

**USE OF NUTRITION INFORMATION BY PROVIDERS OF ALTERNATIVE
HEALTH CARE IN TANZANIA: CASE STUDY OF DAR ES SALAAM**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
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ABSTRACT

The public is exposed to all sorts of nutrition issues which they need to understand in order to reach the right decisions. The overall objective of the study was to assess nutrition information offered by providers of alternative health care to people with seemingly dietary related problems. The study design was cross sectional, in which a sample size of 375 clients and 75 practitioners were interviewed using a structured questionnaire as a tool to collect information. A snowball and convenience sampling techniques were employed to sample both practitioners and clients. A big proportion of clients (44.8%) and practitioners (54.7%) were in the age between 25 and 35 years. Sixty four percent of clients were females while 89.3% of practitioners were males. Most of the practitioners had medium levels of education (secondary school and post-secondary). Furthermore, more than two thirds of alternative health care providers (69.3%) were found to have not received any health/nutrition related qualification or training. They hardly involve nutrition experts in providing nutrition education to their clients (98.7%). Friends using word of mouth, was the most used source of nutrition information by the practitioners. The majority of the practitioners have very poor knowledge of nutrition science. For example, they were not aware of drugs-nutrient interactions (93.3%) or nutrient-nutrient interactions (92.0%). About 72% of practitioners recommend fruits to be eaten 30 minutes to 60minutes before or after a meal. 38.7% of practitioners advise their clients to eat vegetables and fruits only, or to avoid processed and fried foods. It was also revealed that posters and clients' testimonies (54.7%) are the number one communication strategy used by practitioners. On the other hand, more than 80% of clients showed to be satisfied with the nutrition information provided while 16.3% were unsatisfied and perceived the nutrition information provided to be misleading and not specific in terms of food selection.

Perceptions that alternative medicines have fewer side effects, safer, easily accessible and of lower costs seem to be the leading cause for clients to opt for such services. There was a significant difference among clients' perception in relation to their education levels at $P \leq 0.05$, but there was no significant difference with their age or sex. Thus, there is some misleading and contradictory nutrition information given by these health service practitioners, something which the public should be aware of. Government should seek to provide nutrition training to practitioners of alternative health care to enrich their knowledge and improve their services.

DECLARATION

I, Julius, Nyamizi, do hereby declare to the Senate of Sokoine University of Agriculture, that this dissertation is my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted for degree award in any other institution.

Julius, Nyamizi
(MSc. Candidate)

Date

The above declaration is confirmed

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Date

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DEDICATION

I dedicate this dissertation to my husband, Vicent J. Mbalamwezi. It takes a very patient man to endure over two years of a spouse's demanding master's degree. His unwavering support and understanding nature allowed me to focus and thrive.

My dear, this culminating piece of work is as much yours as it is mine. I am forever grateful for you.

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LIST OF ABBREVIATIONS

AHPs	Alternative Health Practitioners
AIDS	Acquired Immunodeficiency Syndrome
CAM	Complementary and Alternative Medicine
CVD	Cardiovascular Diseases
HIV	Human Immunodeficiency Virus
NCDs	Non-Communicable Diseases
PEM	Protein Energy Malnutrition
PHC	Primary Health Care
RDA	Recommended Daily Allowance
SPSS	Statistical Package for Social Sciences
TAHPC	Traditional and Alternative Health Practices Council
TFNC	Tanzania Food and Nutrition Centre
THM	Traditional Herbal Medicine
THP	Traditional Health Practitioner
TMs	Traditional Medicines
TRM	Traditional Medicine
WHO	World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Nutrition information is an important public health tool to promote wellbeing of individuals, enhancing public health, assists consumers to make better informed decision on the nutritional value of food and make healthy food choices based on the relevant nutrition need (Mike, 2014).

In Tanzania nutrition information is accessed through radio, television, newspapers, magazines, cell phones, family or parents, personal experience, neighbors and oral communication (Ronald *et al.*, 2014). Choice of information sources is influenced by the personal level of education, income, sex, age and occupation to solving their day to day nutrition problems (Mtega, 2012).

Worldwide there has been growing public attention on non-communicable diseases related with eating or dietary habits, therefore consumer demand for more detailed, accurate and accessible health related information (Hasings, 2011). Furthermore, consumers are generally motivated to seek information to reduce their uncertainty by relying on reliable information sources to assist in their decision making process and improve their health wellbeing (Hasings, 2011).

Dietary related problems are the conditions that occur due to changes in the eating habits, from consumption of traditional foods to intake of high energy but low nutrient dense foods, frequent unhealthy snacking coupled with a more sedentary lifestyle (Njelekela *et al.*, 2015).

Chronic diseases such as diabetes, hypertension, cancer, cardiovascular disease and osteoporosis are the most common reason for alternative medicine use which may be of particularly important in Tanzania whereby Non-Communicable Diseases (NCDs) are a rapidly growing (Stanifer *et al.*, 2015).

The World Health Organization defines traditional or alternative medicine as the sum total of the knowledge, skills, and practices based on the theories, beliefs and experiences. It is indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness (WHO, 2008).

Alternative medicine practitioner on the other hand, is a person who is recognized by the community as someone competent to provide health care by using medicinal plant, animal, mineral substances and other methods based on social, cultural and religious practices (Abdullah, 2011).

It is estimated that in some African countries, 80 percent of the population depend on alternative medicine for primary health care. In many developed countries, 70 to 80 percent of the population has used some form of alternative or complementary medicine (Lwoga and Sife, 2013).

In Tanzania, more than 60 percent of the population use alternative therapy and medicine (Mhame *et al.*, 2004). Trend in the use of Traditional Medicine (TRM) and Alternative or Complementary Medicine (CAM) is increasing due to eruption of epidemics like HIV/AIDS, malaria, tuberculosis and other diseases like cancer, hypertension, cardiovascular and diabetes. These conditions lead to many nutritional problems, hence

CAM practitioners take advantage of giving nutrition information that may be missing some scientific facts (Mbwambo *et al.*, 2007).

1.2 Problem Statement

Public interest in health eating has increased over the years (Grunert and Wills, 2007), thus consumers have become increasingly concerned about what they eat and how it affects their health (Petrovici *et al.*, 2012). This has provided the alternative health care practitioners with an opportunity to exploit the market potential in nutrition and health services by providing nutrition information which may be contradictory, incomplete and biased (Mike, 2014).

Majority of Tanzanians do not read books to get the right nutrition information but they depend mostly on radio, television, newspapers, magazines, cell phones, family or parents, personal experience, neighbours and oral communication (Ronald, 2014). In Tanzania about 60 to 70% health care utilization is mainly through the use of alternative health care systems which tend to have no certified scientific standards such as dietary supplement and herbal medicine (Kayombo *et al.*, 2012).

Furthermore Tanzanians rely on Traditional Health Practitioners (THP) because they are relatively accessible, inexpensive and locally available when compared to conventional medicine and at present there is an increase practitioners of alternative medicines in Tanzania such as Chinese Traditional Medicine, Homeopath and Radionics medicine, which it is important to inform consumers on their treatment/service whether it is working or not (Kayombo *et al.*, 2013).

Despite of Tanzania Food and Nutrition Center (TFNC) being the national agency to oversee all nutrition activities in Tanzania, everyone is now trying to be the own

information master including the alternative health care practitioners, especially in the area of food and nutrition. As now days diets make headlines on media which confuse consumers about what constitute a healthy diet, and this confusion may make consumers to lose faith even to the sound sources of nutrition information and when misinformation is common, it will become much more difficult to gain public trust for future initiatives to improve public health, which can have a long lasting impact on consumer health, choice and economic (Mike, 2014).

1.3 Study Justification

There is an increase burden of non-communicable diseases resulted from rapid urbanization in Tanzania as a result people are exposed to sedentary lifestyle and unhealthy diets (Mayige *et al.*, 2012). In African communities conventional treatments still exist but few people adhere to treatment due to side effects or costs of the drugs, hence people rely on alternative medicine for the management of non-communicable diseases such as hypertension and diabetes but the prevalence of its use is not sufficiently known (Hughes *et al.*, 2013).

Despite the growth in demand for nutritional information and increase of degenerative diseases, there is relatively little empirical research conducted in developing countries including Tanzania to determine to what extent consumers receive accurate nutrition information for their health condition. As such, in countries like Tanzania, which has strong historical, cultural, and even political connections to traditional medicines (TMs), there is a limited accurate nutrition information provided regarded to the diseases treated.

Therefore it was important to undertake this study to assess nutrition information being provided to the public. This study will contribute to knowledge and enable the

government, policy makers and other nutrition stakeholders to be aware of and figure out common understanding concerning nutrition for the benefit of the society.

1.4 Objectives of the Study

1.4.1 Overall Objective

The overall objective of the study was to assess nutrition information offered by providers of alternative health care to people with seemingly dietary related problems.

1.4.2 Specific objectives

The overall objective of the study was attained by undertaking the following specific objectives:

- i. To assess nutrition knowledge possessed by the practitioners of alternative health care.
- ii. To identify the key messages provided in regard to nutrition
- iii. To identify educational communication strategies employed by the practitioners.
- iv. To determine perceptions of clients with regard to nutrition information and services being provided by practitioners of alternative health care.

1.5 Research Questions

The study was targeting to answer the following research questions:

- i. Is nutrition knowledge delivered by the practitioner of alternative health care correct?
- ii. What messages do customers receive regarding nutrition?
- iii. Which education communication strategies do alternative health care providers use?
- iv. What perceptions do clients of the alternative health care have toward the services provided?

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Overview

In Tanzania, nearly 70% of people still frequently access healthcare through traditional/alternative healers or vendors (Kayombo *et al.*, 2012). This high use of herbal medicines may be due to accessibility, affordability, availability and acceptability of traditional medicines (Chukwuma *et al.*, 2016). The other major reasons for use of TRM and its practitioners for healthcare needs in African countries are inadequacy of health facilities, medical personnel, drugs and other medical supplies (Chudi, 2010).

Currently Practitioners of alternative medicines in Tanzania are increasing over modern medicine such as Chinese Traditional Medicine, Homeopath and Radionic medicine (Kayombo *et al.*, 2013). Some of the herbs could cause adverse effects due to adulteration, inappropriate formulations, plant and nutrient interactions, effects that are sometimes life threatening or lethal (Chukwuma *et al.*, 2016). Because of their importance, understanding community perceptions of TMs and practitioners knowledge and information possessed in Tanzania is necessary (Stanifer *et al.*, 2015).

2.2 Sources of Nutrition Information

In Tanzania nutrition information is accessed through radio, television, newspapers, magazines, cell phones, family or parents, personal experience, neighbors and oral communication (Ronald *et al.*, 2014). Choice of information sources is influenced by the personal level of education, income, sex, age and occupation to solving their day to day nutrition problems (Mtega, 2012).

Munuo (2014) found that other sources were textbooks 34.6%, internet (21.8%), seminars 23.3% self-education and work-related experience (9.8%) however in southwestern Nigeria their main source of information is through radio 70.9% (Bamidele *et al.*, 2009).

According to Sarubin (2002), consumers receive nutrition information from a variety of sources, among others media is their most frequently used source of nutrition information, with magazines (47%), television (34%), books (29%), and newspapers (28%) being of key importance. Two other important categories of health information were the Internet (21%) and a general category which included information from product labels and from friends and family (18%).

It is interesting, yet discouraging that two of the most capable sources of nutrition information, were two of the least commonly used: physicians provided 31% of the information and dieticians provided only 13%. However, physicians rarely have more than a limited training in nutrition and an academic title does not automatically mean a background in nutrition (Lorence and Greenberg, 2006).

Although people are increasingly relying on the Internet for nutrition information, consumers must be reminded that the accuracy of information appearing on Web sites is not governed by any regulatory agency. As a result, sites featuring sound science-based content co-exist with sites containing questionable, inaccurate or alarming information promoted by individuals and groups espousing unscientific views (Wansink, 2005).

The study conducted by Hasings (2011) in Australia indicated that friends and relatives were the most important information source used for obtaining health related information for healthy eating while radio was identified as the least influential.

According to Taylor (2013) information given to the public by the media is harmful. Along with correct information, the amount of misinformation thrown to people can be overwhelming but not all the information about nutrition that the media portrays is false; however the information that is false may be more persuasive therefore causing more harm.

2.3 Why is Nutrition Misinformation on the Rise?

Increased interest in nutritional issues has been fuelled by a number of factors including lifestyle, ageing population, dietary and safety concerns. Because of increased awareness of nutrition and health, consumers may be increasingly vulnerable to nutrition misinformation (Greger, 2001). While this brings new promise to the role that sound nutrition information can play in one's life, it also makes people more vulnerable to nutrition misinformation and to health and economic considerations (Winsink, 2005).

2.4 Use of Alternative Health Care Systems

Alternative medicine refers to any practice that is put forward as having the healing effects but is not based on scientific evidence (Kayombo *et al.*, 2012). It consists of a wide range of health care practices, products and therapies such as dietary supplements and herbal medicines but which lack the necessary scientific validation, and their effectiveness is either unproved or disproved (Nissen *et al.*, 2012). Complementary and alternative medicine practices may incorporate or base themselves on traditional medicine, folk knowledge, spiritual beliefs, or other approaches to healing (Kayombo *et al.*, 2013).

Despite the presence of conventional medicine, referred as scientific medicine, literature reviewed showed that alternative health care such as dietary supplements and herbal medicine is widely used and a rapidly growing health care system worldwide. In Africa,

for example, up to 80% of the population uses alternative health care to help meet their health care needs (WHO, 2002).

In Tanzania current statistics show 60-70% of the population seeks healthcare from practitioners of TRM (Kayombo *et al.*, 2012). These statistics support the World Health Organization (WHO) argument that considers TRM as one of important means to achieve total health care coverage of the world's population (WHO, 2002). The challenge however, lies in the risks and ethics of using traditional medicines that are not systematically documented, authenticated and neither their activity verified or established (Kayombo *et al.*, 2012).

2.5 Health Conditions Prompting the use of Complementary and Alternative Medicine (CAM)

Alternative Medicine use is high in Tanzania (60-70%) and that its use is for symptomatic ailments, chronic diseases such as diabetes, hypertension, cardiovascular disease, osteoporosis and cancers were reported as the most common reason for alternative medicine use whereby these non-communicable diseases are a rapidly growing (Stanifer *et al.*, 2015). In South Africa, Traditional Herbal Medicine (THM) are used for the management of hypertension and cardiovascular diseases but the prevalence of its use is not sufficiently known (Hughes *et al.*, 2013).

In Ghana for example, about 70% of the population depends primarily on traditional medicine to treat a variety of ailments to alleviate sufferings associated with disease and illness (Abdullah, 2011). Makundi *et al.* (2006) found that traditional health care has contributed very significantly to the treatment of degedege (convulsions) in Tanzania while Amira and Okubadejo (2007) reported a significant number of hypertensive patients

receiving conventional treatment at the health facility in Nigeria, also used CAM therapies alleviate the condition.

In America, studies have found that CAM usage occurs most frequently among people with poorer income status resulting from chronic, recurrent, or serious illness (Vohra *et al.*, 2005). For example, CAM use has been noted to be prevalent among patients with allergies, asthma, behavioral and developmental problems such as diabetes and hypertension, cystic fibrosis, HIV infection, rheumatoid arthritis, and musculoskeletal problems such as back, neck, or joint pain (NCCAM, 2008).

Two-thirds of chronically ill patients have used dietary supplements, frequently concomitantly with prescription and over-the-counter drugs (Boyer, 2005). These findings are alarming because patients who are already receiving complicated conventional treatment regimens are at a greater risk for adverse events, especially because many supplements have not been evaluated for safety, efficacy, or drug interactions (Ventola, 2010).

Additionally Gyasi *et al.* (2011) reported traditional medicine is effective as it was employed in treating numerous medical conditions such as malaria, typhoid fever, arthritis, jaundice, impotency, infertility, hypertension, stroke, broken bones, boils, piles, HIV/AIDS, mental illness, etc. However, safety of use of the traditional medicine is not standardized. Although treatments exist, few people comply or adhere to recommended treatment due to side effects or costs of the drugs, hence the reliance on alternative forms of treatment (Abdullah, 2011).

The use of CAM and dietary supplements was found to be fairly common in most people especially those needing frequent medical care and hospitalizations for chronic Conditions (Gardner *et al.*, 2008).

2.6 Increased Preference towards Usage of CAM

In Tanzania although modern medicine is well developed people still rely on TRM for Primary Health Care (PHC) (Kayombo *et al.*, 2013). The major reasons for use of TRM and its practitioners for healthcare needs are inadequacy of health facilities, medical personnel, drugs and other medical supplies (Chudi, 2010).

Furthermore, the use of herbal medicines has been on the increase in many developing and industrialized countries. This high use may be due to accessibility, affordability, availability and acceptability by majority of the population (Chukwuma *et al.*, 2016).

Although social and cultural issues as well as the nature and severity of diseases constitute some reasons for CAM use (Onyiapat *et al.*, 2011), CAM has often been seen as popular because of the seeming harmlessness since is considered to be natural and it is believed to be cheaper and more affordable in most of developing countries (Udo *et al.*, 2014).

Additionally people have become more interested and informed about CAM because of: increased contact with other cultures that traditionally use CAM, the perception that CAM is easier to understand, safer, and less expensive than conventional medications (Ventola, 2010).

Gyasi *et al.* (2011) also found that traditional medicine is readily available to the people and also less expensive, hence easily accessible. Patients may see conventional doctors as

being overly reliant on prescribing drugs and as not bothering to explain the methodology, risks, and benefits of the treatments (Kantor, 2009). Also Patterson and Arthur (2009), found friends are influential in the decision to use CAM.

2.7 Diet Related Non Communicable Diseases

There is growing burden of non- communicable diseases (NCDs) globally. It is estimated that non communicable diseases such as cardiovascular diseases, cancers, diabetes and chronic respiratory diseases account for about 60% of all deaths globally with an estimated increase of 17% over 10 years (WHO, 2005).

In Tanzania although communicable diseases are still the major causes of morbidity and mortality, non-communicable diseases also contribute significantly to the disease burden especially among adult populations (WHO, 2010).

Diseases that were once considered rare such as diabetes and cardiovascular diseases are now considered a normal phenomenon in Tanzania. The increase in the burden of non - communicable diseases is being fuelled by the socio demographic transition that has rapidly been occurring in developing countries (WHO, 2005).

Rapid urbanization of rural areas and rapid migration from rural to urban areas has also contributed to the increased burden of non-communicable diseases, as a result of urbanization populations are more exposed to sedentary lifestyles and unhealthy diets (Mayige *et al.*, 2012).

The major lifestyle factors implicated in the etiology of non-communicable diseases are unhealthy nutrition, smoking, physical inactivity, and excess use of alcohol (WHO, 2005).

Studies also have demonstrated an interaction between HIV and Non Communicable Diseases (Dagogo, 2008).

People living with HIV/AIDS also tend to have high rates of non-communicable diseases. This could be due to the fact that people with HIV/AIDS are living longer and growing older thus developing non-HIV related chronic conditions similar to the rest of population (Mayige *et al.*, 2012).

Chronic diseases such as cardiovascular diseases, cancer, central nervous system and diabetes contributes most to overall mortality in Tanzania and the WHO projected that about 20% of all deaths in Tanzania in 2005 were attributable to chronic diseases (WHO, 2005).

Hypertensive heart diseases such as left ventricular hypertrophy are common in Tanzania, however, there is limited data on the magnitude of ischemic heart diseases including myocardial infarction (Mayige *et al.*, 2012). With regard to stroke, a study by Walker *et al.* (2010) demonstrated that age standardized stroke incidence rates in Hai are similar to those seen in developed countries. However, age-standardized incidence rates were strikingly higher in Dar-es-Salaam than seen in most studies in developed countries, hypertension being a major risk factor.

Similarly mortality rates from strokes were higher in Dar es Salaam compared to other areas (Walker *et al.*, 2010). Stroke has been described as an emerging problem in Tanzania. However, it is poorly known among the communities.

An anthropological study in Tanzania has shown stroke in urban Dar es Salaam is widely believed to emanate from supernatural causes (demons and witchcraft), while in rural Hai District in northern Tanzania is described to be mostly due to 'natural' causes (Mshana *et al.*, 2008).

Findings also shows a prevalence of more than 80% of undiagnosed diabetes in the Tanzania (Mayige *et al.*, 2012) and the emergence of HIV epidemic has also led to increasing prevalence of certain cancers for example cervical cancer and Kaposi's sarcoma (Kahesa *et al.*, 2008).

2.8 Awareness on Diet–disease Relationships among Different Populations

In Tanzania a diet low in fruit and vegetables is associated with non-communicable diseases, the prevalence of diabetes, hypertension and obesity is higher in urban areas than rural ones due to the nutrition transition that involves more energy-dense food and fewer physical activities but its mechanism is poorly known by the community (Keller, 2012).

A study conducted by Ruhembe *et al.* (2014) found knowledge of the causes of diabetes was very low with 83% of the people did not know the causes and were not aware which age is affected by the disease. Moreover 45.5% of the people did not know the diet disease relationship and how to manage the disease through diet, exercises and medication.

In Kenya a study conducted by Maina *et al.* (2010) found only 27.2% of the respondents had good knowledge of the relationship between NCDs and diet, the study indicated that the level of knowledge of NCDs and diet in all regions is also very poor. Another study of a Taiwanese shows the relationship between diet and disease had the highest correct

answer rates (74.7%), followed by comparison of foods in terms of specific nutrients (69.2%) (Lin *et al.*, 2011).

Nutrition knowledge is necessary although not sufficient for dietary change. According to Hendrie *et al.* (2008) survey, respondents were most familiar with the relationship between the amount of fat in the diet and disease. Three-quarters reported that this relationship was with heart disease or obesity, but only one quarter knew it was with both heart disease and obesity. Approximately two-thirds acknowledged there is a relationship between the intake of fruits and vegetables, fibre and sodium and disease; however, knowledge of specific diseases was poorly understood. It is important for the public to be aware of diet-disease relationship because knowledge is a critical component of behavioral change.

2.9 Delivering of Appropriate Messages to General Population

Nutritional knowledge plays an important role in public health although is poorly known among the practitioners. A study conducted by Moses (2010) in Tanzania found the overall performance of the practitioners on nutrition knowledge, attitude and practice was poor (53%), and their nutrition information are rated as moderate. The study indicated that there are gaps in the nutrition knowledge among practitioners and most of them may not have expertise to properly advise clients on the important aspects of nutrition.

In Tanzania there is limited nutrition information among healthcare practitioners and most of them 92 % do not use any nutrition guidelines in their field. Although nutrition knowledge among practitioners is poor contributed by inadequate nutrition training, their attitude towards nutrition issues are positive (Munuo, 2014).

Also there is always a risk of initially relevant health messages reaching the population in distorted or altered form. The old game Chinese Whispers demonstrates this problem clearly: the more individuals or intermediaries in the game, the more distorted the final message becomes (Yngve, 2007).

According to Sandars and Heller (2006), the key elements of knowledge management are generation of knowledge, storage of knowledge, distribution of knowledge and application of knowledge. The existence as well as distribution of a high-quality evidence base does not necessarily mean that the correct message always reaches health-care staff at the bottom of the organization.

The information pressure from other, less valid sources of information is tremendous, and sometimes health professionals adopt and transfer messages which are less valid and tend to stick to routine procedures that are not up-to-date. Of course, information technology is of extreme importance for dissemination, on local intranets for professionals as well as the Internet. Health information is one of the most frequently sought topics on the Internet (Greenberg *et al.*, 2004; Lorence and Greenberg, 2006).

According to Miser (2006), ‘becoming an information master is a task that all can learn’, and thus this task is essential for primary health care specialists. Although most health care staff actually have a slight training on how to use the Internet with discrimination (Lorence and Greenberg, 2006).

2.10 Comparison of Nutritional Knowledge among Different Social Demographics

Nutrition is a science, which narrates the relationship between health and diet while nutritional knowledge is the ability to produce facts or principles related to nutrition. Good

nutritional knowledge of healthcare practitioners has also shown to improve the health conditions of individual, due to the fact that nutrition information will be provided with sound and safe nutrition advices (Kennelly *et al.*, 2010).

Nutrition knowledge is higher among those aged between 29 - 51 years compared with younger individuals .Occupation with higher education level is significantly associated with good nutrition knowledge (Munuo, 2014).

In addition, those with higher educational levels (degree holders and above) had higher mean scores than did diploma or lower certificate holders, which indicates that educational level may affect the nutritional knowledge (Vriendt *et al.*, 2009). According to Chui *et al.* (2014), even educated lacked principles of nutritional knowledge regarding food composition, fats and cholesterol, daily serving recommendations, and food guides.

A study conducted among Belgian middle aged women also found a significant relationship between nutritional knowledge and educational level (Vriendt *et al.*, 2009). Another study further suggests that women have greater nutritional knowledge than men because are more informed about nutrition (Lin *et al.*, 2011). It is also found that nutrition knowledge amongst health care professionals is poor (Munuo, 2014).

2.11 Socio-demographic Usage of CAM

Evidences from studies carried out in different parts of the world have established that CAM use is very common and varies among populations. According to Okoronkwo *et al.* (2014) 37.2% males and 62.8% females used CAM with the age range from 18 - 65 years. A study conducted by Udo *et al.* (2014) found 19.5% of male used CAM remedies while the number of female who used CAM remedies was 44.3% with age of 40-49 years

(33.3%) also low and middle income across education levels seems also to use CAM remedies.

In Tanzania CAM use cut across all age group and education levels varied from none to university level (Stanifer *et al.*, 2015) while in Kenya the use of herbal medicine is associated with a lower level of education and women are the most user of CAM (Mothupi, 2014).

Patterson and Arthur (2009) found that, a larger percentage of CAM users were female (73%) than male (27%), as far as the age concern mostly of CAM users were also in the age between 18 and 21.

Similarly Chui *et al.* (2014) study portrays that CAM users were between the ages eighteen and twenty-five years with female and male were equally distributed. Their education was more on primary and fewer were having degrees.

However, in a study of health care utilization conducted with older adults in Italy, 79% of people who used only CAM were female, 72% of people who used both CAM and conventional medicine were also female (Bishop and Lewith, 2010).

CHAPTER THREE

3.0 METHODOLOGY

3.1 The Study Area

Dar es Salaam is the Tanzania's largest and important economic center. It consists of three local government areas or administrative districts which are Kinondoni, Ilala and Temeke and a population of 4,364,541 with average annual growth rate of 5.6 (NBS and OCGS 2013).

The city contains high concentrations of trade and other services including the alternative health practitioners compared to other parts of Tanzania (Boyle, 2012). Dietary problems are the conditions that occur due to changes in the eating habits with frequent unhealthy snacking together with a more sedentary lifestyle (Njelekela *et al.*, 2015).

Hypertensive heart diseases is one of the dietary related condition and it is common in Tanzania (Mayige *et al.*, 2012) and mortality rates from strokes are higher in Dar es Salaam compared to other areas (Walker *et al.*, 2010). Stroke has been described as an emerging problem, poorly known among the communities and believed to emanate from supernatural causes in Dar es Salaam (Mshana *et al.*, 2008). Therefore the study was conducted within a selected part of Dar es Salaam whereby alternative health care practitioners are seems to be concentrated.

3.2 Research Design

The study design was a cross sectional in which primary data were collected from clients and practitioners of the alternative health care. A cross sectional study design looks at a slice of population at a single point in time; it is often base on a questionnaire survey and

it does not need follow up because participants are interviewed only once (Levin, 2006). This study design was chosen because there were no hypothesis to be tested as such, but rather the aim was to examine and describe the practitioners of alternative health care or traditional medicine.

Traditional Medicine (TM) refers to informal medicine and natural healing. It is an ancient and culture bound method of healing that humans have used to cope and deal with various diseases that have threatened their existence and survival (Abdullah, 2011). Hence, TM is broad and diverse. Similarly alternative health care is a group of diverse medical and health care systems, practices and products that are not presently considered to be part of conventional medicine (Udo *et al.*, 2014). This explains the reason why there is no single universally accepted definition of the terms.

3.3 Sampling and Sampling Procedure

3.3.1 Sample size

The sampling frame included all alternative health care practitioners located in the study areas (selected part of Dar es Salaam) in which sampling units were individual alternative health care practitioners (registered and unregistered) who provide nutrition information to seemingly diet related problems, and clients/customers who receive their services.

The target population size was unknown and could not be approximated (Smith, 2013) due to the fact that some of the practitioners were not registered by their association known as Traditional and Alternative Health Practices Council (TAHPC) but they are doing the business illegally (Mtambalike, 2014) if the researcher could only sample the registered one could miss unregistered who are also potential for the study.

Therefore sample sizes of 375 clients (i.e five per sampled practitioner) and 75 practitioners (i.e 25 per district), making a total of 450 respondents were sampled. The sample size was based on the nature and accessibility of the target population.

3.3.2 Sampling procedure

Snowball sampling technique was employed to reach the relevant practitioners of alternative health care. This was done by identifying one respondent that matches the criteria for the study, and then was asked to recommend another one known to him or her who meets the selection criteria (Bhattacharjee, 2012).

A convenience (on the spot subject) sampling was used to sample clients/ customers based on their relative ease of access (Lucas, 2013). Also snowballing and other ways (asking a person if he/she had used alternative medicine services) of identifying clients were used. Although there are disadvantages of using non-probability sampling methods such as snowball and convenience sampling, it was still appropriate method given the context of this study.

3.4 Data Collection and Ethical Consideration

Quantitative and qualitative data were collected from both practitioners and their clients. A structured questionnaire (Appendix 1) with a designed basic nutrition knowledge test was administered to answer needs of objective one of this study. In that respect, face to face interviews were adopted to collect the information.

An interview schedule and a dialogue enquiry approach as well as observation methods were used to collect information to meet objective number two. Thus was to probe on

what they tell their clients about the relationship between diets related problems and nutrition/food.

Again, a structured questionnaire was used with a face to face interview to gather information to answer objective number three. Respondents were asked to point out the means of communication they use for their clients to know their services.

Also a desk review method was employed to check on other means of communication such as brochures, posters, and leaflets which they provide to the public. A structured questionnaire was used in which face to face and telephone interviews were adopted to collect the information to answer objective number four. The focus was on client's perception with regard to the services and/or nutrition information being provided to them by the practitioners.

Informed verbal consent was sought from the participants before each interview as well as explanation of the purpose of the research. The study was participatory and a person was free to drop out at any point of time during the research process.

3.5 Data Analysis

Statistical Package for the Social Sciences (SPSS) version 20 computer statistical software was used to analyze quantitative data in which descriptive statistics such as frequencies and percentage were used. Chi-square was used to determine the relationship among categorical variables.

Qualitative data was analyzed using ethnographic content analysis technique in which information from the key messages being provided in regard to nutrition was sorted by grouping according to relevant themes.

CHAPTER FOUR

4.0 RESULTS

4.1 Overview

This chapter presents the findings of the study on the nutrition information offered by providers of alternative health care to people with seemingly dietary related problems. Specifically, the results focus on nutrition knowledge possessed by the practitioners, the key messages provided in regard to nutrition, educational communication strategies employed and the perception of clients with regard to nutrition information and services being provided by the practitioners of alternative health care. The results are based on 375 sampled clients and 75 practitioners.

4.2 Socio-demographic Characteristics of Respondents

The results presented in Table 1 show that both clients (44.8%) and practitioners (54.7%) were in the age between 25-35 years, whereas 30.1% of clients and 12% of practitioners were below 25 years, and those above 35 years were for clients and practitioners 25.1% and 33.3%, respectively.

Many of client were females (64%) compared to males (36%), while majority of practitioners were males (89.3%). Clients appeared to have different levels of education while most of the practitioners have attained post-primary school education. On the other hand, more than two thirds (69.3%) of the service practitioners were not having any nutrition or health qualifications.

Table 1: Socio-demographic characteristics of respondents

Variables	Clients (n=375)	Practitioners (n=75)
	Percent (%)	Percent (%)
Age		
Below 25 yrs	30.1	12.0
25 – 35 yrs	44.8	54.7
Above 35 yrs	25.1	33.3
Total	100.0	100.0
Sex		
Male	36.0	89.3
Female	64.0	10.7
Total	100.0	100.0
Education level		
Primary School only	29.3	4.0
Secondary School	27.7	45.3
Certificate + diploma	32.0	45.3
University degrees	10.9	5.3
Total	100.0	100.0
Nutrition or health qualification		Practitioners (n=75)
Qualified		30.7
Not qualified		69.3
Total		100.0

4.3 Use and Practices of Alternative Health Care

More than half (58.7%) of the practitioners were registered by their association known as Traditional and Alternative Health Practices Council (TAHPC) implying that a good proportion (41.3%) was not formally recognized (Table 2). The study also revealed that 40% of the practitioners had less than 2 years in services while the rest have been providing the services for some years now, of up to 10 years.

Table 2: Registration status and duration since started providing services

Variables	Frequency (n) (n=75)	Percent (%)
Registration status		
Registered by CAM of Tanzania	44	58.7
Not registered	31	41.3
Total	75	100.0
Duration for service provision		
Less than 2 years	30	40.0
2-5 years	22	29.3
5-10 years	18	24.0
More than 10 years	5	6.7
Total	75	100.0

Nutrition related diseases treated by practitioners

Table 3 shows the reported nutrition related diseases treated by practitioners of alternative medicines. More than 40% reported to deal with a combination of diabetes and hypertension. Other health disorders include hypertension, cancer, and cardiovascular diseases. However, diabetes appears to be dominating in general.

Results in the table also indicate that, majority of the practitioners neither use nutrition experts in providing nutrition education to their clients (98.7%), nor have they attended any nutrition training (93.3%). But it is interesting that all of them (100%) admitted that they were providing nutrition advice to clients.

Table 3: Nutrition related diseases treated by practitioners and nutrition engagement

Variables	Frequency(n) (n=75)	Percent (%)
Nutrition related diseases treated by practitioners		
Diabetes, Hypertension, Cancer and CVDs	15	20.0
Diabetes and Hypertension	36	48.0
Diabetes and CVDs	2	2.7
Diabetes	11	14.7
Hypertension	7	9.3
Diabetes, constipation and overweight	4	5.3
Total	75	100.0
Use of nutrition professionals to give nutrition advice		
Yes	1	1.3
No	74	98.7
Total	75	100.0
Formal nutrition training attended by practitioners		
Yes	5	6.7
No	70	93.3
Total	75	100

4.4 Nutrition Knowledge Possessed by Practitioners

4.4.1 Sources of nutrition information

Table 4 shows practitioners' five categories of nutrition information sources which include books and internet; friends; books, internet and friends; books and friends; and internet and friends. The distribution appears to be quite even among the five categories. However, while much of the categories were combined, friends as a source of information appear to be outstanding on its own.

Table 4: Sources of information about nutrition issues used by the practitioners

Source	Frequency (n) (n=75)	Percent (%)
Books and internet	12	16.0
Friends	17	22.7
Books, Internet and Friends	15	20.0
Books and friends	17	22.7
Internet and friends	14	18.7
Total	75	100.0

4.4.2 Test of nutrition knowledge

A number of nutrition knowledge test questions were set in the questionnaire (questions 14-23). These included:

1. Nutrients to be replaced after long duration low intensity exercise
2. Relationship of life style behaviors/eating and diet related diseases
3. Drug-nutrient interactions
4. Vitamins that increase iron absorption
5. The correct time for eating fruits
6. Recommended adequate amount of water

4.4.2.1 Nutrients to be replaced after long duration low intensity exercise

Results in Table 5 shows practitioners knew that carbohydrate should be replaced after exercise of long duration with low intensity 38.7%. However, 21.3% of the practitioners were not sure of such nutrient to be replaced after exercising.

Table 5: Nutrients to be replaced after long duration low intensity exercise

Nutrient	Frequency (n) (n=75)	Percent (%)
Carbohydrate	29	38.7
Protein	18	24.0
Fat	12	16.0
Unsure	16	21.3
Total	75	100.0

4.4.2.2 Relationship of life style behaviors/eating and diet related diseases

Table 6 shows attributable causes of an increase in diet related diseases as far as lifestyle behavior is concerned. More than 40% of the sampled practitioners reported that processed foods, sedentary lifestyle and little consumption of natural foods. Fewer (16%) thought it is due to fat foods and sedentary lifestyle.

Table 6: Reported possible causes of diet-related diseases and lifestyle behavior

Cause	Frequency(n) (n=75)	Percent (%)
Fat foods and sedentary lifestyle	12	16.0
Processed foods and little natural foods	33	44.0
Processed foods and sedentary lifestyle	30	40.0
Total	75	100.0

4.4.2.3 Drug -nutrient interactions

Results in Table 7 show that a big number of practitioners neither were aware of drug-nutrient interactions (93.3%) nor not aware of nutrient interactions (92.0%). They insisted that drug–nutrient interactions can only happen with conventional drugs but not for the alternative medicine because they are from natural plants.

In addition, only 8% of practitioners reported to know some nutrient interactions. They managed to mention an example of calcium – potassium which they claim that work together.

Table 7: Reporting of drug-nutrient interaction and nutrients interaction

Variables	Frequency(n) (n=75)	Percent (%)
Agrees that there are drug-nutrient interactions	5	6.7
Don't agree that there are interactions	70	93.3
Total	75	100.0
Nutrients interactions known by practitioners		
Knows any interaction	6	8.0
Don't know any interaction	69	92.0
Total	75	100.0

4.4.2.4 Vitamins that increases iron absorption

Table 8 shows the reported vitamins that increase the amount of iron absorbed from foods. Practitioners of alternative medicine reported vitamin B1 and K are the ones that enhance iron absorption (38.7% and 29.3) respectively while fewer 1.3% said vitamin B12. None of them mentioned vitamin C.

Table 8: Reported vitamins that increase iron absorption

Vitamin	Frequency(n) (n=75)	Percent (%)
Vitamin C	0	0.0
Vitamin B1	29	38.7
Vitamin K	22	29.3
Vitamin E	4	5.3
Vitamin B12	1	1.3
Vitamin D	6	8.0
Not sure	13	17.3
Total	75	100.0

4.4.2.5 The correct time for eating fruits

Results in Table 9 show that 72% of practitioners recommended fruits to be eaten within 30 minutes to 60 minutes before a meal while 17.3% recommend 30 minutes to 60 minutes after a meal. The main concern mentioned was to avoid fermentation, toxicity and flatulency which may occur during digestion once mixed with other foods as reported by practitioners of alternative medicine.

Table 9: The reported correct time for eating fruits

Time duration	Frequency (n) (n=75)	Percent (%)
30minutes -60minutes before a meal	54	72.0
30minutes -60minutes after a meal	13	17.3
Any time	5	6.7
Total	75	100.0

4.4.2.6 Recommended adequate amount of water per day

Table 10 shows the recommended adequate amount of water to be taken by a healthy individual per day as mentioned by practitioners of alternative medicine in this study. Majority (58.7%) recommend 3-5 litres per day, the least (13.3%) recommend 2 litres per day, while others (28.0%) recommend 2-3 litres. They argued that drinking a lot of water helps to eliminate toxins from conventional medicines and other chemicals ingested and make the body free of toxins.

Table 10: Recommended adequate amount of water per day

Amount of water	Frequency(n) (n=75)	Percent (%)
2 liters	10	13.3
3-5 liters	44	58.7
2-3 liters	21	28.0
Total	75	100.0

4.5 Key Messages Provided in Regard to Nutrition

Three categories of key nutrition messages were identified to be provided by the practitioners. These were on:

- Foods that contribute to weight gain
- Advice for weight loss
- Management of diet- related diseases.

4.5.1 Foods that contribute to weight gain

Table 11 shows four groups of foods that contribute to weight gain as reported by sampled practitioners of alternative health care. 38.7% reported fried and fatty foods contribute to weight gain thus should be avoided. Others (25.3%) suggested avoidance of meat and fried potato, 16.0% suggested protein foods, fatty foods, carbohydrates and processed foods contribute to weight gain.

Table 11: Foods that contribute to weight gain

Foods contributing to weight gain	Frequency(n)	Percent (%)
	(n=75)	
Fried foods and fatty foods	29	38.7
Meat and fried potato	19	25.3
Meat, fried foods and processed foods	15	20.0
Protein foods, fatty foods, carbohydrate and processed foods	12	16.0
Total	75	100.0

4.5.2 Advice for weight loss

Table 12 shows different advice provided by practitioners to their clients as a mechanism for weight loss. About 39% of practitioners advise their client to eat vegetables and fruits only, 26.7% advised to eat vegetables, fruits and to do exercise only while the least (1.3%) advise them to avoid processed and fried foods.

Table 12: Reported advice for weight loss

Appropriate food to eat	Frequency(n) (n=75)	Percent (%)
Eat vegetables and fruits only	29	38.7
Avoid processed food and fried foods	1	1.3
Eat vegetables, fruits and exercise only	20	26.7
Eat more natural foods	11	14.7
Fruits and exercise	14	18.7
Total	75	100.0

4.5.3 Management of diet related diseases

Using non-statistical approach, the key nutrition messages provided to clients with diet related problems were identified as summarized in Table 13:

Table 13: Reported messages in management of diet related diseases

Diet-related diseases	Management of diet-related diseases reported by practitioners
Diabetes	Clients should avoid sugary and sweet foods, drink more water, eat a lot of natural foods because they are safe and engage more in exercise. Eat more fruits and vegetables, use honey and whole meals.
Hypertension	Clients should avoid fried foods due to high amount of fat. Instead they should eat a lot of natural foods, fruits, vegetables, fiber foods and whole meals. All those should be accompanied by physical exercises.
Cancer	Clients should avoid processed foods due to high chemical content; eat a lot of fruits and vegetables as well as natural foods because they have high fiber content that will bond carcinogenic matters.
Cardiovascular diseases	Clients should eat a lot of tomato and garlic to break low density lipoprotein, also eat a lot of natural foods and citric fruits to enrich the blood vessels as well as exercising.

4.6 Communication Strategies Employed by Practitioners of Alternative Medicine

Table 14 shows posters and clients' testimonies (54.7%) are the number one communication strategy used by practitioners. Among the five categories, the least category used (2.7%) was found to be television and radio as a way of communication. Very few of them however reported also to use fliers and brochures to create awareness for their services.

Table 14: Type of media or communication strategies employed by practitioners

Media/communication strategy	Frequency(n) (n=75)	Percent (%)
Television, Radio, posters and clients	8	10.7
Television and Radio	2	2.7
Posters and clients testimonies	41	54.7
Poster, Radio and clients	20	26.7
Clients spreading word of mouth	4	5.3
Total	75	100.0

4.7 Clients' Satisfaction Levels and Perceptions toward General Services and Nutrition Information Provided

4.7.1 Satisfaction of nutrition information provided

According to results in Table 15, majority (83.7%) of clients showed to be satisfied with the nutrition information, 83.5% perceiving it to be good and helpful leaving minority group that constitutes 16.3% unsatisfied. 16.5% perceiving the nutrition information to be not directive, misleading and not specific in terms of food. They also complained that a big number of practitioners are business oriented, that is, they are more after money than health benefits.

Table 15: Satisfaction level and perception towards nutrition information provided

Variables	Frequency (n) (n=375)	Percent (%)
Nutrition information provided		
The information is good and helpful	313	83.5
The information is not directive, is misleading and not specific in terms of food selection	62	16.5
Total	375	100
Satisfaction of nutrition information provided		
Satisfied	314	83.7
Not satisfied	61	16.3
Total	375	100

4.7.2 Reasons for opting and perception of clients towards the use of CAM

Table 16 shows various reasons as to why clients opted for CAM services. These include good information provided about maintaining healthy lifestyles (83.0%), availability of clinics as well as good information (73%) and the ease of getting food advice from alternative health care providers (64.5%).

Perceptions that alternative medicines have fewer side effects (86.4%), healthier than conventional medicines (85.6%) and they are more influential thus many people may be attracted to use (85.9) were seen to get higher percentages. Fewer clients (52%) perceived alternative medicines to be easily accessible and of lower cost.

Table 16: Reasons for opting and perception of clients towards the use of CAM

Variables	n	Disagree (%)	Neutral (%)	Agree (%)	Total
Reasons for opting CAM services					
Providers give good information on maintaining a healthy lifestyle	375	12.0	5.0	83.0	100
I would be more likely to use CAM due to good information provided and more clinics	375	13.9	12.8	73.3	100
It is easier to get food advise from alternative health care	375	20.8	14.7	64.5	100
Perception of clients towards the use of CAM					
There are less side effects when using alternative medicines	375	4.3	9.3	86.4	100
Alternative medicines are more healthy than conventional medicines	375	3.5	10.9	85.6	100
Alternative medicines healing has lower cost and easily accessible	375	33.3	14.7	52.0	100
Information from parent(s) and friends can influence the use of alternative medicine	375	2.1	12.0	85.9	100
Conventional medicine have higher side effect	375	4.3	17.6	78.1	100
Alternative medicine is not harmful to my health	375	5.8	24.0	70.2	100

4.7.3 Relationship between perception of clients toward nutrition information and their education levels

Table 17 shows that majority of clients from different education levels perceived nutrition information provided to be good and helpful. However, a larger proportion of university graduate clients thought of the services negatively, as compared to the other education levels. The differences were statistically significant by using Chi-square testing ($P=0.013$).

Table 17: Education and perception of clients toward nutrition and health eating information provided

Variables	Primary School (n=110)	Secondary School (n=104)	Certificate + Diploma (n=120)	University degrees (n=41)	Total (n=375)
The information is good and helpful	87.3	85.6	84.2	65.9	83.5
The information is not more directive, is misleading and not specific in terms of food selection	12.7	14.4	15.8	34.1	16.5
Total	100.0	100.0	100.0	100.0	100.0

Chi-square value = 10.750; df = 3; P = 0.013

4.7.4 Information on maintaining a healthy lifestyle

Majority of respondents regardless of their education levels agree that alternative health practitioners give good information on maintaining healthy life styles (Table 18). However, most respondents who agreed were primary education holders (90.0%) while the least were university degree holders (63.4%). The largest proportion of respondents to disagree was found among university degree holders (26.8%). The differences were statistically significant at $P=0.013$.

Table 18: Opinion on whether CAM practitioners give good nutrition information

Opinion	Education Category				Total (n=375)
	Primary School (n=110)	Secondary School (n=104)	Certificate + Diploma (n=120)	University degrees (n=41)	
Don't give good information	8.2	12.5	10.0	26.8	12.0
Not decided	1.8	5.8	5.8	9.8	5.1
Yes, gives good information	90.0	81.7	84.2	63.4	82.9
Total	100.0	100.0	100.0	100.0	100.0

Chi- square value = 16.169; df = 6; P = 0.012

4.7.5 Less side effects on using natural remedies

Results presented in Table 19 show the majority of respondents in all education levels agreed that there are fewer side effects when using natural remedies than the modern medicines. However, 26.8% of university degree holders were undecided.

Table 19: Opinion on whether alternative medicines have fewer side effects (percentages)

Opinion	Education Category				Total (n=375)
	Primary School (n=110)	Secondary School (n=104)	Certificate + Diploma (n=120)	University degrees (n=41)	
Don't have fewer side effect	4.5	2.9	5.8	2.4	4.3
Not decided	6.4	8.7	6.7	26.8	9.3
Have fewer side effect	89.1	88.5	87.5	70.7	86.4
Total	100.0	100.0	100.0	100.0	100.0

Chi-square value 18.274; df = 6; P = 0.006

4.7.6 Natural plant formulas compared to modern medicines

Of the total clients interviewed, generally the majority in all education levels agreed that taking alternative medicine is healthier than taking conventional medicine (Table 20). However, a small proportion of university graduate clients (9.8%) disagreed.

Table 20: Education levels and perception on use of alternative medicines (percentages)

Opinion	Education Category				Total (n=375)
	Primary School (n=110)	Secondary School + Diploma (n=104)	Certificate (n=120)	University degrees (n=41)	
No, it is not healthier	0.9	2.9	4.2	9.8	3.5
Not decided	10.0	7.7	8.3	29.3	10.9
Yes, it is healthier	89.1	89.4	87.5	61.0	85.6
Total	100.0	100.0	100.0	100.0	100.0

Chi-square value = 24.749; df = 6; P = 0.000

4.7.7 Cost implication and accessibility of alternative medicine

Table 21 indicates that more than 50% of all clients across their education levels believe in alternative medicines and they perceive that they are easily accessible with lower cost compared to modern medicines.

Table 21: Cost implication and accessibility of alternative medicine

Opinion	Education Category				Total (n=375)
	Primary School (n=110)	Secondary School + Diploma (n=104)	Certificate (n=120)	University degrees (n=41)	
Not true that it is more affordable and accessible	41.8	28.8	32.5	24.4	33.3
Not decided	10.9	19.2	12.5	19.5	14.7
Affordable and more accessible	47.3	51.9	55.0	56.1%	52.0
Total		100.0	100.0	100.0	100.0

Chi-square value = 8.402; df = 6; P = 0.210

4.7.8 Food advice and education from alternative health care clinics

Results presented in Table 22 show that more than 50% of respondents at all education levels agree that it is easier to get food advice from alternative health care clinics than anywhere. There was no significant difference among respondents of varying education levels at $P \leq 0.05$.

Table 22: Opinion on food advice and education from alternative health care clinics

Opinion	Education Category				Total (n=375)
	Primary School (n=110)	Secondary School (n=104)	Certificate + Diploma(n=120)	University degrees (n=41)	
It is not easier to get	23.6	20.2	16.7	26.8	20.8
Not decided	7.3	17.3	18.3	17.1	14.7
It is easier to get	69.1	62.5	65.0	56.1	64.5
Total	100.0	100.0	100.0	100.0	100.0

Chi-square value = 8.880; df = 6; P = 0.180

CHAPTER FIVE

5.0 DISCUSSION

5.1 Overview

The public is exposed to all sorts of scientific issues which they need to understand, in order to reach the right decisions. One of these issues is the choice of diet. The increased interest in nutritional issues has been fuelled by a number of factors including lifestyle, ageing population, dietary and safety concerns.

As consumers have become increasingly concerned about what they eat and how it affects their health, they are taking a more proactive role in their healthcare and given the surge in the use of media for health information gathering, the flow of information to consumers becomes a key determinant to their welfare. Although information alone does not necessarily result in improving healthy well-being, it is seen as an important step towards positive health behavior change.

This chapter discusses the results obtained from the study. It is respectively divided into six distinctive parts. The first part discusses the characteristics of clients and practitioners, the second part looks at use and practices of alternative health care, part three looks at nutrition information offered by practitioners of alternative medicine, part four looks at the key messages provided in regard to nutrition, part five looks at communication strategies employed by practitioner of alternative health care and part six looks on perceptions of clients toward nutrition information and the general services being provided by practitioners of alternative health care.

5.2 Characteristics of Clients and Practitioners

5.2.1 Age

The typical ages of the practitioners and their client differ (Table 1). Clients were in the age between 25-35 years (44.8%), however more than half of practitioners were in the age of 25-35 years (54.7%). In African communities CAM use occurs between 18 - 65 years (Okoronkwo *et al.*, 2014) also Udo *et al.* (2014) reported the same. In Tanzania specifically CAM use occurs across all age group from young to adult individuals (Stanifer *et al.*, 2015).

5.2.2 Sex of respondents and CAM use

The findings (Table 1) indicate that the highest number of CAM users were females (64%) compared to males (36%). This revealed that females seek more alternative health care treatment compared to males while majority of the practitioners were males (89.3%).

In Tanzania there is an increasing number of people using alternative medicine to cure different type of diseases, 60% reported to be females (Kayombo *et al.*, 2012).

In African countries such as Kenya and Nigeria reported the same as this finding that the most CAM users were female compared to men (Mothupi, 2014; Udo *et al.*, 2014; Okoronkwo *et al.*, 2014). This may be due to reason that women are more likely to be informed about nutrition and health care systems than men and are more willing to try CAM because they are more conscious of their health, serious and open-minded.

5.2.3 Education

As per results presented in Table 1. Clients had certificates/diploma and primary schools respectively, fewer were of university degree. However, most of the practitioners have

some form of formal schooling, having secondary school and certificates/diploma and 5.3% were university degree level.

Most of these respondents had lower levels of education, hence likely to have lower levels of understanding matters related to complementary and alternative medicine as far as nutrition is concerned, hence it is easier for them to be misinformed.

According to Stanifer *et al.* (2015), education levels of CAM use in Tanzania varies from none to university level. Practitioners with higher education level are significantly associated with good nutrition knowledge (Munuo, 2014).

5.3 Use and Practices of Nutrition in Alternative Health Care

5.3.1 Provision of nutrition information

The study found that all of the sampled practitioners provide nutrition information to their clients. This means that majority of practitioners of CAM do involve themselves in nutrition counseling/advice which is neither their profession nor have they attended nutrition training. This can be a source of unsound and misleading information to the public that may endanger health and economy of individuals as people will be spending money for the service which is neither reliable nor valid.

Good nutritional knowledge of healthcare practitioners has also shown to improve the health conditions of individual, due to the fact that nutrition information will be provided with sound and safe nutrition advices (Kennelly *et al.*, 2010) which seem to be poor to practitioners of alternative healthcare in Tanzania.

According to Miser (2006), ‘becoming an information master is a task that all can learn’, and this task is essential for primary health care specialists. However, such a situation can be a problem, with everybody trying to be their own information master, especially in the area of nutrition (Lorence and Greenberg, 2006).

5.3.2 Health or nutrition related qualification and the use of nutrition professional's

As far as the findings of this study, majority of the alternative health care practitioners have no any health or nutrition related qualification (Table 1), which means they have no appropriate professional qualifications of what they are doing. Only few of practitioners have health qualification of alternative medicines.

It was observed that majority of the alternative health care providers do not directly give the service to their customers, they rather assign the work to the workers whom have no qualifications and with lower education level which could be a source of misinformation.

The findings also portrayed that CAM practitioners do not use nutrition experts to help in providing nutrition information to their clients (Table 3), they rather do from experience. They also had no any nutrition training attended, and only few of practitioners had attended nutrition training through Seventh Day Adventist church seminars where they learn on health eating and lifestyle behaviors. Hence more nutrition misinformation may occur.

A study conducted by Moses (2010) in Tanzania there are gaps in the nutrition knowledge among practitioners and most of them may not have expertise to properly advise clients on the important aspects of nutrition and their knowledge are rated as moderate. Also Munuo (2014) found that in Tanzania there is limited nutrition information among healthcare

practitioners and most of them 92 % do not use any nutrition guidelines in their field and their nutrition knowledge is poor contributed by inadequate nutrition training.

According to Yngve (2007) nutrition advice is sold to the public by self-styled 'experts' with no formal degree-level training in the subject, thus there is always a risk of initially irrelevant health messages reaching the population in distorted or altered form. As the more individuals or intermediaries in the game, the more distorted the final message becomes

5.3.3 Registration and duration of providing the health services

More than half of the sampled alternative health services practitioners have been registered within their association known as "TAHPC " and others were not registered.

These findings as presented in Table 2 suggest that there are practitioners who conduct illegal services in the study area regardless of the government favorable condition for registration, Mtambalike (2014) also reported the same.

Additionally, practitioners were found to have less than 2 years of doing the service while only few had more than 10 years. This indicates that huge numbers of practitioners have only recently joined this business of providing the alternative medicines because of the increased nutritional related conditions which may not be treated in convention medicine. Kayombo *et al.* (2013) also found that emerging and re-emerging diseases which had no cure in the conventional medicine had led to increasing use of TRM in Tanzania.

A study conducted by Jangu (2012) on social change and traditional medicine in Tanzania found that, in 2006 the Tanzanian government initiated a project to register all CAM practitioners. Healers who were still interested in practicing medicine in villages have

many challenges due to lack of license. A license was one of the conditions for practicing CAM services. Also healers did not trust their clients, suspecting that some were government agents sent to investigate on them.

This condition forced them to seek for registration. Some of the practitioners were reluctant to register their business due to the fact that, they have no profession of the business and other criteria for the registration.

5.3.4 Nutrition related diseases treated by CAM practitioners

The findings (Table 3) show that CAM practitioners do treat and provide nutrition education on diabetes and hypertension, while few of them provide education on cancer and cardiovascular diseases. Diabetes and hypertension are the leading nutrition related diseases or problems treated by CAM practitioners.

The possible reason for this could be due to CAM treatments are easily available, affordable and with fewer side effects compared to modern medicine (Kayombo *et al.*, 2013). However, safety of use of traditional medicine is not standardized.

In Tanzania chronic diseases such as diabetes, hypertension, cardiovascular disease, osteoporosis and cancers were reported as the most common reason for alternative medicine use whereby these diseases are a rapidly growing (Stanifer *et al.*, 2015).

Furthermore in South African communities Hughes *et al.* (2013) reported the same.

CAM use has also noted to be prevalent among patients with behavioral and developmental problems such as stroke, diabetes and hypertension (Boyer, 2005).

5.3.5 Sources of nutrition information

The findings in (Table 4) indicated that practitioners got information on nutrition issues from friends, internet and books. This shows that friends and internet were the mostly reliable source of nutrition information used by the practitioners of alternative health care, which may be a source of incomplete, misleading and contradictory nutrition information offered since practitioners do not source nutrition information from either nutritionists or dieticians which may be valid source to be used.

Ronald *et al.* (2014) reported that in Tanzania nutrition information is accessed through radio, television, newspapers, magazines, cell phones, family or parents, personal experience, neighbors and oral communication.

Munuo (2014) found that other sources information in Tanzania were textbooks 34.6%, internet (21.8%), seminars 23.3% self-education and work-related experience (9.8%) however in other African country such as Nigeria their main source of information is through radio 70.9% (Bamidele *et al.*, 2009).

According to Sarubin (2002) people get nutrition information from a variety of sources, and media is their most frequently used source of nutrition information. Although people are increasingly relying on the internet for nutrition information, people must be reminded that the accuracy of information appearing on Web sites is not governed by any regulatory agency. As a result, sites featuring sound science based content co-exist with sites containing questionable, inaccurate or alarming information.

5.4 Nutrition Knowledge Possessed by the Practitioners of Alternative Medicine

Few key issues were investigated in this study. These are relationship of life style behaviors or eating and diet related diseases, vitamin that increases the amount of iron

absorption, drug-nutrient interaction, nutrient to be replaced after exercising, adequate amount of water an individual needs to take per day and the correct timing for eating fruits.

5.4.1 Relationship of life style behaviors or eating and diet related diseases

The finding Table 6 shows practitioners of CAM are aware of a relationship between lifestyle behaviors and diet related diseases.

In Tanzania a diet low in fruit and vegetables is associated with non-communicable diseases, nutrition transition that involves more energy-dense food and fewer physical activity also is associated with lifestyle diseases (Keller, 2012; Maina *et al.*, 2010) reported the same as in this findings.

Similarly, Hendrie *et al.* (2008) found people were most aware of the relationship between the amount of fat, sugar and sodium in the diet and disease. Another study conducted by Lin *et al.* (2011) shows that there is a relationship between diet and disease.

In developing countries Tanzania being inclusive, diseases that were once considered rare such as diabetes and cardiovascular diseases are now considered a normal phenomenon. As a result of urbanization, populations are more exposed to sedentary lifestyles and unhealthy diets (Mayige *et al.*, 2012).

Moreover, the major lifestyle factors implicated in the etiology of non-communicable diseases are unhealthy nutrition, smoking, physical inactivity, and excess use of alcohol (WHO, 2005).

5.4.2 Vitamin that increases the amount of iron absorbed from foods

Vitamin that increases the amount of iron absorbed from foods (Table 8) reported by the sampled practitioners are vitamin B1 and K. None of them identified the correct vitamin which is vitamin C (ascorbic acid). This means there is misleading information provided to the public as practitioners are unsure and some not even aware of such a vitamin regardless of the iron deficiency anemia in the community.

Iron deficiency anemia is a concern in both developing and developed countries (Beck *et al.*, 2014), iron deficiency should be easily identified and treated, and yet it is often overlooked by health care practitioners (Miller, 2013). Dietary factors such as ascorbic acid enhance iron absorption; while phytic acid; soy protein; calcium and polyphenols inhibit iron absorption (Beck *et al.*, 2014).

Ascorbic acid is the most effective enhancer of non-heme iron absorption. Other dietary factors including citric acid and other organic acids, alcohol and carotenes similarly enhance non-heme iron absorption (Sharp, 2010).

Although ascorbic acid is recognized as a powerful enhancer of iron absorption, studies have not found any association between iron status and total daily ascorbic acid intake (Leonard *et al.*, 2014).

5.4.3 Drug- nutrient interactions

As shown in Table 7, a huge proportion of practitioners of the alternative medicine do not know if there are drug- nutrient interactions. Only few of them (6.7%) know there is a drug-nutrient interaction, but believed that to be specifically from conventional medicine

(western medicines) but not for alternative medicine for the reason that they are from natural plants.

This is contradictory information because natural medicine can as well interact with a nutrient the interaction can be positively or negatively. Therefore, their believe is missing the scientific evidence or support.

Some of the alternative medicine could cause adverse effects due to adulteration, inappropriate formulations, food and drug interactions, effects that are sometimes life threatening or lethal (Chukwuma *et al.*, 2016).

Gyasi *et al.* (2011) reported safety of traditional medicine is of concern because they are not standardized, and there is some form of interaction between CAM and nutrients. In addition to these concerns, poor regulatory framework for importation, manufacturing and distribution of herbal medicines in Africa keeps herbal medicine poorly researched, where even the registered products exist, it does not adhere to good manufacturing practices, principles of safety and efficacy as is required for conventional medicines (Hoist *et al.*, 2009).

5.4.4 Nutrients to replace after long duration low intensity exercise

Majority of practitioners as shown in Table 5 reported carbohydrate should be replaced after exercise of long duration with low intensity. However, about 21.3% of the practitioners are not sure of which nutrients should be replaced. This is still a problem for their clients, especially for those who are recommended to do exercise.

Low-intensity, long-duration exercise results in a greater total fat oxidation than does moderate intensity exercise of similar caloric expenditure (Thompson, 2012). During exercise, the intensity and duration will determine the energy expenditure, and low-intensity exercise requires a longer duration to expend a similar number of calories compared to high intensity exercise. Therefore, the time available for exercise becomes important which is not known by practitioners of alternative medicine.

5.4.5 Adequate amount of water individual takes per day

More than half of CAM practitioners recommend 3-5 liters per day as per Table 10 without considering other factors like health conditions, environment, age, gender and physical activities.

They went on claiming that drinking a lot of water will help individuals to eliminate toxins and other chemicals ingested, whereas drinking little water will cause dehydration and tiredness. But too much water dilutes the body's electrolytes and sodium levels, and this leads to a serious condition known as hyponatremia.

Aggarwal (2012) reported people should take an average of eight cups/glasses (consisting of eight fluid ounces) per day. However, the true amount of water intake depends upon several factors, including gender, age, level of activity and environment. As an individual grows older, the need for water intake decreases slightly, but adequate water intake is still just as vital to the body's functioning.

5.4.6 Correct time for eating fruits

CAM practitioners (Table 9) reports fruits should be eaten 30 to 60 minutes before or after a meal so as to avoid fermentation, toxicity, flatulent, indigestion, heartburn and other

digestive discomforts which may occur during digestion once mixed with other foods. They further claim fruits should be eaten alone or with other fruits on an empty stomach.

Moreover, 6.7% of practitioners reported fruits should be eaten at any time as individuals feels to eat. It has been also noticed that these people do not recommend eating of balanced diet as most of nutritionist's advice the community. They seem to claim that when a fruit is eaten close to a meal, especially right after a large meal or combined with other foods, it is held in the stomach too long along with other foods. This will cause the fruit to rot and ferment in the gut, thus will causes stomach upset (Leche, 2012).

According to Chandra (2012) there are facts and myths that are still overlapping in the community which leave consumers confused about what to eat and at what time. For example:

Myth: Fruit should be eaten on an empty stomach; if eaten with other foods it can cause fermentation and rot in the stomach, affecting digestion.

Fact: Fruit can be eaten at any time and it can be eaten along with other foods. The body produces digestive enzymes for protein, fat, and carbohydrates which help it digest mixed meals. Besides, since the stomach has a high concentration of hydrochloric acid, harmful bacteria are killed before they are able to reproduce, so fermentation cannot take place in the stomach.

Similarly Melnic (2012) reported that, fruit is an incredibly healthy food group: packed with vitamins, nutrients, fiber and water. But there have been some nutritional claims circulating suggesting fruit can also be damaging if eaten in conjunction with other foods. While it is true that fruit helps accelerate fermentation in things like bread starters, the idea that it could do so in a stomach is completely false.

5.5 Key Messages Provided in Regard to Nutrition

Several key issues were investigated in the study. They included foods that contribute to weight gain and advice for weight loss as well as management of diet related diseases.

5.5.1 Foods that contribute much to weight gain and advice for weight loss

Results in (Table 11) show foods that contribute to weight gain. Majority of practitioners stated that, fried and fatty foods contribute to weight gain hence should be avoided. Moreover, meat and fried potatoes as well as processed foods were also mentioned. On the other hand, this is true but lacks some nutritional principles behind as it depends with the portion size consumed by an individual and the type of fat consumed such as saturated or polyunsaturated fats as well as activity level of a person.

Along with the mentioned foods to contribute weight gain, increased food intake, high socioeconomic status, physiological status of a person, reduced physical activity and sedentary lifestyles can make individual to gain weight (Shayo and Mugusi, 2011).

In Tanzania, nutrition transition is usually marked by increased consumption of cheap vegetable oils that are rapidly integrated into local diets, meat, milk, processed food, and soft drinks together with an increase in the share of food consumed away from home seem to contribute weight gain (Keding *et al.*, 2013).

Table 12 shows the advices provided by these practitioners for weight loss as most of them tell their clients to eat vegetables and fruits, as well as to do exercise only, this information when practiced by individuals will make people miss some important nutrients like energy dense nutrients which is important to the body and the community will suffer from Protein Energy Malnutrition (PEM) on long run, and the country suffer the consequences.

Interpreting nutrition information into appropriate food consumption patterns were seems to be difficulty for most of the practitioners in the study area, hence consumers are being confused about what is right and wrong information. However information itself is not a sufficient instigator of change, but it is necessary if consumer is to understand appropriate health messages, to change their own lifestyle.

5.5.2 Management of diet- related diseases

The key messages provided to client in regard to management of diet- related problems reported by practitioners are shown in Table 13. Eating a lot of natural foods does not sound well for diabetic people as this will make individual to gain weight and increase blood sugar as well, hence accelerate the problem. The proper way is to adhere to recommendations and proper choice of foods, as well as to watch on the glycemic index of the particular foods.

Drinking a lot of water exceeding the recommendation is dangerous to the health as too much water dilutes the body's electrolytes and sodium levels, and this may lead to a serious condition known as hyponatremia.

Nutritionist's advices people to eat everything in moderation and according to Recommended Daily Allowance (RDA) and not to avoid some of foods because the body needs all the nutrients for its proper functioning.

Observing health conditions of individuals is also very necessary to enhance the wellbeing. It has been observed that there are some missing and contradictory information being provided by these practitioners that should be corrected to serve the health of consumers.

Chui *et al.* (2014) reported most of people lack principles of nutritional knowledge regarding food composition, fats and cholesterol, daily serving recommendations, and food guides as also seen in this study.

Similarly, Hendrie *et al.* (2008) found eating more fruit, vegetable, fiber as well as less preservative and additives will reduce a risk of cancer

Furthermore, in Tanzania there is need to focus on primary prevention at population level targeting interventions to reduce exposure to tobacco, reduce alcohol intake, reduce salt intake, promote healthy diets and physical activity as a way to manage diet related diseases (Mayige *et al.*, 2012).

5.6 Communication Strategies Employed by Practitioner of Alternative Health Care

The findings in Table 14 show that, more than half of practitioners create awareness to their customers through posters and clients testimonies after getting satisfaction with their services.

It was observed that few of them have fliers and brochures for their customer to be aware of their services. Communication from client to client is the most used way by these practitioners as some of them are afraid of conflicting with the government because they are not officially recognized.

Mboera *et al.* (2007) reported public meetings, television, radio and print materials such as brochure, leaflets, posters, and fliers are the most frequently used strategies for health information communication in Tanzania. Although the information gets to the community,

still there is lack of adequate knowledge and information exchange capacities among the health care practitioners.

Chui *et al.* (2014) found that materials such as newspaper articles and leaflets were also better utilized by highly educated people to gain information and implement changes in lifestyle.

5.7 Perceptions of Clients on Nutrition Information and the General Services

5.7.1 Perceptions toward nutrition information provided

Majorities of clients have been advised on healthy eating and lifestyle behaviors when visiting the alternative health care practitioners. Furthermore, most of them (Table 15) have been satisfied with the nutrition information provided by their practitioners and 83.5% reported the information provided is good and helpful to their health conditions, although few of them (16.5%) claimed the information provided was not satisfactory because the information was contradictory, misleading and not specific in terms of food selection. A study conducted by Moses (2010) in Tanzania found gaps in the nutrition information among practitioners and most of them may not have expertise to properly advise clients on the important aspects of nutrition.

Additionally there is limited nutrition information among healthcare practitioners in Tanzania and most of them 92 % do not use any nutrition guidelines in their field (Munuo, 2014). Thus there are still contradiction information on nutrition as seen in this study although client perception seem to be high on alternative medicine use in Tanzania.

5.7.2 Perception of clients towards the use of CAM

Table 16 shows majority of CAM users use alternative medicine services due to various perceptions and believes such as less side effects, lower costs, easy accessibility, parent(s)

and friends influence on the use of CAM, higher side effects for conventional medicine as well as alternative medicine is not harmful to their health.

A study conducted by Kayombo *et al.* (2012); Chudi (2010) found the other major reasons for use of TRM and its practitioners for healthcare needs in Tanzania are inadequacy of health facilities, medical personnel, drugs and other medical supplies. The high use of CAM may also be due to accessibility, affordability, availability and acceptability by majority of the population in developing countries (Chukwuma *et al.*, 2016).

Social and cultural issues has also contributed to the increase of CAM use (Onyiapat *et al.*, 2011), CAM has often been seen as popular because of the seeming harmlessness since is considered to be natural and it is believed to be cheaper and more affordable in most of developing countries (Udo *et al.*, 2014; Gyasi *et al.*, 2011) also reported the same.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The study shows that, regardless of CAM practitioners to have lower education and no nutrition training, their clients believe on their services and most of them use their services due to lower cost, perceived safety, easily available and accessible to their area compared to conventional medicine, easily accessible information as well as the information provided are friendly, more understood, good and helpful to their health conditions.

Most of the practitioners of CAM services are lacking training on nutrition and they have low education levels. Therefore they have low understanding of matters scientifically. These practitioners pre-scribe their medicine through experience. They claim their medicine to be natural and locally made so there is no drug-nutrient interaction or side effects.

Furthermore friends and internet were dependable and credible source of nutrition information used by practitioners to assist them transfer information to their clients, in which some of the information reported are misleading and contradictory as far as health eating is concerned. Regardless of the health professionals being among the most trusted sources of health related information, they were less used by practitioners of CAM.

6.2 Recommendations

This research study investigated only the use of nutrition information by practitioners of CAM in Dar es Salaam and thus the findings could not be generalized to the population at large in the country. In order to generalize the findings, a more representative sampling

population should be sought and be tested in another regional setting. Using the findings from this study as the basis, further investigation should be conducted in other sites. Should try to determine if there are any significant differences existing between sites on the use of nutrition information by practitioners of CAM. Furthermore in order to provide the public with more relevant and valid information, the following should be adhered to in order to ensure good health in the community:

- i. Health organization agencies need to collaborate with these CAM practitioners in order to promote sound information and to build in feedback systems for validation of the conveyed messages by CAM practitioners.
- ii. We also need to make sure that our own profession stands out in the blur of these nonprofessionals who produce nutrition messages at an ever-increasing pace. We need to show that we are trustworthy, identifiable, reachable and updated. If not us, then others will take all the initiative. And if not now, the pandemic of diet related diseases in our community is more likely to become uncontrollable.
- iii. More investigation is needed regarding the safety and drug-nutrient interactions with CAM, and the community should be educated on CAM services.
- iv. Government should involve also the practitioners of alternative health care in their trainings regarding nutrition to enrich their knowledge.

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APPENDIXES

Appendix 1: Questionnaire for Health Care Providers

Nutrition survey

Below are questions of nutrition information, based on your current knowledge please answer the question as best as you can. This is a survey, not a test. Your answers will remain anonymous.

1. District name.....

Part A: Socio-demographic characteristics of the respondent

2. Age of respondent

.....

3. Sex of respondent

(a) Male (b) Female

4. What is the highest level of education you have completed?

(a) Primary school

(b) O levels

(c) A levels

(d) Technical or trade certificate

(e) Diploma

(f) Degree

(g) Post-graduate degree

5. Do you have any health or nutrition related qualifications?

(a) Yes

If yes please specify:

.....

(b) No

Part B: Nutrition information possessed and communication strategies

6. Do you give nutrition advice to your clients?

a) Yes (b) No

7. If yes; on what aspect/diseases do you give nutrition advice?

.....

8. How long have you been providing nutrition advice?

a) Less than 2 years (b) 2 -5 years (c) 5-10 years (d) More than 10 years

9. Where do you source information about Nutrition issue?

.....

10. Have you ever used outside nutrition professionals to give nutrition advice to your clients?

(a) Yes (b) No

11. If "yes" from which institution?

.....

12. Have you ever had formal nutrition training?

(a) Yes (b) No

13. If yes who conducted the training?

.....

14. To the best of your knowledge what vitamin increase the amount of iron absorbed from food?

.....

15. The most important nutrient to replace after a one hour run with low intensity is

(a) Carbohydrate (b) protein (c) Fat (d) unsure

16. Which type of food contributes much to weight gain?

.....

.....

17. If a person wants to lose weight, which foods will you advice to eat?

.....

.....

18. Is there any drug- nutrient interaction you know?

(a)Yes (b) No

19. If yes specify

.....

20. Is there any nutrient –nutrient interaction you know?

(a)Yes (b) No

21. If yes specify

.....

22. What is the adequate amount of water should a health individual take per day?

.....

23. What is the correct time for eating fruits?

.....

24. Which type of media/communication are you using for your customers to know your service?

.....

.....

.....

.....

Part C: Interview schedule

(Nutrition and health problems/diseases)

25. What diet related diseases are you treating?

.....

.....

.....

26. What nutrition advice are you providing for your clients to manage their condition?

.....

.....

27. For the diseases you're treating (diet related), is there any relationship with lifestyle behavior/ eating

(a) Yes (b) No

28. If Yes Please explain

.....

.....

Part D: Recommendations

29. What is your recommendation in regard to food and nutrition information in Tanzania?

.....

.....

.....

30. What is the status of your organization in terms of registration?

.....

Thank you for your valuable and considerable time. It is very much appreciated.

Appendix 2: Questionnaire for clients of Complementary and Alternative Medicine

Nutrition survey

Below are questions of nutrition information and services offered at alternative health care, based on your perception please answer the question as best as you can. This is a survey, not a test. Your answers will help identify public perceptions regarding to alternative health care practices and your answers will remain anonymous and confidential. Please respond to the following questions.

Part A: Socio-demographic characteristics of the respondent

- 1 .District name
2. Sex of respondent
 - (a) Male (b) Female
3. Age of respondent (yrs.).....
4. What is the highest level of education you have completed?
 - (a) Primary school
 - (b) O levels
 - (c) A levels
 - (d) Technical or trade certificate
 - (e) Diploma
 - (f) Degree
 - (g) Post-graduate degree

Part B: Perception on nutrition information being provided

5. As client of alternative health care, have you ever head on healthy eating and life style advice provided to people by alternative health providers?

(a) Yes

(b) No

6. If yes, is the information provided satisfactory?

(a) Yes

(b) No

7. If "NO" Explain

.....

.....

.....

8. What is your perception in regard to nutrition information and or health eating provided?

.....

.....

.....

.....

Part C: Perception on general service being provided by alternative health care.

1: Strong Agree 2: Disagree 3: Neutral 4: Agree 5: Strong Agree

9-18: Listed below are a number of statements concerning your perception about Alternative medicine use? For each statement you should tick the number that corresponds most closely to your perception or belief. **Tick only one number. Please do not miss any statements.**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
Alternative health providers give good information on maintaining a healthy lifestyle					
There are less side effects when using natural remedies					
Alternative medicine involves natural plant formulas which are more healthy than taking drugs given by the medical doctor					
I would be more likely to use Alternative medicine if there were more clinics					
Alternative medicine Providers give decision about my health care treatments					
I believe in alternative medicine healing, and it has lower cost					
Information from parent(s) and friends can influence the use of alternative medicine					
Conventional medicines have higher side effect than alternative medicines					
Taking alternative medicine therapies is not harmful to my health.					
It is easier to get food advice from Alternative health care clinics					

Part D: Recommendations

19. What is your recommendation's regarding to food and nutrition information being provided and the general services?

.....

.....

.....

Thank you for your valuable and considerable time. It is very much appreciated