SOCIO-CULTURAL FACTORS INFLUENCING ATTITUDES AND PERCEPTIONS ON FOOD AND NUTRITION IN MOROGORO MUNICIPALITY

BY

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ABSTRACT

The present study was undertaken to understand socio-cultural factors influencing attitudes and perceptions on food and nutrition of adult men and women residing in Morogoro Municipality. Specifically, the study aimed at determining the socio-cultural factors influencing attitudes and perceptions on food and nutrition; to assess the influence of socio-cultural factors on dietary pattern in the study area; to evaluate household decision making on food accessibility; and to assess the nutritional status of adult household members. Face to face interview and focus group discussion were used to explore the factors. Also, anthropometric dimensions of the respondents were measured, and households were visited for direct observation. A total of 534 respondents were interviewed and the nutrition status of 500 respondents was assessed. The main finding of the study indicates that most of the people in the study area (88%) attained primary school education. The majority of respondents (96%) were involved in agriculture activities. A high proportion (66%) of the respondents lack knowledge on food and nutrition. The nutrition status of the respondents explains the prevalence of under nutrition. About 69% of assessed male and 31% of female respondents are underweight using the standard BMI cut off of 18. Moreover, socio-cultural factors influenced the subjects' attitudes and perception on food and nutrition. The study concluded that there is an inverse relationship between socio-cultural influences and eating behaviour of the people in Morogoro Municipality. Through interaction, people adopt different culture but they do not completely lose their culture, still adhere to their old traits therefore interventions need to be geared towards different groups of the population focusing more on factors influencing their attitudes and perception on food and mark the basis for planning culturally sensitive interventions to promote healthy eating.

DECLARATION

I ESTHER MUTIBA CHACHA do here by declare to the senate of Sokoine University of Agriculture that the work presented here in my own creation and has not been submitted for degree in any other University.

…… ……..

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The above declaration is confirmed by,

…….. ……

Prof. J. Kinabo Date

(Supervisor)

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LIST OF ABREVIATION AND ACRONYMS

ACN	- Administrative Committee on Coordination
ADA	- American Dietetic Association
AIDS	- Acquired Immune Deficiency Syndrome
BMI	- Body Mass Index
ECLAC	- Economic Commission for Latin America and the Caribbean
FAO	- Food and Agriculture Organization
GDP	- Gross Domestic Product
HIV	- Human Immunodeficiency Virus
IFIC	- International Food Information Council
MMC	- Morogoro Municipal Council
NGO	- Non governmental organization
SCN	- Sub Committee on Nutrition
SPSS	-Statistical Package for Social Science
UN	- United Nations
UNICEF	- United Nations Children Fund
URT	- United Republic of Tanzania
USDA	- United State Dietetic Association
WFP	- World Food Programme
WHO	- World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

All humans eat to survive. They also eat to express appreciation, for a sense of belonging, as part of family customs, and for self-realization. For example, some one who is not hungry may eat a piece of cake that has been baked in his or her honour. The term eating habits refers to why and how people eat, which food they eat as well as the way people obtain, store, use, and discard food. Individual, social, cultural, religious, economic, environmental, and political factor all influence people's eating habits. Social factors and cultural practices in most countries have a great influence on what people eat, how they prepare their food, their feeding practices and the food they prefer (Baranowski *et al*., 2003). All people have their likes and dislikes and their beliefs about food and many people are conservative to their food habit. People eat according to learned behaviours regarding etiquette, meal, snack pattern, acceptable foods, food combinations, and portion sizes. A common eating pattern is three meals (breakfast, lunch, and dinner) per day with snacks between meals. The components of a meal vary across cultures, but generally include grains, such as rice or noodle, meat or meat substitute, such as fish, beans, and accompaniments, such as vegetable. (Klimas-Zacas *et al.*, 2001).

Culture is a major determinant of what we eat. Personal values, attitudes and beliefs about food and food preferences are largely shaped during the early socialization period and are thus already a product of culture. Food chosen, methods of cooking, eating pattern, food preparation, number of meals per day, time and size of portion eaten make up human food ways and are a part of coherent culture in which each custom and practices has a part to

play (Fieldhouse, 1982). Socio-cultural factors are transmitted from one generation to another by the process of socialization. Furthermore, local knowledge and perception concerning food are usually limited to socio-norms and other socio-cultural factors that surround food. Undesirable dietary habits and nutrition related practices, attitudes, perceptions and socio-cultural influences could affect nutritional status (Shetty, 1999).

In every society, there are rules (usually unwritten) which specify what food is and what is not food. What one society regards as normal or even highly desirable however another society may consider revolting or totally inedible (Fieldhouse, 1982) Food habits differ widely in regard to which foods are liked, disliked, eaten or not eaten in the society. Cultural groups provide guideline regarding acceptable foods, foods combination, eating pattern and eating behaviour compliance with these guideline creates sense of identity and belonging for the individual. Some one who is repeatedly exposed to certain foods is less hesitant to eat them, for example, lobster, traditionally was only available on the coasts and is much more likely to be accepted as food by coastal dwellers (Onyango, 2003). Religion may have an important role in forbidding the consumption of certain foods for example neither the Muslim nor the Jewish people consume pork. Within Christianity, the Seventh Day Adventists discourage stimulating beverage such as alcohol which is not forbidden among Catholics. Food habit and custom do change and they are influenced in many different ways (Grivetti, 1980).

A number of food habits and practices are poor from a nutritional point of view; however some food practices are governed by taboos and beliefs, which in some societies may contribute to nutritional deficiencies among particular groups of the population (Latham, 1997).

The study aims at contributing to improvement of the nutritional status of urban communities by understanding the socio-cultural factors influencing attitudes and perceptions on food and nutrition and sharing one knowledge with many different sectors including agriculture, health, community development and other stakeholders whose aim is to ensure provision, accessibility and improvement of nutrition services to both rural and urban district in Tanzania.

1.2 Problem Statement

Morogoro region is among few regions in the country endowed with a climate capable of supporting production of various types of food crops including maize, rice, vegetables, fruits, taro, cassava, sweet potatoes etc. Despite high production and availability of variety of foods, the region is facing the problem of nutrition insecurity like other parts of the country. The nutritional status of adults and children in the region is poor. Infant mortality rate for Morogoro is 112 per 1000 live births. Maternal mortality rate is 153 per 100 000. The prevalence of wasting in children below five years of age is 1.5%, underweight 25%, and stunting 52.4%. The prevalence of stunting is higher than the national average of 46%. This is evident that chronic under nutrition is prevalent in Morogoro region. The prevalence of anaemia is 59% in children below five years of age and 47% in school children (Kinabo *et al.,* 2004).

The nutritional status of adults is also of great concern; about 31% of all males are under weight using the standard Body Mass Index (BMI) cut off of 18. About 11% of adult females are underweight. Prevalence of anaemia among adult males ranged between 29% and 71%. Prevalence of anaemia of non- pregnant women was 52%. In some villages, the prevalence was as high as 80%. (Kinabo *et al.,* 2004).

1.3 Justification of the Study

Studies on nutrition have focused more on the causes and consequences of malnutrition and very little on understanding as to why people do behave or practice the way they practice with regard to food and nutrition. The studies on food choice are very limited (Gibney, 2004). Many studies and researches have been done on the mechanisms of addiction and the biological basis of food choice rather than the socio-cultural foundations of food selection (Rozin, 1981; De Garine, 1970; Gibney, 2004). Moreover, research on patterns of food consumption is quite limited. Consumption pattern is about the number of meals, the quantity of meals, the way they are eaten, and with whom they are eaten as well as social aspects of eating. The way person eat, is an important part of culture and varies across cultures (Armelagos, 1996). And this has never been in the food guidelines.

Various food guides provide suggestions on foods to eat, portion sizes and daily intake. However, personal preferences, habits, family customs and social setting largely determine what a person consumes (Klimas-Zacas, *et al..*, 2001).

In both areas of food safety and nutrition, our understandings of consumer's attitudes are poorly researched (Gibney, 2004). A better understanding of how the public perceives their diets would help in the design and implementation of healthy eating behaviours. The present study provides information on the socio-cultural factors surrounding food and nutrition and recommend appropriate interventions to improve the situation.

1.4 Objectives

1.4.1 General objective

To contribute towards improved nutritional status of urban communities by understanding the socio-cultural factors influencing attitudes and perceptions on food and nutrition.

1.4.2 Specific objectives

i. To determine the socio-cultural factors influencing attitudes and perceptions on food and nutrition.

ii. To assess the influence of socio-cultural factors on dietary pattern in the study area.

iii. To evaluate household food decision making on food accessibility.

iv. To assess the nutritional status of adults in the households.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Food Production, Availability and Access

Approximately 852 million people world wide can not obtain enough food to live health and productive lives. (FAO, 2004). ‘Hunger’ is a popular word that resonates strongly with all people, even those who have experienced it only briefly. It is common usage; it describes the subject's feeling of discomfort that follows a period without eating. The term undernourishment defines insufficient food intake to continuously meet dietary energy requirements (FAO, 2003). The term food insecurity relates to the condition that exists when people do not have physical and economic access to sufficient, safe, nutritious, and culturally acceptable food to meet their dietary needs and lead an active and healthy life. (FAO, 1996). Within the definition of food insecurity is a distinct between chronic and acute food insecurity. Chronic food insecurity occurs when people are unable to access sufficient, safe, and nutritious food over long periods such that it becomes their normal condition. Acute food insecurity exist when the lack of access to adequate food is more short term, usually caused by shocks such as drought or war. Hunger and food insecurity are often used interchangeably, since both focus on the availability of food. But it is human nutrition that determines whether a person thrives, falls ill or dies. Nutrition deals with the way body absorbs and uses food, while malnutrition leads to health problems, growth retardation poor cognitive development, and in the worst cases death. It may results from deficiencies, excesses, or imbalances in energy, protein, and other nutrients (FAO, 2003). Both food insecurity and nutritional insecurity must be overcome.

Data show an inverse relationship between food shortage and underweight children: there are more under weight children in cereal surplus countries than in cereal deficit ones. On

reflection, this in not surprising. Asian countries such as India produce enough food to feed themselves, yet both the number and the rate of underweight children are extremely high. Increased supplies did not translate into comparable increases in food consumption by the poor due to the lack of purchasing power, policy failures, and the growing use of cereals and other staples for animal feed to serve wealthier consumers (Scherr, 2003).

Most of Latin America and Asia produce or import enough food to feed their population under there circumstances, productivity growth in Agriculture is not the most effective measure for reducing malnutrition. Instead, the key is to ensure that improvements in productivity are shared across a broad spectrum of resource poor farming households. This requires equitable access to productive assets, especially land, and to improved technologies. It is also essential that the markets function well to ensure that improvements in productivity result in lower consumer prices. The urban poor in these areas need to gain economic access to food (Smith, 2002).

In Africa, however, soil nutrient depletion and unreliable water supply are extreme. Depleted soils cannot provide sufficient mineral nutrients (nitrogen, phosphorus) for crops to grow. This translates into low food productivity and supply. Therefore, for most African Countries, the initial entry point to increasing food production and access may revolve around investments in soil health and water management to improve agriculture productivity (FAO, 2003).

2.1.1 Impact of hunger, poverty, and education on nutrition

The results show that individuals who are malnourished have been failed by many different sectors including agriculture, health, community development, education, social

welfare, finance, and employment. To address hunger effectively requires understanding many causes of malnutrition at the household, community, and regional levels. It also requires multisectoral approach to develop solutions, design and implement policies specifically targeted at vulnerable populations. Previous research suggests that, a cross countries extreme poverty accounts for close to half the variability in over all malnutrition rates. (Smith *et al.,* 2002), in a cross country study of the causes of malnutrition, found that during 1970 – 95, re capita income in developing countries increased significantly from USD 1 011 to USD 2 121. This large increase was found to have facilitated an estimated 7.4 percent reduction in child malnutrition. In a study of 42 developing countries, the UN standing committee on nutrition (UN ACC/ SCN, 1994) found a statistically significant relationship between GDP per capita growth and changes in under weight prevalence, with a 1 percent annual increase in the growth rate of GDP per capita leading to a 0.4 percent increase in underweight prevalence. A similar study of 18 Latin American Countries by the ECLAC in 2001 found that, in 3 percent of the cases analyzed, the percentage of people living on less than day was correlated with the percentage of the population under weight. In effect, 49 percent of the cross country variability in the malnutrition rate (low weight- for- age) and 57 percent of the cross country variability in moderate to serious chronic malnutrition (low height – for- age) could be attributed to differences in the percentage of people living in extreme poverty (ECLAC, 2004).

The level of parents education especially mother's level of education, has significant impact on child malnutrition. If the mother attains primary school education, the child is less likely to be underweight. The correlation is even stronger if the mother also received secondary education. (Smith *et al.*, 2002). In a similar study in 1993 the UN ACC/SCN found especially in South Asia, that female enrollment in secondary school and

government expenditures on social services (health, education and social security), are negatively and significantly associated with underweight prevalence.

2.1.2 Sanitation, health facilities and water

Inadequate sanitation, poor health facilities, unsafe water sources, contribute significantly to malnutrition by increasing the burden of illness for both children and adults .More than 1billion people , one - six of the worlds population , lack access to safe and drinking water. Households dependent on well or surface water for drinking are more likely to have increased prevalence of under weight children be cause the water is more likely to be contaminated And the children living in households, with no toilets are more likely to be underweight (FAO, 2001a).

2.1.3 Socioeconomic, political access and inequalities

The literature on malnutrition has drawn attention to various socioeconomic factors and the functioning of markets in determining access to food. It is believed that the biggest challenge throughout the developing world is to reduce the differences in access to food across geographical areas and social strata. If people find it difficult to produce or purchase enough food, the lack of functioning markets makes it doubly difficult. Access to food is also limited by inefficient markets that are unable to supply sufficient quantities of seasonal food in response to demand throughout the year. These market failures exacerbate fluctuations in the price of food and affordability of food for the poor (Benson, 2004). Sociopolitical Conditions affect Malnutrition through Inequality and exclusionary practices that dis empower groups such as women, children (particularly girls), and ethnic minorities in many countries. Social exclusion results in deprivation not just in food but in wide range of basic services, Including education and health. At the intra household level,

data from South Asia demonstrate that when there is discrimination in food intake between boys and girls, it is largely in favor boys (Haddad *et al.,* 1995).

The inequalities in food intake for infants in South Asia reflect cultural values and the different wages commanded by male and female adults in the labor market. This type of gender specific exclusion from food consumption does not occur as frequently in sub – Saharan Africa, in part because women are household heads in a large proportion of households. But different forms of social and political exclusion in the region can have similarly negative impacts on food security and nutrition status.

2.1.4 HIV / AIDS and nutrition

It is well established that there are important two ways interactions between nutrition and the spread of HIV/ AIDS. Good nutrition is seen as an essential complement to the use of anti retroviral drugs to slow the progression of HIV into full blown AIDS (Kadiyala *et, al.*, 2003). Undernourished people infected with HIV/AIDS develop the full symptoms of the disease more quickly than people who are well fed. People suffering from the disease need good nutrition to fight it off. Yet one of the earliest effects of AIDS is reduced consumption of food in affected households. HIV / AIDS have an especially devastating effect on smallholders' agriculture which remains the engine of economic development for the poor in many developing countries. The main impacts of HIV / AIDS morbidity and mortality on agriculture include reducing crop diversity and the area cropped, abandoning labor intensive activities and selling livestock (Drimie, 2003). Other less direct factors also affect agriculture performance. For example, pastoralist in Namibia Spend up to 25 percent of their time in mourning and attending funerals. *(*Engh, *et al.,* 2000*).* The support services to agriculture also suffer. A study in Zambia found that 67 percent of extension

workers interviewed had lost at least one co worker to AIDS over a three year period *(*Alleyne *et al.,* 2001).

2.1.5 Regional instability and conflict

The impact of conflict on food insecurely is well known. In 1998 some 35 million people were displaced in low and middle income countries, many of them due to conflict and natural disasters. Studies have sought to quantify the effects on food production in conflict Zones in Africa where farm output is the principal source of livelihood for the majority of poor and food insecure people (FAO, 2000). Several analysts have shown a strong association between conflict and factors closely related to food insecurity such as high infant mortality and intergroup competition over land and water. Conflict is also a very important determinant of child malnutrition. A mix of extreme poverty, inequality, and declining per capita incomes was frequently associated with civil wars in the 1990s and early 2000s, particularly when combined with heavy reliance on a narrow range of primary product exports (Collier *et al.,* 2003). Other analysts contend that conflict is not an inevitable out come of environmental scarcities and food insecurity *(*Messer *et al.,* 2001*).* Over the past 20 years, civil conflict has created food emergencies in Angola Burundi, Republic of Congo, Democratic Republic of Congo, Cote d' Ivoire, Guinea, Liberia, Siera Leone, Sudan and Uganda. Although the countries affected by food emergencies may change from year to year there has been little progress in reducing the incidence of such emergencies a cross Africa continent (Benson, 2004).

The key trigger conditions that predisposes societies towards conflict may be natural, such a prolonged drought. They may be economic such as a change in the price of the principle food. (Rice in Indonesia) or cash crop (coffee in Rwanda) that deprives the rebelling

population of its perceived just standard of living. Or they may be political, such as social inequalities, violations of human right, and the denial of access to land or welfare programmes as in Central American. Frequently the food insecurity caused by conflict is heightened by economic crises, HIV/ AIDS, or other disasters. The result is that even more people go hungry. The second link between hunger and instability relates to horizontal inequalities (Stewart, 2002). Large relative differences in nutrition and lack of access to economic, political, and social resources among groups differentiated along ethnic, cultural and religious lines reduces social cohesion (Stewart, 2002). If we can alleviate hunger by tackling it's under lying causes, we are likely to make the world and developing nations safer and more secure. Additional humanitarian sources are necessary for dealing with the consequences of both conflict and natural disasters, and the transition from conflict back to development require huge investments in food and nutritional support.

2.1.6 Natural disasters and climate change

Other major sources of vulnerability for hungry people are natural disasters and climate variability. The poor and food insecure countries that largely depend on rain fed farming are the most vulnerable to variability in climate. Climate variability affects food insecure households in economies with a high dependence on agriculture. In Southern India, the coefficient of variation for net farm income over 10 years was 127 percent, primarily due to climate variability. The amount of food a household is able to purchase is affected by large price fluctuation during droughts or floods. Locust outbreaks and migratory patterns also depend on climate variability, as do many other pests and diseases. A flood can cut off access to markets by damaging transport infrastructure, inundating markets and washing away homes and crops. A drought can lead to crop losses, food price increases, reduced agricultural labor, lost revenue from secondary processing and transport of agricultural

commodities and lost energy when the water in hydroelectric dams become low. Technologies are available for climate prediction to assist the poor in managing their vulnerabilities to risk, based on improved knowledge of climatic risks and local predictions at seasonal time scales (Hansen *et al.*, 2004).

2.2 Food Accessibility and Choices

Food security is linked to diet which is the food stuff available to people that the people eat. In addition food security is also about food preferences, another factor that influence food choices. There is no doubt that the cost of food is a primary determinant of food choices. Whether cost is prohibitive depends fundamentally on person's income and socio-economic status. Low income groups have a greater tendency to consume unbalanced diets and in particular have low intake of fruits and vegetables (De Irala-Estevez *et al*., 2000). However, access to more money does not automatically equate to a better quality diet but the range of foods from which one can choose should increase.

Accessibility to shops is another important physical factor influencing food choice, which is dependent on resources such as transport and geographical location. Healthy food tends to be more expensive when available within towns and cities compared to supermarkets in the outskirts (Donkin *et al.*, 2000). However improving access alone does not increase purchase of additional fruit and vegetables, which are still regarded as prohibitively expensive (Dibsdall *et al.*, 2003).

Many Americans are concerned about nutrition and are aware that achieving a healthful diet is important for health. Yet despite this awareness, many does not taken steps to improve their diets (ADA, 2002). According to USDA's most recent Healthy Eating Index,

the diets of most (74%) Americans need to be improved (Basiotis *et, al.,* 2000). Furthermore information disseminated on nutrition comes from a variety of sources and is viewed as conflicting or is mistrusted, which discourages motivation to change (De Almeida *et al.*, 1997).

Eating behaviour unlike many other biological functions is often subject to sophisticated cognitive control. One of the most widely practiced forms of cognitive control over food intake is dieting. Many individuals express a desire to loose weight or improve their body shape and thus engage in approaches to achieve their ideal body mass index (Mac Evilly & Kelly 2001). Findings from a study of more than 34,000 Minnesota adolescents in grades 7 to 12 indicate that dieting and dissatisfaction with body weight are both strongly associated with low intake of dairy foods (Neumark *et al.*,1999).

Research indicates that dairy foods can be consumed without increasing calorie or fat intake, body weight, or percent body fat (Miller *et al*., 2001). Furthermore, emerging research findings suggest that calcium rich dairy foods such as milk, cheese, or yoghourt pay a role in reducing body weight and body fat in children and adults (Teegarden *et al,*. 2003).

Dietary quality and eating behaviour are influenced by where food is consumed, at home, school, or away from home at restaurant and fast food establishments. (Miller *et, al.*, 2001). However problems can arise when dieting and exercise are taken to extremes. The etiology of eating disorders is usually a combination of factors including biological, psychological, familial and socio-cultural. The occurrence of eating disorders is often associated with a distorted self-image, low self esteem, non-specific anxiety, obsession,

stress and unhappiness (Mac Evilly & Kelly, 2001).

There is a low level of perceived need among European population to alter their eating habits for health reasons, 71% surveyed believed that their diets are already adequately healthy (Kearney *et al.*, 1997).

This high level of satisfaction with current diets has been reported in Australian (Worsley & Crawford, 1985), American (Cotugna *et al*., 1992) and English subjects (Margetts *et al.*, 1998). The lack of need to make dietary changes, suggest a high level of optimistic bias, which is a phenomenon where people believe that they are at less risk from a hazard compared to other. This false optimism is also reflected in studies showing how people underestimate their likelihood of having a high fat diet relative to others (Gatenby, 1996) and how some consumers with low fruit and vegetable intake regard themselves as ‘high consumers’ (Cox *et al.*, 1998a).

If people believe that their diets are already healthy it may be unreasonable to alter their diets, or to consider nutrition or healthy eating as a highly important factor when choosing their food. Although these consumers have a higher probability of having a healthier diet than those who recognize their diet is in need of improvement, they are still far short of the generally accepted public health nutrition goals (Gibney, 2004).

Household income and the cost of food is an important factor influencing food choice, especially for low-income consumers. The potential of food wastage leads to reluctance to try ‘new’ foods for fear the family will reject them. In addition, a lack of knowledge and the loss of cooking skills can also inhibit buying and preparing meals from basic

ingredients. Education on how to increase fruit and vegetable consumption in affordable way such that no further expense, in money or effort is incurred has been proposed as a solution (Dibsdall *et al*., 2003).

Lack of time is frequently mentioned reason for not following nutritional advice, particularly by the young and well educated (Lappalainen *et al*., 1997). However healthful eating is perceived by some consumers to be convenient and costly (IFIC, 2002). People living alone seek out convenience foods rather than cooking from basic ingredients.

2.3 Culture, Taste and Food Classification

Food is the organic substance that we eat to give the body energy .But we don't eat everything that is eatable for us and we prepare the food differently This has to do with culture .Culture defines what is edible and what is not. Personal habits and preferences can modify the cultural frame of reference (along with the biological). Food is like a language allowing groups to be unique and different from other groups (Katz, 1982).

Palatability is proportional to the pleasure some one experience when eating a particular food. It is dependent on the sensory properties of the food such as taste, smell, texture, and appearance. The influence of palatability on appetite and food intake in humans has been investigated in several studies. There is an increase in food intake as palatability increases, but the effect of palatability on appetite in the period following consumption is unclear. Increasing food variety can also increase food and energy intake and in the short term alter energy balance (Sorensen *et al*., 2003).

What people eat is formed and constrained by circumstances that are essentially social and

cultural. Population studies shows that there are clear difference differences in social classes with regard to food and nutrient intake. Poor diet can result in under nutrition and over nutrition can lead to overweight and obesity. Also, culture leads to the difference in habitual consumption of certain foods and in traditions of preparation, and in certain cases can lead to restrictions such as exclusion of meat and milk. Cultural influences are however amenable to change, when moving to a new country individuals often adopt particular food habit of the local culture (Feunekes *et al.,* 1998).

Attitudes and belief, many of which reflect cultural values, can have either positive or negative effects on eating behaviours. A recent study of adolescent in California found that those with positive attitudes about healthful eating (e.g. believed that healthful foods taste good, that consuming a healthful diet would make them feel better about themselves) intended to consume a healthful diet over the next month (Backman *et al*., 2002).

The Pan-European Survey of Consumer Attitudes to Food, Nutrition, and Health found that the top five influences on food choice in 15 European member states are ‘quality/freshness’ (74%), ‘price’(43%), ‘taste’(38%), ‘trying to eat healthy’(32%) and ‘what my family wants to eat’(29%). These are average figures obtained by grouping 15 European member states results which differed significantly from country to country. In USA the following order of factors affecting food choices has been reported; taste, cost, nutrition, convenience and weight concerns (Glanz *et al.,* 1998). In the Pan-European study, females older subjects, and more educated subjects considered ‘health aspects’ to be particularly important. Males more frequently selected ‘taste’ as a main determinant of their food choice. ‘Price’ seemed to be most important in unemployed and retired subjects. Interventions targeted at these groups should consider their perceived determinants of food

choice (Glanz *et al.*, 1998).

Social influences on food intake refer to the impact that one or more persons have on the eating behaviour of the others, either direct (buying food) or indirect (learned from peer's behaviour) either conscious (transfer or belief) or sub conscious. Even when eating alone, food choice is influenced by social factors because attitudes and habits develop through the interaction with others (e.g. a young person at a basketball game may eat certain foods when accompanied by friends and other foods when accompanied by his or her teacher (Feunekes *et al.*, 1998). However quantifying the social influences on food intake is difficult because the influences that people have on the eating behaviour of others are not limited to one type and people are not necessarily aware of the social influences that are exerted on their eating behaviour. Social support can have a beneficial effect on food choices and healthful dietary change (Devine *et al*., 2003).

Taste is one of the most important influences on food choice (Story *et al*., 2002). In reality taste is the sum of all sensory stimulation that is produced by the ingestion of a food. This includes not only taste per se but also smell, appearance and texture of food. These sensory aspects are thought to influence, in particular, spontaneous food choice. From early age, taste and familiarity influence behaviour towards food. (Steiner, 1977). Taste preferences and food aversions develop through experiences and are influenced by our attitudes, beliefs and expectations (Clarke, 1980).

According to one survey, the belief that "healthy foods don't taste as good" was cited by 19% of respondents as the major reason they did not eat as healthfully as they should. Taste preference for sweetness, which is inborn, is a significant determinant of food

choices in young children (ADA, 2002). These culturally influenced taste preferences should be considered when developing interventions to increase calcium intakes.

2.4 Traditional Food Habits and Taboos

The traditional diets of most societies in developing countries are good. Usually only minor changes are needed to enable them to satisfy the nutrient requirements of all members of the family. Many societies, for example in Indonesia and in parts of Africa, partly ferment foods before consumption. Fermentation may both improve the nutritional quality and reduce bacterial contamination of the food. The quantity of food eaten is a common problem than the quality of traditional foods (Latham, 1997).

Some customs and taboos have known origins, and many are logical, although the original reasons may no longer be true. The custom may have become part of the religion of the people involved the customs that prohibit consumption of certain nutritionally valuable foods may not have an important overall nutritional impact, if only one or two food items are affected. Some societies, however, forbid such a wide range of foods to women during pregnancy that it is difficult for them to obtain a balanced diet. (Rozin *et al.*, 1981). Foods may also be classified according to a number of cultural factors, such as hot-cold, male-female, and dangerous for pregnant women, which are culturally constructed from sensory data and other information (Manderson *et al.*, 1981).

CHAPTER THREE

3.0 MATERIAL AND METHODS

3.1 Description of the Study Area

3.1.1 Administrative area

Morogoro region is divided into six Administrative districts namely Kilombero, Ulanga, and Kilosa, Morogoro rural, Mvomero and the Morogoro Municipality. The region lies between latitude 5^{o} 58'' and longitude 10^{o} 0''to the south of the equator and longitude 35˚25''and 35˚ 30'' the east. It occupies a total of 72 939 square kilometers which is approximately 8% of the total area of Tanzania Mainland. Seven neighboring regions border it; to the north are Tanga and Arusha. To the east, Coast region, to the west are Dodoma and Iringa and Ruvuma borders Morogoro to the south. The southern eastern border there is Lindi region. The study was conducted in Morogoro municipality. The municipality has one division which is sub- divided into 19 wards and 274 "mitaa"[1] (URT, 2002).

3.1.2 Geographical location, area and population

Morogoro Municipality is about 195 kilometers to the west of Dar-es-salaam and is situated on the lower slopes of Uluguru Mountains whose peak is about 534 metres above sea level. It lies between latitude 6˚5''and 6˚55''south of the equator and between longitudes 37˚55''to 38˚05'' east of the Greenwich Meridian.

[1]Swahili word for administrative streets.

The Municipality has a total land area of 531 square kilometer this land coverage constitutes 0.4% of the total regional area. The major physical features include the famous uluguru mountains which lie in the southeastern part and Mindu Mountains which lie in the western part. Also in the northern part, the district is bordered by Sokoine village and in the west it is bordered by Sangasanga and Changarawe villages both of Mvomero district. In the East towards Dar-es-salaam main road there is Mkambarani village and in the Southeast it is bordered by Pangawe village both of Morogoro Rural district. In the Northeast, the municipality is bordered by Mkonowamara village of Bagamoyo district, Coast region. There are three main rivers with several tributaries, which form a number of alluvial flood plains. The rivers are Morogoro, Kilakala and Bigwa. Other sources of water are the Mindu dam which was built in the late1980s for the purpose of supporting the industrial activities as well as for domestic use (MMC, 2006).

The population is 113 082 males and 114 839 females which makes a total of 227 921 residents with an average size of 4.1 people per household. Initially the inhabitants were mainly from the ethnic groups of Luguru tribe, but the current population has a mixture of ethnic groups of different tribes (URT, 2002).

Major economic activities include: Industries of primary and secondary level; subsistence and commercial farming; small scale enterprises and commercial retail as well as wholesales. The main agricultural cash crops are sisal, rice and maize, which are grown in the neighbouring districts and the periphery of the Municipality. Food crops include maize, rice, vegetables, fruits, taro, cassava, sweet potatoes etc. Food shortage months include October through April while adequate food periods include May through September. The livestock kept are cattle, goats, chicken, ducks etc. Despite the above

economic activities, the municipal dwellers are poor. The contributing factors to poverty are; low productivity in economic activities such as Agriculture, livestock, and business enterprises, diseases such as malaria and HIV/AIDS, low education level, lack of entrepreneur skills, poor infrastructure(i.e. well set up markets and roads)(MMC, 2006). There is a variation of climatic conditions throughout the year; but the weather is still attractive because of its high altitude. Morogoro experiences average daily temperature of 30^{o}C with a daily range of about 5^{o}C. The highest temperature occurs in November and December, during which the mean maximum temperatures are about 33^{o}C. The minimum temperatures are in June and August when the temperatures go down to about 16^{o}C. The mean relative humidity is about 66% and drops down to as far as 37%. The total average annual rainfall ranges between 821mm to 1,505mm. A long rain season starts in late March and last till late May and short rains start in mid October until late December each year (MMC, 2006).

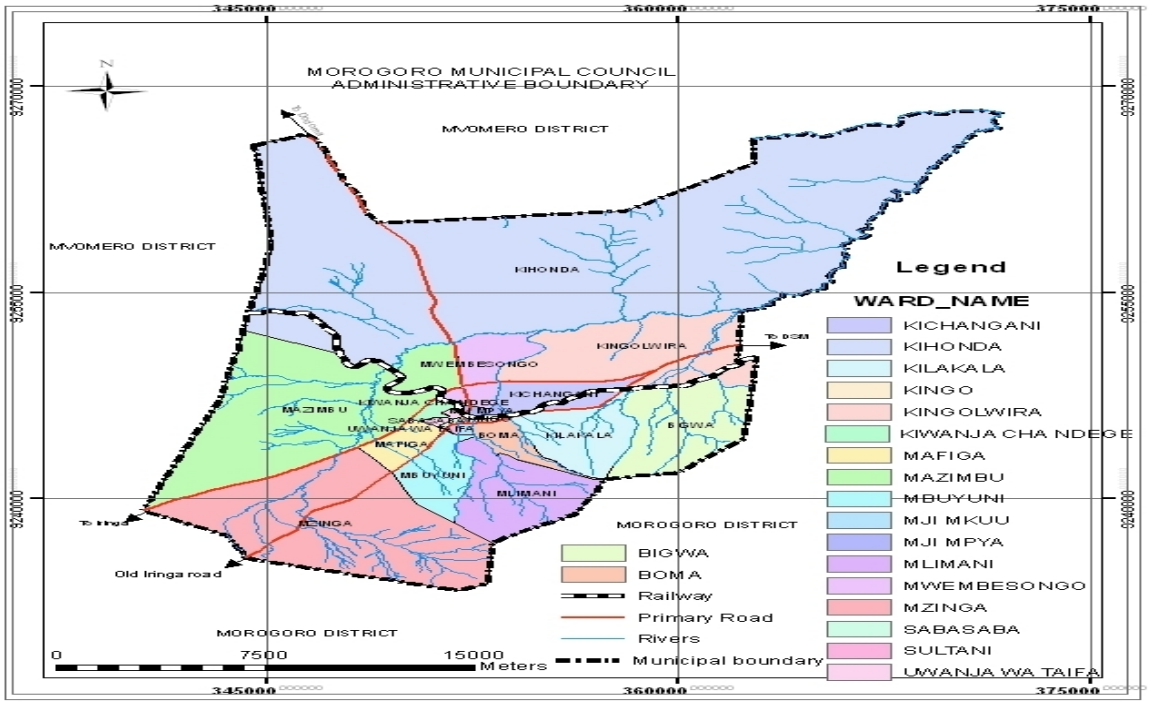

Figure 1: A map of Morogoro Municipality

3.2 Study Design

The study was carried out using Cross sectional survey design to collect data, where structured interviews and assessment of nutritional status of adult household members were included.

3.3 The Study Population

The study population drawn involved adult women and men from three wards namely Kingolwira, Mwembesongo and Bigwa. The “mitaa” were Mwembemsafa, Vituli and Mwembesongo B.

3.4 Sampling Procedure

Morogoro municipality is made up of 19 wards and 274 administrative streets. Registers were used to select wards and streets where urban and peri-urban wards and “mitaa” were

considered. Selection of households was based on population size of each “mtaa”.

3.4.1 The sample size

The selected sample size for the study comprised 500 Adults (69% male and 31% female) aged between 20 to 65 years. According to Fisher *et, al.,* (1991) the formula used is ($n=Z^2pq/d^2$). The population is greater than 10,000 therefore the selected sample size was 400 respondents. Fortunately, 100 people from the same “mitaa” volunteered to participate. The aim was to interview 150 respondents from Bigwa, 150 from Kingolwira and 100 from Mwembesongo wards. Instead, the interviewed respondents were175, 220, and 105 from Bigwa, Kingolwira and Mwembesongo respectively.

3.4.2 The sampling technique

Wards for the study were selected by the municipal director’s office (planning department). The criterion for selection was focused on studying the sample size which would represent the urban and peri-urban areas of the Municipality. The wards were selected from population and housing census book. Priority was given to wards with high population size (for accuracy). Simple random sampling procedure was used to select households which participated in the study. Four hundred households for face to face interview were selected from “mitaa registers”. “Mitaa” with high population were considered first the aim was get the sample size to meet the specific objective of assessing the influence of social interaction on dietary pattern. The first registered households were chosen (to avoid bias). Eight key informants for focus group discussion from each ward were invited (ward executive officer, ‘mitaa government leaders. elders, and influential people). The last ten registered households (four from each of the two peri-urban “mitaa”and two from urban “mtaa”) were visited for direct observation. The researcher

employed 6 assistants (two from each ward). The assistants were trained on how to interview the respondents, to record anthropometric measurements and to determine the nutrition status of the respondents by using BMI standard cut off points. The assistants included 3 ‘mitaa’ government leaders and 3 agricultural extension officers from each ward.

3.5 Data Collection Method

3.5.1 Primary data

Primary data for the study were obtained from four main sources; study Questionnaire, anthropometric measurements, focus group discussion and direct observation. The aim was to crosscheck and verify information obtained through these different methods regarding the topic in question. The data on family size, social norms, food decision making, attitudes and perceptions on food and nutrition, and nutritional status of adults were collected.

General information collected included, age, sex, type of family, education, occupation and religion of the respondents. Specific information included the issues concerning socio-cultural factor, traditions and food taboos and attitudes and perceptions on food and nutrition.

3.5.1.1 Face to face interview

The face to face structured interview was used to administer the Questionnaires to five hundred respondents. The questionnaire consisted of open ended and closed ended questions. The task of interviewing the respondent was done by researcher with the help of enumerator and street chairman who mobilized the subjects.

3.5.1.2 Assessment of attitude and perception

In the likert scale, checklist statements relevant to the assessment of attitude were collected and each of them containing agree and disagree statements to particular attitude.

The same 500 respondents were asked to respond to each statement by checking one of the categories of agreement or disagreement using five point scale on which 5 and 1 stand for most agree and most disagree attitudes, respectively. The total scores of each respondent were obtained by adding the scores that he /she got from separate statement.

3.5.1.3 Anthropometry

The anthropometric measurements of 500 respondents were recorded by using standard protocols.

3.5.2 Measurement of weight

Body weight was measured by using a portable weighing scale (0-150 kg) (SECA-GERMANY) which was placed on a hard flat surface and checked for zero balance before each measurement. Subject with bare feet and only with light clothes were instructed to stand unassisted on the centre of the balance. While taking measurement a respondent stood in upright position while relaxed with feet placed in V- shape. Weight was recorded to the nearest 0.1kg.

(ii) Measurement of height

Heights were measured by using a portable harpended stadiometer Subjects were allowed to stand straight with the head positioned such that Frankfurt plane was horizontal, bare feet together in the centre, knees straight, heels, buttock and shoulders blades in contact

with the vertical surface of the studio meter. Arms hanged loosely at the sides with palms facing the thighs. Height was recorded to the nearest 0.1 cm.

3.5.1.4 Focus group discussion

Focus group discussions were carried out with key informant guided by a checklist of open ended questions. Twenty four representatives from three wards namely Kingolwira, Bigwa and Mwembesongo (eight informants from each ward) were invited to participate in focus group discussion. The discussions were conducted in a Mwembesongo ward's office. The questions were written on the flip charts and the chairman was elected by the participants to guide the discussion by reading the questions (appendix 4). The participants were given equal chances to contribute. Women were encouraged to contribute and the notes were taken. Probing involved a follow-up questioning to get a full response. The discussion included the reasoning on how they perceive food and other socio-cultural factors influencing attitudes on food and nutrition. The information collected was used to supplement the study questionnaire.

3.5.1.5 Direct observation

A total of ten households, in three wards were visited and various activities being carried out by family members were observed and recorded. The activities included food preparation, distribution and acquisition. The researcher was allowed to stay for 4 days in each household.

The aim was to enable the researcher to understand what the respondents are doing and why. Also to get useful information to compare with what they responded to the questionnaire.

3.5.2 Secondary data

The secondary data on food production records, prevailing nutrition situation and some hospital records were derived from reports, library work and informal discussions, also by consulting different publications, such as information concerning the background of the study area.

3.6 Data Analysis

3.6.1 Analysis of respondent's attitudes and perceptions

Data collected were analyzed using statistical package for social science (SPSS) version 12.0 computer programmes. In this statistical package, descriptive analysis of data on frequencies, proportions, percentages, means, median and mode were done. Various qualitative responses were described which included knowledge, attitude and perception on food and nutrition.

3.6.2 Analysis of anthropometric data

Nutritional status of adults was determined by using BMI (weight (kg)/ height (m^2). Cut off points were used to categorize the nutritional status of respondents as follows; Below 18 underweight, from18.5-24.9 normal, from 25 to 29.9 overweight, from 30 to 34.9 obese, from 35 to 39.9 grossly obese and 40^+ morbid obese (WHO, 2004).

CHAPTER FOUR

4.0 RESULTS

This section presents the results on socio- cultural factors influencing attitudes and perceptions of food and nutrition in Morogoro region Tanzania. On study questionnaire survey and assessment of nutritional status, the study involved 534 respondents; 175 respondents from Bigwa, 105 respondents from Mwembesongo, and 220 respondents from Kingolwira ward of which 68.8% were males and 31.2% females. In group discussion the study involved 24 respondents, 8 from each ward and direct observation involved 10 respondents, 4 from each ward.

4.1 Characteristics of the Respondents

The background characteristic of the respondents included sex, age, education, occupation, family size and religion. These parameters were used to determine the socio-cultural factors influencing attitudes and perceptions on food and nutrition.

4.1.1 Age and sex of the respondents

The research aimed at interviewing equal number of adult males and females aged between 20 and 65 years. Table 1 shows that Sixty nine percent of the respondents (69%) were males and 31% were females.

Table 1: Age and sex of respondents (N=500)

Age	20-30	31-40	41-50	51-65	Total	Percent
Sex:						
Female	90	79	69	106	344	68.8
Male	57	46	28	25	156	31.2
Total	**147**	**125**	**97**	**131**	**500**	**100.0**

4.1.2 Education of respondents

The majority of the respondents (88 %) have attained primary school education, and only 2.8% of the respondents had no formal education (Table 2).

Table 2: Education level of respondents (N=500)

Education	Male	%	Female	%	Total	Percent
Primary school	311	62.2	129	25.8	440	88
Secondary school	29	5.8	17	3.4	46	9.2
No formal education	4	0.8	10	2.0	14	2.8
Total	**344**	**68.8**	**156**	**31**	**500**	**100.0**

4.1.3 Occupation of respondents

The respondents mentioned their occupation, and it varied from farming to employment. Ninety six percent (96%) of the respondents were involved in agricultural production activities others are employed and are in different business as shown in Table 3.

Table 3: Occupation of respondents (N=500)

Occupation	n	Percent
Farmers	480	96
Business	15	3
Employed	5	1
Total	**500**	**100**

4.1.4 Family sizes of the respondents

The respondent's family sizes were listed in order of seniority. Each respondent was required to mention members of the family. It shows that the family size of the respondents ranged between 2 and 4 people. The family size of most of the respondents (33%) was 3 people in a family, only 8.6% of the respondents had family size of 4 people or more (Table 4).

Table 4: Family sizes of respondents (N= 500)

Number of people	n	Percent
1	149	9.8
2	160	32
3	165	33
4	83	16.6
Above 4	43	8.6
Total	**500**	**100.0**

4.1.5 Religion of the respondents

The respondents were asked to mention their religion in order to understand the influence of religion on food attitude and perception. Results show that a high proportion (68%) of the residents is Muslims.

4.1.6 Knowledge on food and nutrition

Respondents were asked to respond on whether they had knowledge on food and nutrition or not. The majority of the respondents (66%) lack knowledge on food and nutrition. Only 34% of the respondents had knowledge on child spacing and vaccination.

4.1.7 Source of knowledge on food and nutrition

Schools were the most important source and 50% of the respondents acquired knowledge through trainings conducted at schools. Other sources are from neighbours, hospitals and mass media as shown in Table 5.

Table 5: Source of knowledge (N=170)

Source	n	percent
At school	85	50.0
Hospital	55	32.3
Mass media	25	14.7
Neighbour	5	3.0
Total	**170**	**100.0**

4.1.8 Impact of nutrition education

The respondents were asked to respond on whether the nutrition education had an impact to their daily lives. The results show that 50% of the respondents admitted that there was an impact, 44.1% said that there is no impact and 5.9% were not sure if nutrition education had an impact or not.

4.1.9 Definition of food

Nearly 63% of the respondents were able to define food as anything which when eaten supplies energy and materials for building new tissues of the body. Other responses are shown in Table 6.

Table 6: Definition of food (N=500)

Definition	n	Percent
Anything edible	144	28.8
Anything which when eaten supplies energy and materials for body building.	317	63.4
Anything that satisfies hunger	21	4.2
I don't know	18	3.6
Total	**500**	**100.0**

4.1.9 Undesirable effects of low nutrients intake

A high proportion (54.6%) of the respondents does not know the effect of low nutrient intake and very few (8.8%) could associate the effect of low intake of nutrients to diseases and weight loss.

Table 7: Undesirable effect of low nutrients intake (N=500)

Response	n	Percent
Do not know	273	54.6
Emaciation	114	22.8
Dizziness	12	2.4
Loss of energy	51	10.2
Frequent illness	11	2.2
Loss of weight	33	6.6
Anaemia	6	1.2
Total	**500**	**100.0**

4.1.10 Perception of nutrition

Fifty nine percent of the respondents perceived nutrition as an activity of eating enough food to meet nutritional requirements of the body. However 6% perceived nutrition as knowledge of choosing food (Table 8).

Table 8: Perception of nutrition (N=500)

Response	n	Percent
Different food that are good	130	27.6
To eat sweet foods	38	7.6
Knowledge of choosing food	30	6.0
Activity of eating food to meet nutritional requirement	294	58.8
Total	**500**	**100.0**

4.1.11 Better way of getting nutrients from food

About 56% of the respondents believed that better way of getting nutrients from the food was through eating enough meals with different foods (Table 9).

Table 9: Better way of getting nutrients from food

Response	n	Percent
Eating enough meals with different foods	278	55.6
Eating sweet foods	154	30.8
Eating foods containing protein carbohydrates and fats	68	13.6
Total	**500**	**100.0**

4.1.12 Meaning of nutrients

About 46% of the respondents could not define nutrient properly and 11% could not define it at all. (Table 10).

Table 10: Meaning of a nutrient (N=500)

Response	n	Percent
Chemical substance that is available in different varieties of foods with specific functions in the body when eaten	219	43.8
Is delicious food	228	45.6
I don’t know	53	10.6
Total	**500**	**100**

4.2 Frequency of eating food in a day

A high proportion (59.8%) of the respondents in the study areas reported a feeding frequency of three times per day, and only 2.4% had a feeding frequency of four times per day (Table 11).

Table 11: Number of meals consumed in a day (N=500)

Response	n	Percent
One time	16	3.2
Two times	173	34.6
Three times	299	59.8
Four times	12	2.4
Total	**500**	**100.0**

4.2.1 Frequency of consumption of various foods

It was observed that the respondents consumed various foods once to two times in a day but there were variations of consumption between wards and households depending on their attitudes and perception on foods. Responses are shown in Table12 and appendix 2.

Table 12: Daily food consumption frequency (N= 500)

	N							
Type of food	**Do not eat**		**Eat once**		**Eat twice**		**Eat thrice**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Cereals:								
Rice	7	1.4	270	54	210	42	13	2.6
Maize	21	4.2	419	83.8	56	11.2	4	0.8
Finger millet	25	11.4	393	78.2	82	16.4	0	0
Sorghum	88	17.6	372	74.4	40	8	0	0
Bulrush millet	166	33.2	309	61.8	25	5	0	0
Doughnuts	19	3.8	380	71	81	14.6	20	4
Bread, white	30	6.0	456	91	14	2.8	0	0
Roots/tuber/plantain:								
Taro	3	0.6	312	62.4	185	37	0	0
Potatoes	13	2.6	287	57.4	136	27.2	64	12.8
Plantain	0	0	382	76.4	102	20.4	16	3.2
Yam	168	33.6	280	56	52	10.4	0	0
Sweet potatoes	38	7.6	415	83	47	9.4	0	0
Cassava	26	5.2	248	49.6	189	37.8	37	7.4
Bread fruit	47	9.4	412	82.4	41	8.2	0	0
Animal/fish foods:								
Beef	12	2.4	402	80.4	77	15.4	9	1.8
Goat meat	22	4.4	366	73.0	64	12.8	48	96
Sardine	9	1.8	390	78	101	20.2	0	0
Rabbit meat	135	27	365	73	0	0	0	0
Cows milk	66	13.2	357	71.4	83	16.6	0	0
Grass cutter meat *(ndezi)*	149	29.8	351	70.2	0	0	0	0
Goats milk	202	40.4	298	59.6	0	0	0	0
Pork	377	75.4	80	16	43	8.6	0	0
Poultry foods:								
Chicken meat	30	6	384	76.8	71	14.2	15	3
Chicken eggs	29	5.8	409	81.8	65	13	0	0
Guinea fowl meat	61	12.2	439	87.8	0	0	0	0
Ducks meat	49	9.8	447	89.4	6	1.2	0	0
Guinea fowl eggs	109	21.8	391	78.2	0	0	0	0
Ducks eggs	110	22	390	78	0	0	0	0
Pulse foods:	12	2.4	315	63	129	25.8	44	8.8
Kidney beans	12	2.4	315	63	129	25.8	44	8.8
Mung	23	4.6	357	71.4	120	24	0	0
Pigeon peas	25	5	265	53	210	42	0	0
Cow peas	36	7.2	350	70	114	22.8	0	0

4.2.2 Relationship between eating food and health

About 79.2% of the respondents could relate food to their health but 20.8% could not due to the fact that they lack nutrition knowledge.

4.2.3 Reasons on how they relate food to their health

Although 79.2% of the respondents agreed that they related food to their health only 24.7% ate balanced diets and 54.5% of the respondents gave different reasons related to health but not exactly to food and its function in the body.

Table 13: Reasons on how they relate food to their health (N=500)

Reasons	n	Percent
I eat balanced diet	98	24.7
I do not eat left over food	82	20.7
I wash my hands before eating	80	20.2
I wash cooking and serving utensils	46	11.6
I drink boiled water	30	7.5
I eat to satisfy hunger	60	15.1
Total	**396**	**100.0**

4.2.3 Cultural influences on people's interaction

About 69% of the respondents indicated that different cultural influences do not have any influence on their dietary pattern. The most important reasons included own schedule of eating (38%) and food consumed depends on availability (31%) (Table 14).

Table 14: Reasons on the influence of interaction on dietary pattern (N=500)

Response	n	Percent
I eat like my neighbours	60	12.0
I have my food schedule	188	37.6
I restrict children from eating in the neighbours house by cooking the same food they eat	52	10.4
My culture is better	24	4.8
I eat what I get	156	31.2
The family plans together on what to eat	20	4.0
Total	**500**	**100.0**

4.2.4 Fruits and vegetables consumption

The list included fruits and vegetables sold in Morogoro market and others which are locally available at their wards. The aim was to assess social and cultural influence on people's attitudes and perceptions on fruits and vegetable consumption in the study area The results show that the respondents consumed various fruits, most of them (24.2%, 28.8%, 19.8% and 19.2%) consumed ripe banana four times in a week. Also, it was observed that they consumed vegetables once to three times in a week. Some of the respondents (36%, 42%, and 13%) consumed vegetables three times in a week.

Other responses are shown in (Tables 15& 16).

Table 15: Frequency of consumption of fruits in a week (N=500)

	N%					
Fruit	**Do not eat**	**Eat once**	**Eat twice**	**Eat three times**	**Eat four times**	**Total**
Pawpaw	12.6	63.4	16.2	6.8	1.0	100
Avocado	56.2	35.0	5.4	2.8	0.6	100
Water melon	36.2	47.8	14.0	2.8	0	100
Cucumber	23.6	55.8	16.0	3.4	1.2	100
Mango	12.8	29.6	29.8	21.2	5.6	100
Lime	61.0	31.6	6.2	1.6	0	100
Orange	15.8	52.6	25.8	4.4	1.4	100
Lemon	33.4	48.8	10.8	7.0	0	100
Tangerine	18.8	60.6	16.0	3.4	0	100
Pineapple	15.2	53.8	18.4	10.6	2	100
Ripe banana	8.0	24.2	28.8	19.8	19.2	100
Apple	70.4	23.8	4.0	1.8	0	100
Plum	71.6	25.6	2.0	0.6	0	100
Pear	47	41.8	9.4	1.8	0	100
Guava	27.6	46.8	19.4	6.2	0	100
Baobab pulp	47.6	39.2	9.2	4.0	0	100
Jack fruit	20.4	54.0	19.2	5.4	1.0	100
Sour sop	38.6	47.6	11.2	2.6	0	100

Table 16: Consumption of vegetables in a week (N=500)

	N%					
Vegetables	**Do not eat**	**Eat once**	**Eat twice**	**Eat three times**	**Eat four times**	**Total**
Amaranth	7	36.2	42	13.4	1.4	100
Sweet potato leaf	55.2	19.2	20.3	3.8	1.2	100
Wild amaranth	16	56.6	23.2	4.2	0	100
Spinach	44.6	35.8	17.6	2	0	100
Chinese cabbage	65.2	22.2	10.2	2.4	0	100
Egg plant	14.2	58.2	23.8	2.8	1	100
Cabbage	22.2	43	29.4	5.4	0	100
Broccoli	88	9.8	2.2	0.0	0	100
Carrot	37.2	43	17.2	2.6	0	100
Green pepper	7.8	50.6	29	7.8	4.8	100
Pumpkin leaf	7.2	54	30	7	1.8	100
Cowpea leaf	10.2	37	33.4	15.2	4	100
Okra	13	42.6	36	6.6	1.8	100
Black night shade leaf	21.8	46.2	28.2	3.8	0	100
Tomato, bitter	4	17.4	41.8	33.4	3.4	100
Onion	4.2	16.6	22.8	29	27.4	100

4.2.5 Social and cultural values of food

Lack of nutrition knowledge influenced the attitudes and perception on foods consumed in the study area. All foods are nutritious depending on the composition of food, its preparation and method of cooking. There was a notion that some of the foods are superior (‘nutritious’) than other foods e.g. decorticated maize flour than whole maize flour. Also cultural beliefs and other socio- cultural factors contributed to their food choices (Table 17).

4.2.6 The type of foods considered ‘nutritious’ when eaten

The results show that the respondents considered cereal foods (decorticated maize stiff porridge and rice) with different relishes from animal and poultry sources are more nutritious than with relishes from pulses. They prefer to eat decorticated maize stiff porridge than whole maize flour stiff porridge *(dona)* (Table 17).

Table 17: The type of foods considered 'nutritious' when eaten (N=500)

Food	n	%
Decorticated maize stiff porridge with meat	98	19.6
Rice with meat	77	15.4
Decorticated maize flour stiff porridge with yoghurt	69	13.8
Rice with beans	59	11.8
Decorticated maize flour stiff porridge with sardine	50	10
Whole maize flour stiff porridge with meat	32	6.4
Plantain with meat	29	5.8
Rice with fish	28	5.6
Whole maize flour stiff porridge with	16	3.2
Plantain with beans	12	2.4
Rice with tea	8	1.6
Sliced mixed roots*(futali)*	7	1.4
Bulrush stiff porridge with meat	7	1.4
Sorghum stiff porridge with beans	5	1.0
Cracked maize with beans*(kande)*	3	0.6
Total	**500**	**100.0**

4.2.6.1 Reasons influencing food choices considered 'nutritious'

About 40% of the respondents believe that the chosen food is high in energy and only 2.4% of the respondent considered easiness of food availability as the influence of their food choice (Table 18).

Table 18: Reasons influencing food choices considered nutritious (N=500)

Reasons	n	Percent
As energy giving foods	202	40.4
As healthy foods	77	15.4
Good taste and satiety	51	10.2
It provides various nutrients for proper body functioning	50	10.0
We like the food	74	14.8
It is our traditional foods	34	6.8
Easily available foods	12	2.4
Total	**500**	**100.0**

4.2.7 The type of foods considered not nutritious when eaten

The results show that the top five foods considered not 'nutritious' were cassava stiff porridge, sorghum stiff porridge, boiled cassava, Taro and a mixture of maize with beans *(kande)*(Table 19).

Table 19: The type of foods considered 'not nutritious' when eaten (N= 500)

Food	n	Percent
Cassava stiff porridge	137	27.8
Sorghum stiff porridge	98	19.6
Boiled cassava	62	12.4
Taro (gimbi)	20	4.0
Bread fruit *(shelisheli.)*	12	2.4
Mixture of maize and beans *(kande)*	40	8.0
Sweet potato	39	7.8
Kidney beans	21	4.4
Goat's milk	2	0.4
Plantain	26	5.2
Meat alone	20	4.0
Total	**500**	**100.0**

4.2.7.1 Reason influencing food choice considered not nutritious

Most of the respondents (56%) stated that the food does not stay longer in the stomach. And only 3.4% of the respondents complained that the foods cause constipation. (Table 20).

Table 20: Reason influencing food choices considered not 'nutritious' (N=500)

Response	n	Percent
It does not stay longer in the stomach	280	56
Unpleasant taste and smell	152	30.4
Do not make the body strong	51	10.2
Causes constipation	17	3.4
Total	**500**	**100.0**

4.2.8 Type of foods socially considered meals[2] and snacks[3] when eaten

The majority (97%) of the respondents considered decorticated maize stiff porridge as a meal and only 21.2% considered bulrush millet as a meal. Doughnuts and breads are not considered as meals (Table 21).

Table 21: Types of Cereal foods socially considered as a meal (N=500)

Types of food	n			
	Social value			
	Meal	Snack	Total	Percent
Milled maize	488	12	500	97.6
Rice	270	230	500	54.0
Sorghum	221	279	500	44.2
Millet, finger	136	364	500	27.2
Millet, bulrush	106	394	500	21.2
Bread, white	24	476	500	4.8
Doughnuts	19	481	500	3.8

[2] A meal is food eaten in substantial quantities, usually at a particular time of a day.

[3] Snack is food or beverage eaten under other circumstances than as a regular meal e.g. between meals; usually taken informally and in small amount.

4.2.9 Pulse foods socially considered as a meal when eaten

About 82% of the respondents considered pigeon peas as a meal. Respondents ranked pigeon peas highly because they prefer to eat the food. They harvest or buy the peas seasonally when is still green in the pods. Kidney beans are considered as snack because of its availability and frequency of consumption. They regarded beans as a common food, sometimes eaten at breakfast or in between meal. (Table 22).

Table 22: Pulse foods socially considered as meals (N= 500)

	n			
Types of food	**Social values**			
	Meal	**Snack**	**Total**	**Percent**
Pigeon peas	408	92	500	81.6
Cow peas	389	111	500	77.8
Mung	382	118	500	76.4
Kidney beans	154	346	500	30.8

4.2.10 Plantain, root and tuber foods socially considered meal

Most of the respondents considered the foods plantain, Taro, potato and cassava that they constitute a meal and few of them considered sweet potato, yam and bread fruit (Table 23).

Table 23: Plantain, roots and tuber foods socially considered as meals (N=500)

	n			
	Social values			
Types of food	**Meal**	**Snack**	**Total**	**Percent**
Plantain	394	106	500	78.8
Taro *(gimbi)*	378	122	500	75.6
Potato	353	147	500	70.6
Cassava	334	166	500	66.8
Sweet potato	217	293	500	43.4
Yam *(kiazi kikuu)*	197	303	500	39.4
Bread fruit (*shelisheli)*	146	354	500	29.2

4.2.11 Classification of foods in social value

The foods identified included cereal, pulse, root, tuber as well as poultry and animal foods. Social values depend on how they perceive and rank foods in either high or low class.

4.2.12 Cereal foods socially considered as high value

The majority (94%) of the respondents considered rice as a high valued food and only 15.2% of the respondents valued bulrush millet. Decorticated maize was valued higher than whole maize because of its colour and shelf life. (Table 24).

Table 24: Cereal foods socially considered having high value (N=500)

	n			
	Social values			
Types of food	**High**	**Low**	**Total**	**Percent**
Rice	468	32	500	93.6
Decorticated maize	282	218	500	55.4
Millet, finger	131	369	500	26.2
Whole maize	116	384	500	23.2
Sorghum	111	389	500	22.2
Millet, bulrush	76	424	500	15.2
Bread, white	62	438	500	12.4
Doughnuts	56	444	500	11.2

4.2.13 Root and Tuber foods socially considered having high value

Fifty one percent of the respondents considered the food taro to be of high value followed by potato (29%) and plantain (25%) (Table 25).

Table 25: Roots and tubers socially considered having high value (N=500)

	n			
	Social value			
Type of food	**High**	**Low**	**Total**	**Percent**
Taro *(gimbi)*	256	244	500	51
Potato	144	356	500	28.8
Plantain	125	375	500	25.0
Yam *(kiazi kikuu)*	69	431	500	13.8
Sweet potato	56	444	500	11.2
Cassava	54	446	500	10.8
Bread fruit *(shelisheli)*	45	455	500	9.0

4.2.14 Pulse foods socially considered as having high value

Only forty two percent of the respondents ranked kidney beans as of high value. It is because other people in the study area perceive pulses as food of low value.

Table 26: Pulse foods socially considered having high value (N= 500)

Frequencies				
	Social values			
Type of food	**High**	**Low**	**Total**	**Percent**
Kidney bean	210	290	500	42.0
Pigeon pea	171	329	500	34.2
Cow pea	168	332	500	33.6
Mung	158	342	500	31.6

4.2.15 Animal and poultry foods in social value

About 56% of the respondents' perceived beef, chicken eggs and cows' milk as foods of high value (Table 27).

Table 27: Animal and poultry foods socially considered of high value (N= 500)

	n			
	Social value			
Types of food	**High**	**Low**	**Total**	**Percent**
Beef	278	222	500	55.6
Chicken	232	268	500	46.4
Goat's meat	222	278	500	44.4
Sardine	214	286	500	42.8
Rabbit's meat	210	290	500	42.0
Chicken's egg	210	290	500	42.0
Guinea fowl's meat	185	315	500	37.0
Cow's milk	171	329	500	34.0
Grass cutter meat *(ndezi)*	159	341	500	31.8
Duck's meat	156	344	500	31.2
Goat's milk	107	393	500	21.4
Ducks egg	87	413	500	17.4
Pork	70	430	500	14.0

4.2.16 Measurement of attitudes of people on food and nutrition

The results show that the respondents' attitudes towards food consumption differed according to how they perceive food. For example, the results on the fourth statement show that 20% of the respondents disagreed. They understand the importance of breakfast as a meal in a day and 40% of the respondents were undecided. The remaining 40% of the respondents agreed that they do not understand. (Table 28).

Table 28: Measurement of attitudes on food and nutrition (N=500)

	Statement	N%				
		Strongly disagree 1	**Disagree 2**	**Undecided 3**	**Agree 4**	**Strongly agree 5**
1.	Food means anything that when eaten into the body serves to build and repair tissues and regulate body processes	10	20.6	13.8	52.8	2.8
2.	Eating balanced diet increases resistance to diseases	4	13.2	30.0	45.8	7
3.	Lack of access to food have a direct influence to dietary pattern	0	6.6	12.0	37.4	44
4.	Breakfast is not an important meal in a day	2	18	40.0	27.0	13
5.	Inadequate food intake impairs physiological need of the body	6	4	40.0	30.0	20
6.	Food taste, texture and colour have a direct effect on food intake	10	22	32.0	40.0	6
7.	Skipping meals in a day do not interfere with the nutrient requirement of the body	2.8	5.6	40.0	10.0	41.6
8.	Sequential dietary pattern i.e. breakfast, lunch and dinner is necessary for an individual to remain health	5	7.6	18.4	40.0	29

4.2.17 Socio-cultural factors influencing food consumption

Focus group discussion were held with 6 young women, 6 young men, 6 older, women and 6 older may giving a total of 24 participants representing people in the study area. The meaning of food was further discussed and controversial issues were further explored. The age range of young women and men was 20 to 35 years and the older categories ranged from 36 to 65 years. A Check list of questions was used to cross check the correct answers for the needed information; General perceptions about food as well as religion and other belief restricting people from eating some of the foods was the main issues discussed.

4.2.17.1 General perception about food

Perception differed considerably in different age groups. Older women see themselves as food providers; even if food is scarce they see it as their responsibility to make sure all the family members have something to eat.

Older men while dependent on women preparing the food they eat, they see themselves as the persons responsible for supporting the family. Men love delicious foods and felt that a meal is not complete without red meat for example beef. They said eating maize stiff porridge with fish or chicken does not make them feel satisfied because the foods do not stay longer in the stomach compared to when they eat maize stiff porridge with beef. Some of the young women seemed to be conscious about body weight and therefore very selective about food. Not all young women found it necessary to restrict their food intake; others felt that they had no choice because they eat food prepared at home.

Young men thought that food made them happy. They enjoyed good foods that had been prepared for them .They felt that they could eat any food without restriction. During the discussion three themes were identified in relation to the first question discussed:

a.Meaning of food in relation to health

Understanding food in relation to health is particularly important in enhancing our understanding of what messages are needed to promote healthy food choice. This theme was therefore reported first.

Participants mentioned that some foods are considered harmful to the body for example eating fatty foods was regarded dangerous as it could lead to heart diseases, diabetes and high blood pressure. There was a general understanding that lack of certain nutrient results in diseases. The example cited was malnutrition in children. Some of the participants mentioned that they need more information about food and nutrition. They are aware of child spacing and safe motherhood and they understand the importance of vaccination to children under one year of age. Some of the participants felt that although eating unbalanced foods can lead to nutrients deficiency in the body, they do not follow nutrition advice because of financial constraints.

b. Relation of food to body size and image

Young women were aware of the consequences of consuming excess amount of food. Some felt that people are what they eat. Other participants mentioned that eating excess food may lead to overweight and consuming less food lead to loss of weight (thinness). They also felt that people’s body size is related to their socio economic standing. On the other hand men felt that they have a responsibility to support their immediate family and

that their success in this needed to be evident to the family members by being fat.

c. Social meaning of food

Food is used to show love, acceptance and humanity. Food is associated with happiness. Low food production leading to household food insecurity reduces social integration and happiness. For example, ‘if you visit someone’s house and if you are not given food you feel not welcomed’.

4.2.17.2 Religion and other beliefs restricting people from eating some foods

The participants mentioned that religions such as Muslim and Seventh day Adventist restrict their followers from eating pork. Other beliefs associated with culture focused more on pregnant women and few to children and men. For example, pregnant women are not allowed to eat eggs; this is to prevent them to deliver babies without hair on the head. Also pregnant women are restricted to eat jackfruits as it is believed that the delivered babies would be covered with cartilage like materials like that found on the jack fruit coat.

However pregnant women are not allowed to eat pineapple to prevent them from delivering babies with rashes all over their bodies. Tooth diseases are associated with eating large quantities of pineapple fruit. They believe that eating tangerine in large quantities is associated with fever to the members of the household.

They believed that when a pregnant woman eats meat from four legged animal she may get difficulties in delivery because baby in a womb would position hands and legs together. Men are not allowed to eat okra because it is believed that okra reduces body strength.

Baobab pulp is not considered a healthy fruit because it is believed that eating the pulp leads to being fat like a baobab tree. It is also believed that the roots of a baobab tree are used to treat malnutrition among children. The roots are boiled and the extract is orally administered to malnourished children to cure malnutrition.

4.2.17.3 Direct observation

A total of ten households were visited and various activities carried out were observed and recorded. This included food preparation, distribution and acquisition. The researcher was allowed to stay for eight hours in a day for four days. It was during the start of agricultural season 2007/2008 and most of the adult household members were involved in food crop production.

a. Food preparation

In the ten households visited, only four households own land for food production. Two households hired land for food production and four households depended on food they bought from the market. The cereal foods eaten were milled maize stiff porridge and rice. Roots and tubers included; taro, cassava, sweet potato and plantain. Fruits commonly eaten were ripe banana water melon and mango. Vegetables included are cabbage, Chinese cabbage, pumpkin leaf, amaranth, okra and bitter tomato. Pulse foods included kidney bean, pigeon pea, chick pea and mung. They also consume beef and sardine.

b. Food distribution and acquisition

Most of the families ate two to three times in a day. They prepared stiff porridge from decorticated maize with a relish prepared using sardine, meat or vegetable for lunch and rice with kidney bean or sliced mixed roots and tubers with kidney bean for dinner. Black

tea or milk tea with boiled sweet potato or plantain for breakfast. They also ate white breads and doughnuts. This observation was made in six households of Bigwa and Kingolwira ward. In Mwembesongo ward, two of the visited households prepare tea and left over food for breakfast (rice with beans). They normally skip eating lunch. Another two households do not take breakfast. The common cooking methods were boiling, shallow frying and stewing. Vegetable cooking oil, tomato, onion and salt was added in relishes for flavour. Charcoal and fire wood stoves were used to cook food. Aluminum pan and lid, plastic bowls, ceramic plates, and glass utensils were used for handling and serving food. Normally adults ate separately. Children's portion were served and shared in the aluminum tray either rice with kidney bean relish or decorticated maize stiff porridge in plastic plate with sardine relish in the plastic bowls . Most of households visited depended on food they bought from the market.

4.3 Decision Making on Food Availability and Accessibility

4.3.1 Land ownership

Food production depends on availability of land in this study respondents were asked to give information on whether they own land or not. 71% of the respondents own land while 29% either hire or borrow land for food production.

4.3.2 Decision making on what to produce

On the question about who decides on what to produce the respondents admitted that it is either the husband or wife or both who decides what to produce on their piece of land. It was observed that in 59% of the households, husbands make decision on what to produce. However in 24% of the households both husband and wife are involved in decision making for production. Only in 17% households that the wife made decision in production,

4.3.3 Food availability and accessibility

Food is available during the months of May to October. It is the time when food prices falls. About 64% of the respondents indicated that they do not have enough food for six months and 36.4% of respondents have enough food but only for the first three months (August to October) after harvesting period. Food shortage months range from November to April. It is also the time when food prices increases and remain elevated up to the next harvesting period which normally starts in May up to August. During that time most of the households obtain foods from the markets. The type of food and quantity to be bought depends on purchasing power of individual household. For example during the month of November to January people diverse from eating rice and maize (as price increases) to plantain, cassava, taro, bread fruit, and yams. It is also a time when whole maize flour is consumed.

4.3.4 Money for buying food

Money for buying foods is provided by the fathers in 66.% of the households. In 20% of the households, money is provided by the mothers. Father and mother contribution was observed in 13% of households.

4.3.5 Preparation of food for the family

Mothers (53%) are responsible for preparing food for the family and some of the respondents (47%) mentioned other members of the family (Table 29).

Table 29: Who prepares food for the family (N=500)

Response	n	Percentage
Mother	265	53
Father	182	36.4
Sister	32	6.4
Others	21	4.2
Total	**500**	**100**

4.3.6 Reasons on who prepares food for the family

About 76% of the respondents mentioned that mothers prepare food for the family. The most important reasons include mother always cook food (55.4%) and mother is the heads of the household (20.4%). (Table 30).

Table 30: Reason on who prepares food for the family (N=500)

Response	n	Percent
Mother always cook food	277	55.4
I am not married	37	6.4
Mother is the head of household	102	20.4
My wife passed away	34	6.8
My wife and I separated	50	9.0
Total	**500**	**100.0**

4.3.7 Household expenditure

The most important item of household expenditure is food. About 77% of the households spend most of their money on buying food.

Table 31: Household expenditure (N=500)

Response	n	Percent
Buying food	386	77.2
Education fee	72	14.4
House rent	39	7.8
Luxury	3	0.6
Total	**500**	**100.0**

4.4 Nutritional Status of Adult Household Members in the Study Area

The nutritional status was determined by using BMI (weight/height (m^2). Cut off points were used to categorize the nutritional status of respondents as follows; Below 18 underweight, from18.5-24.9 normal, from 25 to 29.9 overweight, from 30 to 34.9 obese, from 35 to 39.9 grossly obese and 40^+ morbid obese.(WHO, 2004).

The result shows that the nutrition status of the respondents varied from one ward to another. About 53% of the respondents were underweight (36% male and 17% female) (Table 32).

Table 32: Nutrition status of adults (N=500)

	Wards															
	Bigwa				**Kingolwira**				**Mwembesongo**				**Total**		**Percent**	
Sex:	M		F		M		F		M		F		M	F	M	F
BMI	N	%	N	%	N	%	N	%	N	%	N	%				
Under weight	62	52.5	33	58	90	66	47	56	29	32	6	40	181	86	36.2	17.2
Normal	28	24	14	24.4	35	26	23	27	22	24	3	20	85	40	17	8
Overweight	20	17	8	14	9	7	11	13	19	21	2	13	48	21	9.6	4.2
Obese	7	6	2	3.5	2	7.5	2	2.4	10	11.1	3	20	19	7	3.8	1.4
Grossly obese	1	0.8	0	0	0	0	1	1.2	7	8	1	7	8	2	1.6	0.4
Morbid obese	0	0	0	0	0	0	0	0	3	3.3	0	0	3	0	0.6	0
Total	**118**	**100**	**57**	**100**	**136**	**100**	**84**	**100**	**90**	**100**	**15**	**100**	**344**	**156**	**68.8**	**31.2**

CHAPTER FIVE

5.0 DISCUSSION

This is a discussion of the results obtained from the study which aimed at; determining socio-cultural factors influencing attitudes and perceptions on food and nutrition; assess the influence of socio-cultural factors on dietary pattern in the study area; evaluate household decision making on food accessibility; and assess the nutrition status of adult household members.

5.1 Socio-cultural Factors Influencing Attitudes and Perceptions on Food and Nutrition

5.1.1 Age and sex of the respondents

The study involved adult males and females aged between 20-65 years. It was observed that men response was greater than women because the research was conducted during the start of the agricultural season of 2007/2008 and women were largely involved in agricultural production activities. It was also observed that women were responsible for family food preparation. Sex and age difference were seen to influence attitude and perception of respondents on food. Focus group discussion involved participants of different age groups including younger group of 20-44 years and older group of 45 to 65 years. Older women regard themselves as food provider (from food production, processing and preparation). Older men, under normal circumstance see themselves as responsible for supporting the family by providing money to buy food or to hire land for production while they depend on women for food preparation.

5.1.2 Education level and nutrition knowledge

It was also observed that they lack nutrition knowledge and few of them who had the knowledge argued that it had no impact on their eating behaviour. Nutrition knowledge act as a pathway through which food selection and preparation influence individual's diet. Parents, mothers in particular play an important role in shaping young children's eating behaviours by their own dietary behaviours, their attitudes towards food, and the availability of foods in the home (Glewwe, 1999). Parents can also encourage more healthful dietary patterns among adolescents (e.g. balanced diets through family meals).The quality of family meals is largely dependent on their knowledge on nutrition and health practices.

Nutrition knowledge may be obtained from several sources including formal education, families, friends, mass media, and community health service. (Glewwe, 1999). A study by Kearney *et al* (2000) indicated that the level of education can influence dietary behaviour during adulthood. In contrast, it has been shown that nutrition knowledge and good dietary habit are not strongly correlated. This is because knowledge about health does not lead to direct actions when individual are unsure on how to apply their knowledge (De Almeida *et al.*,1997). Knowledge or health information also influences food choices. However, knowledge alone does not necessarily translate into healthful eating behaviours. It may provide information to implement a behavioural change, but it is the individual's attitudes or belief that ultimately determines whether or not to translate this knowledge into actual behaviour (Katz, 1982). Behaviour must be understood within the context of the cultural values in which they occur, reinforcing values which promote positive behaviours while discouraging negative ones.

The study revealed that more education is needed with regard to social and cultural acceptance of what food is. Furthermore, peoples' attitudes and perception on food and nutrition should be understood.

5.1.3 Religion and cultural beliefs

In the study area, most of the people are Muslims. For example Vituli village is located at the peri- urban area of Bigwa ward; the respondents' live on the Uluguru Mountain bordered by Morogoro rural district. The nearby wards are Kiroka and Kinole where many residents are Muslims. Religions such as Muslim and Seventh day Adventist restrict their followers from eating pork. Other beliefs associated with culture also were found to influence their food choice especially on fruits and vegetable consumption. For example Tooth diseases are associated with eating large quantities of pineapple fruit. They believe that eating tangerine in large quantities is associated with fever to the members of the household. Men are not allowed to eat okra because it is believed that okra reduces body strength.

5.1.4 Pricing effect on food choices

The study observed that food prices increase when there is a shortage of food (November – April). The price also determined the type and quantity of food to be bought. The respondents alternate the foods they prefer (rice, maize) to available foods at low price (plantain, cassava, taro, bread fruit e.t.c.) The price reduction intervention targeting fruits and vegetables was implemented in two secondary school cafeterias; one school was located in a primarily white middle- income suburban area, where as the other school was located in an urban area of California with a mixed ethnic and socioeconomic population. Fresh fruits and carrots were target for 50% price reduction. The results showed that

during the price reduction period, sales of fresh fruits increased from 14 items per week to about 63 items per week and sales of carrots increased from 37 packets per week to 77 packets per week. Sales returned to baseline level with reinstatement of usual price (French *et al.*, 2003). Price incentive can be an effective intervention strategy to influence individual food purchase.

5.2 Influence of Socio-cultural Factors on Dietary Pattern

5.2.1 Attitudes and perception about food

The results indicated that many households do not consume balanced diet. Women would just make sure the family members have something to eat and it does not matter whether the meal compose a variety of food. In addition, lack of knowledge on nutrition and the loss of cooking skills also inhibit buying and preparing meals from basic ingredients. Variation of individual food choices depends on taste, perceived value (which include prices and portion size) and perceived nutrition (Glanz *et al.*, 1998). For example, individuals of lower socioeconomic status may place greater importance on perceived value where as those who are mainly concerned about health and nutrition may place greater importance on nutritional quality of foods (Solheim *et al.*, 1996). For example, decorticated maize flour was perceived having higher value than whole maize because of its bright white colour and keeping quality (stored longer than whole maize flour).

5.2.2 Food intake in relation to health

Food intake was low; number of meals per day was between two to three meals and frequency of eating different food stuffs varied from one to three times in a day. Almost half of the interviewed people believed that eating meals three times in a day was enough but some argued that the low food intake was due to either lack of enough resources to

access appropriate food for a balanced diet or low economic situation which limit them to prepare a range of foods as that would require money for both foods and fuel. The study revealed that there are variations of consumption of various foods between wards. The reason is that the dietary pattern of households in each wards depended on the availability and accessibility of the foods. However, respondents' perceptions on food influenced their food choice. For example, the respondents considered decorticated maize stiff porridge with relishes from animal and poultry foods more nutritious than whole maize stiff porridge with relishes from pulse. This indicates that although the foods consumed are the same but the influences of food choices differ (in the wards and in households).

Most of the respondents agreed, disagreed or were undecided on the correct statement related to food consumption. In focus group discussion some of the participants agreed that they lack nutrition knowledge. This indicates that they need more information about food and health in relation to food consumption.

Basing on the fact that they prefer to eat rice and maize than sorghum and bulrush millet, the preferences influenced their decision to produce the food crops they like. This is done regardless of prevailing weather conditions that suit the growth of such crops, thus leading to food shortage not only to poor food producers but also urban food consumers as prices tend to increase. Moreover, their perceptions about food influenced their food choices enhancing food aversion and avoidance. Social values attached to foods classifying some of food stuffs as healthy, nutritious, highly valued, and inferior were the determinants of food choices among many of the respondents. The way types of food are perceived significantly affect purchasing behaviour of the households (Klesges *et al*., 1991). Consumption of protein foods was also very low; pulses were frequently eaten than animal

and poultry sources of foods which are of high protein quality. Perceptions about certain foods contributed to low intake of available food stuffs; for example on animal and poultry sources of foods, beef was socially considered having higher value than other red meat, cow's milk than goat's milk, chicken than duck's meat, chicken's eggs than duck's eggs. These foods are consumed only once or twice in a week. Sardines than fish were eaten at least twice in a week. Therefore increasing number of meals per day is necessary to ensure diversity and enhance adequate intake of nutrients. It should be recognised that a perceived need to undertake changes is a fundamental requirement for initiating dietary change to individuals and, or the community.

Most interventions put emphasis on developing guidelines with the aim of encouraging all population groups to adhere to appropriate nutrition intake. In developing these guidelines little emphasis is placed on understanding what food means to certain individuals (De Almeida *et al., 1997).* This therefore means that, general tool for behavioral modification such as food based guideline can not be used in different cultures and produce similar desired effect. Individuals have strong values that have been internalized early in life which may be stronger than the guidelines which instruct them on new eating habits. Dietary interventions should take this into consideration and plan interventions accordingly. It should be acknowledged that each culture is unique with different norms and values, which also determine eating habit.

Taste is one of the most important factors affecting food intake, knowledge of culturally determined taste preferences can be used to help tailor interventions to specific ethnic minority groups to increase their consumption of nutrient rich foods(Story *et al.*, 2002).

5.2.3 Marriage

The families have an influence on dietary pattern especially when the couples are from different culture. One of the reasons given was own schedule of eating. It was observed that, husband or wife or both decides what to produce on their piece of land and that, husbands make decision on what to produce. However in some of the households both husband and wife are involved in decision making for production and mothers prepare food for the family. Initially the inhabitants of Morogoro Municipality were mainly from the ethnic groups of Luguru tribe, but the current population has a mixture of ethnic groups of different tribes (URT, 2002). A study was done in 1995 and twenty-two heterosexual couples were recruited from Edinburgh and Glasgow to examine the changes which took place in their eating habits and food related activities when they began to live together. Both men and women felt that eating together had a symbolic importance when they set up home together and most couples made efforts to eat a main meal together most evenings, while shopping and eating patterns tended to become more regular and formalized than they were at the pre-marriage/cohabitation stage (Kremmer *et al*., 1998). This seems to be applicable to most couples and has an effect on eating habits since each person tries to adapt the likes of his/her partner. It was mentioned by 76% of the respondents that women were mainly responsible for preparing food and men (66%) provided money for buying foods. This implies that cultural interactions within the family have an influence on dietary pattern.

5.3 Fruits and Vegetables Consumption

It was observed that vegetables and fruits consumption was very low and it was not considered important for the people to eat fruits every day. They just eat once to three times in a week; this is a very low frequency as these are important foods rich of nutrients

responsible for protecting the body against diseases. However through group discussion with adult household members, it was disclosed that the cultural belief attached to consumption of certain vegetables and fruits influence negative attitudes towards that particular foods leading to consistent refusal and, or low intake. For example, men are not allowed to eat okra because it is believed that okra reduces body strength. They believed that eating large quantities of pineapple fruit is associated with tooth decay diseases.

5.4 Evaluation of Household Decision Making on Food Accessibility

The main occupation of the people in the study area is farming. The burden is borne by the whole community, but more by women. Women are the key participants farming in Morogoro. They grow, process, and prepare the family's food. They gather water and wood. They care for children and people suffering from AIDS.

The study observed that men decide on what to produce and they keep the family money. Although people in the study area were involved in agricultural production activities, they face food shortage from November to April each year. This indicates that many households in the study area were food insecure. However, majority spent most of their money on buying food.

About 9% of men prepared food themselves because they do not stay with their wives (separated). This implies that some of the families' happiness was robbed by different forms of social, cultural and political exclusions which contributed to family chaos. The study also found that in addition to nourishing the body, food plays central part in the culture, traditions and daily life of the people. It is a sign of warmth, acceptance and friendship. Food is used for celebrations, rituals, and for welcoming guests. Lack of

enough resources to access appropriate quantity and quality of food reduces social cohesion of married couples.

5.5 Nutritional Status of Adult Household Members

Adequate nutrition begins at the household level. The situation explains the prevalence of under nutrition in the community, caused by chronic food insecurity due to the fact that people are unable to access sufficient, safe, and nutritious food over long periods to an extent that it becomes their normal life. Morogoro region has been unable to produce enough food for consumption. This is evident due to reoccurrence of food shortages from time to time over the decades (URT, 2006). It was observed that in the urban ward of Mwembesongo, the respondents like to eat foods away from home especially lunch. This is due to the fact that some of the respondents are employed far from home. In general, people may obtain knowledge about healthy food choices, but when considering price and taste, they may choose tastier and cheaper but less nutritious foods (Solheim *et al*., 1999). This implies that life style of urban dwellers influences individual food choices hence increased cases of obesity than in peri-urban area.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

There is an inverse relationship between socio-cultural influences and eating behaviour of the people in Morogoro Municipality. The response given by some of the respondents in the present study show the existence of certain negative beliefs and practices on food which are rooted in the culture. These beliefs have an impact on eating behaviours of the people and the community in general. Women's workload, lack of access to gender equality and inadequate nutrition awareness also limit the food intake of the community although after moving to the city, people adopt different culture, they do not completely lose their culture, they still adhere to their old traits. Thus more nutrition education is needed.

Furthermore, socially accepted norms and values surrounding peoples understanding of what food is, revealed that food choices factors vary from one individual to another. Therefore one type of intervention to modify eating behaviour will not suit all population groups. Rather dietary interventions should take this into consideration of these differences and interventions should be planned accordingly. It should be acknowledged that each culture is unique with different norms and values. Therefore interventions need to be geared towards different groups of the population with consideration of factors influencing attitudes and perceptions on food and nutrition.

6.2 Recommendations

Nutritional and agricultural interventions are essential to hunger reduction and could be more effective if designed and implemented in complementary ways. Yet all too often they are undertaken by separate institutions with little coordination between them. Therefore government should create institutional structures to integrate agriculture and nutrition policy at all levels (from ministries to communities).

Price incentive can be an effective intervention strategy to influence individual food purchases. At population level, through policy changes, pricing strategies potentially could be used to encourage fruit and vegetable consumption through government price subsidization or to influence food choices among participants in government sponsored food assistance programmes. More research is needed to better understand the potential effect of various pricing strategies on individual and population food choices.

Because food is a cultural symbol and eating is a symbolic act through which people communicate, perpetuate and develop their knowledge, beliefs, feelings and practices towards life, an understanding of cultural influences on eating habit is essential for health educators who want to provide realistic educational interventions which are designed to modify dietary practices.

Call for further research is made on food processing, preparation and preservation to retain nutrients, add taste and values to locally available foods socially considered not nutritious. Vegetables and fruits consumption are highly encouraged. Orchards and homestead gardens should be encouraged to facilitate availability and accessibility of fruit and vegetables. Simple improved vegetables preparation methods such as boiling for short

time, avoiding drying vegetables in the sun, washing before cutting and retaining of boiled stock or soup are highly recommended.

Health educators need to help people make healthy food and beverage choices when eating both inside and outside the home. Efforts of government, public health services, producers and retailers to promote fruit and vegetable dishes consumption as value for money could also make a positive contribution to dietary change.

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APPENDICES

Appendix 1: Sample size calculation

According to Fisher *et, al*. (1991) the formula used is

$n = z^2 pq/d^2$

Where:

n = desired sample size (when a population is greater than 10,000)

z = standard normal deviate, set at 1.96 (in simple at 2.0) corresponding to 95% confidence level

p= proportion in the target population estimated to have particular characteristic; if not know use 50%

q =1.0-p

d = degree of accuracy desired, usually set at 0.05 or occasionally at 0.02

$n = \{(2)^2 * 0.5 * 0.5\} / (0.05)^2$

= 400

Appendix 2: Daily food consumption frequency

Table 12a : Frequency of food consumption in wards (N= 500)

N%												
Wards:	**Bigwa**				**Kingolwira**				**Mwembesongo**			
Eat Per day:	**Do not**	**Eat**	**Eat**	**Eat**	**Do not**	**Eat**	**Eat**	**Eat**	**Do not**	**Eat**	**Eat**	**Eat**
Cereals:	**eat**	**once**	**twice**	**thrice**	**eat**	**once**	**twice**	**thrice**	**eat**	**once**	**twice**	**thrice**
Rice	1	18	7.8	0	0.4	20.4	20.2	1	0	15.6	14	1.6
Maize	0.6	28.4	4.8	0.2	2	36	6	0.6	1.6	19.4	0.6	0
Sorghum	7.2	24	1.8	0	6	36.6	5.4	0	4.4	13.8	0.8	0
Finger millet	2.4	24.4	1.2	0	2	37.2	7.2	0	0.4	17	8	0
Bulrush millet	5.2	29.8	1.4	0	19.2	26.4	3.2	0	9.8	4.4	0.4	0
Doughnuts	1.4	22.2	0.4	0	2.4	33.8	3.8	1.2	0	20	12	2.8
Bread, white	2.6	32	0	0	3	38.8	0.8	0	0.4	20.4	1.8	0
Plantain/root/tuber:				0								
Taro (magimbi)	0.2	18.2	17.2	0	0.4	28.4	10.8	0	0	15.8	9	0
Potatoes	1.6	9	4	0	0.8	30	19.8	4.2	0.2	18.4	12	8.6
Plantain	0	20	0	0	0	31.4	4.8	0.8	0	20.6	15.6	2.4
Yam (viazi vikuu)	18	12.6	0	0	15	26.6	4	0	0.6	16.8	6.4	0
Sweet potatoes	1.4	21.4	0	0	6.2	37.8	3.8	0	0	19.8	5.6	0
Cassava	3.2	25.4	12.4	0	2	15.2	17.4	2.4	0	12	8	5
Bread fruit	3.4	31	0	0	5.2	37	3.6	0	0.8	14.4	4.6	0
Animal/ Fish:												
Beef	0.6	32.8	1.6	0	1.6	40	5.4	0.4	0.2	20	8.4	1.4
Goat's meat	2.4	20	0.6	0	1.4	39.4	2.4	7.2	0.6	13.6	6.6	24
Sardine	1.2	25	0	0	0.4	33.6	8.2	0	0.8	19.4	12	0
Rabbit meat	3.2	30.4	0	0	24	20	0	0	0.4	20.2	0	0
Cow's milk	9.2	21.4	0	0	3.6	29.4	7	0	7	20.6	9.6	0
Grass cutter's meat *(ndezi)*	3.6	31.4	0	0	18.8	25	0	0	7.4	11.8	0	0
Goat's milk	24	10.6	0	0	14.4	25.6	0	0	2	11.2	0	0
Pork	25.8	2.4	0	0	38	9.2	7	0	116	4.4	1.4	0
Poultry:				0								
Chicken's meat	2.4	22.6	1.2	0	3.6	33.2	5	0	0	21	8.4	3
Chicken's Eggs	3.2	22	0	0	2.2	39.4	2.6	0	0.4	20.4	10.4	0
Guinea fowl's meat	11.8	3.32	0	0	8	36	0	0	2.4	18.6	0	0

Duck's meat	2.6	32.4	0	0	6.4	32.4	36.8	0	0.8	20.2	1.2	0
Guinea fowl's eggs	10	24.6	0	0	7.4	36.6	0	0	4	17	0	0
Duck's eggs	13.4	21.6	0	0	8.2	35.8	0	0	0.6	20.6	0	0
Pulses:												
Kidney beans	1.6	27.4	7.2	0.6	0.6	21.6	9	2	0.2	14	9.6	8.2
Mung	1	32.4	12.2	0	2.8	19.8	8.6	0	0.8	19.2	17.2	0
Pigeon Peas	0	35	12.2	0	4.6	8.6	15.4	0	0.4	9.4	14.4	0
Cow peas	5	20.4	0	0	3.6	40.4	11.8	0	2.8	9.4	11.2	0

Appendix 3: Questionnaire

Questionnaire November 2007

SECTION A

General information

Name of the household head ……

2.Age of household head……

3.Types of family (single/nuclear/extended/other)…….

4.Family members in order of seniority…….

No	Name	Age	Sex	Marital status	Education	Occupation
i.	……	……	…….	…….	…….	……..
ii.	……	……	……	…….	…….	……..
iii.	……	……	…….	…….	…….	……..
iv.	……	……..	…….	……	…….	……..
v.	……..	…….	…….	…….	…….	……..

5.Religion……..

SECTION B

Knowledge, social and cultural factor (tick the correct answer)

1.Have your ever had a knowledge about food and nutrition

(a) Yes (b) No (If the answer is no shift to question 5)

2.Where did you get nutrition education

(a) School (b) Hospital (c) Neighbour/friends (d) Mass media

3.What was the concern of that education

(a) General information about nutrition (b) One topic about nutrition (name...)

(c) Don’t know

4.Do the knowledge you acquired have an impact on your understanding about food and nutrition

(a) Yes (b) No (c) Not sure

5.How do you define food

(a) Anything edible (b) Anything that where taken into the body supply energy builds and repair tissues and regulates body processes

(c) Anything that satisfy hunger (d) Don’t know

6.How many times do you eat per day

(a) One meal (b) Two meals (c) Three meals (d) More meals

7.What does nutrition means to you

(a) Different delicious (b) Sweet foods (c) Knowledge of choosing food (d) All activities concerned with eating enough food to meet physiologic needs of the body through specific nutrients.

8.What is a nutrient

(a) Chemical substances available in different types of food material (b) It is delicious food (c) Don't know

9.Which is the better way to get nutrients from food

(a) To eat enough and different kind of food (b) To eat sweet foods

(c) To eat protein, carbohydrate and large amount of food

10.When you prepare and cook food, do you minimize nutrients losses?

(a) Yes (b) No (c) Not sure

11 Is there any undesirable effects to your body, if the nutrients intake is low than the recommended intake

(a) Yes (b) No (c) don't know (explain…….)

12. Is there any undesirable effects to our body if the nutrients intake exceeds the recommended intake

(a) Yes (b) No (c) don't know (explain……...)

1. During celebration /family gathering, which meals do you consider special

	Meal	Reason
1.	…….	…….
2.	……	…….
3.	…….	……..

2. Do you know diseases associated with inadequate food intake

(a) Yes (b) No (list at least three…….)

3. What foods are given to sick person (list …….)

4. When you eat , do you consider the relationship between food and your health

a) Yes (how)…… (b) No (why)…….

5. How do you define health

(a) Get fat (b)To eat enough food (c)Proper body functioning, mental fitness and reduces illness (d)Don't know

You eat fruits and vegetables, how often do you eat (tick the correct answer)

Fruits/vegetable	**Eat per week**				**Do no eat**	**Eat per day**			
Vegetables	**1**	**2**	**3**	**4**		**1**	**2**	**3**	**4**
Amaranth									
Sweet potato leafs									
Wild Amaranth									
Spinach									
Chinese cabbage									
Egg Plant									
Cabbage									
Broccoli									
Carrot									
Green pepper									
Pumpkin leafs									
Cowpeas leafs									
Black might shade leaf									
Tomato bitter									
Onion									
Fruits									
Pawpaw									
Avocado									
Water melon									
Cucumber									
Mango									
Lime									
Orange									
Lemon									
Tangerine									
Pineapple									

Banana, ripe									
Apple									
Plums									
Pear									
Guava									
Baobab pulp									
Jackfruit									
Sour sop									

1= once 2= twice 3= three times 4= four times

20.Do you use spices and additives

(a) Yes (b) No (why)……

22. Does interaction with other people influence your food choice

(a) Yes (b) No (c) Not sure (reason……)

(b) Attitudes and perceptions and on food and nutrition

23.According to your culture what foods are considered nutritious when eaten

Food **Reasons**

…… ……

24.According to your culture what foods are not considered nutritious when eaten

Foods **Reasons**

…… ……

25.(a) What food is socially accepted as meal (when eaten with relish) or snacks and how do your social value categorize that food (tick the correct answer)

Type of food	**Meal**	**Snack**	**Social value**		**Eat per week**				**Eat per day**				
Rice, cooked			High	Low	1	2	3	4	1	2	3	4	
Maize stiff porridge													
Millet, finger													
Millet, bulrush													
Bread, white													
Cassava													
Doughnut													
Sweet potatoes													
Taro													
Potato, English													
Bread fruit													
Plantain													
Yams													
Sorghum													
Beef													
Pigeon peas													
Mung beans													
Cowpeas													
Pork meat													
Kidney beans													
Fish, cooked													
Cow’s milk													
Goat’s milk													

Egg, chicken													
Egg, duck													
Chicken meat													
Goat’s meat													
Duck’s meat													
Guinea fowl meat													
Grass cutter’s meat													
Rabbit’s meat													

1= once 2= twice 3= three times 4=four times

25 (b) Likert scale to measure attitudes of people on food and nutrition (tick the correct answer)

	Sentence	**Strongly disagree 1**	**Disagree 2**	**Undecided 3**	**Agree 4**	**Strongly agree 5**
1.	Food means anything that when eaten into the body serves to build and repair tissues and regulate body processes					
2.	Eating balanced diet increases resistance to diseases					
3.	Lack of access to food have a direct influence to food pattern					
4.	Breakfast is not an important meal a day					
5.	Inadequate food intake impair physiological needs of the body					
6.	Food taste, texture and colour have a direct effect on food intake					
7.	Skipping meals in a day lead to failure of the body meet nutrient requirement					
8.	Meal pattern i.e. breakfast, lunch and dinner is necessary for individual to remain health					

SECTION C

Decision making on food accessibility (tick the correct answer)

1. Do you own land?

(a) Yes (b) No

2. Who decide on what to produce?

(a) Father (b) Mother (c) Both (d) others (explain why)

3. Are you food secured (from last harvest to the coming harvest?)

(a) Yes (b) No

4. If no, explain which months do you face food shortage ……..

5. Who provide money for food?

(a) Father (b) Mother (c) Both

6. Who prepare food for a family?

(a) Mother (b) Father (c) Sister (d) Others

7. When you prepare food do you consider eating balanced diet? Yes / No

8. Elaborate on how you balance food for your health

Building and repair food	Protecting foods	Energy giving foods
…….	……	……

9. Who decide on meal preparation?

(a) Mother (b) Father (c) Sister (d) Others

10. In your family which activity consume more of family earnings (money)

(a) Education (b) Buying food (c) House rent (d) Luxury

SECTION D

Assessment of nutrition status of adult in households

No	**Anthropometric measurement**		**BMI**
1.	Weight Height	Kg Cm	
2.	Weight Height	Kg Cm	
3.	Weight Height	Kg Cm	

Appendix 4: Checklist for key informant and focus group discussion

1. General perception of food and nutrition
2. Meaning of food in relation to health
3. Social meaning of food
4. Relation of food to body size and image
5. Religion and other beliefs restricting people from eating some foods.

THANK YOU FOR YOUR CO-OPERATION