think differently because of colonialism that made western food systems superior to local food systems. The socio-economic statements by Mr. Tapo about eating these vegetables during difficult times reveal that the indigenous vegetables suffer negative labels associated with poverty (Demi 2014). Findings from the study also confirm that indigenous are viewed in the negative way as poor people's foods in the Figtree communities.

de bruin (2018) found out that people in South Africa regarded indigenous vegetables as medicinal plants that have health promoting benefits. In this study, Mr. Tapo mentioned that the indigenous vegetables cure certain diseases that affect children. From the respondents' perceptions, it was revealed that Messer (1977) urges indigenous communities to adopt food as medicine and medicine as food. In spite of the importance of indigenous vegetables to our health and socio-economic benefits, they remain marginalized. Indigenous green leafy vegetables play an important role in agriculture and nutrition systems in Africa.

6.2.2 Consumption patterns

Out of 11 food groups, 54.8% of the respondents consumed less than or six food groups while 76.9% respondents consumed less than or three indigenous food groups of the available 5 indigenous food groups clearly proves that households have alternatives to indigenous vegetables. It is also likely that seasonal differences in the growth of indigenous vegetables may have influenced the consumption patterns (FAO, 2011). The most popular indigenous vegetables are spider flower (Cleome gynandra, Nyovhi/runi, Ulude) and bush okra (Corchorus olitorius, Nyenje/gusha, Idelele) although most households used terms like "bitter" and "salty" to describe

the taste of the vegetables. All the respondents mentioned that the cooked vegetables do not look "right" and children often refuse to taste them because of the way it looks. Elsewhere, Okeno (2003) reports that the younger generations dislike vegetables because of the bitter taste, non-attractiveness and palatability. Mzanva and Chigumira (2004) blame the bitterness of spider flower for marginalization of this nutritive vegetable. In addition, the declining availability of indigenous vegetables and competition from their exotic relative's influences in the dietary intake of the traditional vegetables (Okeno 2003). In relation to this, it was found that the middle- and average-income earners, especially in urban centers, consumed little of indigenous vegetables in fear of risking their health (AVRDC 2006).

6.2.3. Knowledge systems

Mothers and grandmothers are the custodians of indigenous vegetable knowledge systems in Figtree. In Uganda, women are the ones who prepare and ensure that the family is well catered for in terms of quantity and quality of meals consumed (Bua and Onang 2017). In addition, women were the ones responsible for the cultivation, collection and preparation of vegetables for consumption as opposed to men. According to Vorster et al (2007), women are the major custodians of the knowledge on indigenous vegetables. This concurs with the findings of the research study, as most of the respondents were women with the knowledge and the ones in charge of cooking meals for their households. Most of the male respondents lack knowledge on the preparation or cooking of the indigenous vegetables. Findings by Modi et al (2006) suggest that youth of the community know less about indigenous vegetables than their parents and grandparents. Ineke et al (2007) state that labeling indigenous vegetables as "backward knowledge" and "poverty food" lead to the youth not being interested in these traditional plants.

Chweya and Mnzava (1997) note that indigenous vegetables play a significant role in customs and traditions in Africa. Value-chain addition of these marginalized vegetable can provide a source of income for poor households, especially for the poor and the unemployed (Chweya and Mnzava, 1997). Post-colonial theory is committed to addressing the plague of colonialism and mantains that the consequences of colonialism are still persisting. According to Hamadi (2014), the powerful colonizer has imposed a language and a culture, whereas those of the colonized peoples have been ignored or distorted. In this way, tradition and cultural practices have been ignored that the indigenous people are alienated from their indigenous vegetables. Therefore, it reveals that individuals have disassociated themselves from traditional and cultural foods as well.

6.2.4 Preferred vegetables and availability

Most households do not have enough to eat due to food being neither available nor accessible (Keino et al, 2014). All the respondents said given a diverse dietary choice, they would prefer non-indigenous vegetables to indigenous vegetables. Muhanji et al (2011) asserts that colonization brought and promoted exotic crops and vegetables at the expense of traditional crops and vegetables that were better adapted to the climate than their relatives were. According to Chetty (2013), former colonies have adopted different food preferences from traditional ones. From the findings, the lack of prioritization of indigenous vegetables indicate that people have moved away from their local foods especially indigenous vegetables and in the process there is underutilization or loss of indigenous vegetables. One may point out that in the communities of Figtree people have prioritized non-indigenous foods in their diets. Therefore, post-colonial theory highlights that colonialism has led to the loss of cultural identities of indigenous people at the same time western culture has been adopted dating back to the colonial era. One of the respondents mentioned the importance of the vegetables but insisted on incorporating other

vegetables that are exotic because she felt that the indigenous vegetables cannot be consumed regularly. The respondents showed that they broke away from traditional foods as well as vegetables and preferred western types of foods that are easily available in supermarkets.

Only 24% of the respondents like indigenous foods in Figtree communities. To some, their disposable income allows them to buy exotic vegetables and meat excluding indigenous vegetables. Welch and Graham (1999) suggest that modernization has resulted in the simplification of human diets and reliance on a few staple crops whilst indigenous vegetables are discriminated. Jameson (1984) argues that there is a loss of historicity and as individuals we cannot know the past in this modern world. This explains the findings on that indigenous vegetable that are healthier and part of people's cultures are rejected in favor of less healthy foods. However, some used to eat the indigenous vegetables during difficult times due to lack of money or late salary payments in her household that is when they tried to incorporate these vegetables in their diets. In addition, Mr. Tapo mentioned that they used to eat these vegetables during difficult times due to lack of money or late salary payments that is when they tried to incorporate these vegetables in their diets. This concurs with de Bruin (2018) research findings whereby respondents pointed out that they cook indigenous foods when there is nothing to eat or when they are broke. The study showed that the respondents did not like the taste of the indigenous wild vegetables as well as the way they appeared especially bush okra. Spider flower is tanninferous associated with bitterness which is not desirable (Chweya and Mnzava 1997).

6.2.5 Preparation and cooking methods

Most of the female respondents had the knowledge of cooking and preparing the vegetables whilst most of the male respondents lack this knowledge. Smith and Ezyaguirre (2007) assert that in most cases urban population lacks proper knowledge on drying the wild vegetables.

Flyman and Afolayan (2006) reported that wild vegetables require special preparation to remove their astringent taste, but the handling technique differed from district to district in their study. Ineke et al (2007) found out that there was a feeling that the older people had the knowledge on the cooking of the vegetables. In addition, Cernansky (2015) asserts that despite the awareness on consumption of the indigenous vegetables, the problem is that people do not know how to prepare the vegetables.

6.3 Conclusion

Mixed methods research approach was found to be reliable for estimating chronic to severe food insecurity in Figtree households. Food consumption indicators (DD, DDI, HFIAS and HHS) were also reliable in quantifying household food insecurity. On the other hand, the explanations to the marginalization of indigenous vegetables were examined using qualitative semi-structured interviews and the researcher illustrated how the study contributes to existing sociological knowledge on the marginalization of indigenous vegetables. The study revealed that indigenous vegetables are perceived in a negative way as it was aimed by the colonialists to undermine indigenous and local cultures in the name of civilization whilst alienating people from their culture as explained by the post-colonial theory. From the findings it was clear that indigenous vegetables have suffered marginalization and low uptake from daily diets in the households of Figtree. In addition, it is also, about what looks and taste “right” and gives pleasure and satisfaction to the senses. The indigenous vegetables seem to have lost their socio-economic and cultural acceptance in the Figtree communities as such they are less likely to overcome dietary challenges faced in food insecure households. Nevertheless, there is need for educating this community that healthy eating and food security is about what households eat, not just to fight

hunger and provide nutrients for good nutritional health but also balanced nutrition, which comes with accepting available indigenous vegetables.

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