PHYSICAL ACTIVITY, NUTRITIONAL PATTERNS AND BODY WEIGHT STATUS OF MEMBERS OF THE 9TH PARLIAMENT OF UGANDA

BY

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DECLARATION

I, Patience Tayebwa, hereby declare that this thesis titled **Physical Activity, Nutritional Patterns and Body Weight Status of Members of the 9th Parliament of Uganda,** is my original work and has never been submitted to any institution for the award of a degree or any other academic or professional award.

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APPROVAL

This is to certify that the study by Patience Tayebwa titled **"Physical Activity, Nutritional Patterns and Body Weight Status of Members of the 9th Parliament of Uganda"** has been conducted under our supervision and this accruing dissertation is now ready for submission for the award of a Master of Science degree in Sports Science of Kyambogo University.

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DEDICATION

This work is dedicated to my Mother, Mrs Josephine Akwede, my Father Mr Leanard Bigirwa and my siblings Ayebazibwe Christine and Edgar Tukundane.

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I thank the Almighty God for the guidance, protection, knowledge and wisdom that He graciously rendered to me during the entire course.

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ABBREVIATIONS AND ACCRONYMS

BMI	Body Mass Index
CDC	Centre for Disease Control
EDFs	Energy Dense Foods
FFM	Fat Free Body mass
HHS	Health and Human Services
IPAQ	International Physical Activity Questionnaire
METs	Metabolic Equivalent of Task
MPs	Members of Parliament
MVA	Moderate Physical Activity
NCDs	Non Communicable Diseases
NP	Nutritional Patterns
OWO	Overweight and Obesity
PA	Physical Activity
SPSS	Statistical Package for Social Sciences
VPA	Vigorous Physical Activity
WHO	World Health Organization

ABSTRACT

Physical activity (PA) and nutritional patterns are major factors that determine body weight status which in turn affects one's health status. The purpose of the study was to assess the PA, nutritional patterns and body weight status of Members of the 9th Parliament of Uganda (MPs). A descriptive cross-sectional survey design was used to gather data on the MPs' PA, nutritional patterns and body weight status of the MPs. systematic random sampling technique was used to select respondents. Though the study sampled 245 MPs, only 150 (61%) MPs responded. The data was collected using descriptive survey questionnaires and statistical analysis was done using SPSS (version 22.0). The findings indicated that MPs spent an average mean of 2.2 days on Vigorous PA and in each of these days; they spent an average mean of 13.5 minutes on Vigorous PA.MPs also spent an average mean of 2.6 days on moderate PA and on each of these days, they spent an average mean of 23.0 minutes. MPs also spent an average mean of 2.9 hours sitting during weekends and an average mean of 3.4 hours sitting during weekdays. The findings further revealed that 76% MPs consumed processed foods and 67% MPs consumed fatty foods 3 times a day, 47% of MPs consumed 3 eggs per week and also 32% of the MPs consumed nut and seeds 3 days in a week. The food consumption score was at 30.95 and was classified as borderline. Their overall body weight status was summarized as follows; Underweight 10 (6.7%), Normal weight 48 (32%), Overweight 63 (42%), Obese class I 25 (16.7%), Obese class II 4 (2.6%). Most of the MPs both men and women were in overweight category. It was established that PA and nutritional patterns had a significant and positive relationship with the body weight status of the MPs. It is therefore recommended that the government of Uganda, through the Ministry of Health, strengthens sensitization of the population regarding proper nutrition and awareness on PA.

KEYWORDS: Physical Activity, Nutritional Patterns, Bodyweight Status, Members of the 9th Parliament of Uganda

CHAPTER ONE
INTRODUCTION

1.1 Background to the study

The incidence of non-communicable diseases (NCDs) has increased worldwide, affecting the health of many people in addition to other factors (WHO 2006). These diseases cause majority of premature deaths and contribute to the majority of disabilities (Dalal et al, 2011). According to the Health Communication Unit (2005), NCDs are often as a result of excessive weight, poor diet, tobacco use, alcohol misuse and exposure to ultraviolet radiation. A healthy body requires being physically active and following proper nutritional patterns where a balance between energy intake and energy output is ensured.

According to WHO (2006), there are many complex factors, such as biological, social and lifestyle that influence body weight. However, a balance between healthy food choices (energy input) and regular PA (energy output) would help to maintain a healthy body weight and prevent NCDs. Excessive consumption of energy carbonated drinks and fast foods, frequent snacking in addition to inadequate PA, are the major factors that contribute to overweight and obesity (Kuwait Ministry of Health, Administration of Food and Nutrition, 2010).

According to WHO (2011), 43 million children (with 35million in developing countries) were estimated to be OWO in 2010. Also, in 2010 the prevalence of OWO among adults worldwide was 6.7% and was expected to reach 9.1% in 2020 (WHO, 2011). In 2016, more than 1.9 billion adults 18years and above were found in overweight category and 39% of adults were in obese category worldwide. (WHO, 2017)

In Africa, estimated prevalence of childhood OWO in 2010 was 8.5% expected to reach 12.7% in 2020. This therefore called for a need for effective interventions as early as infancy to reverse anticipated trends and prevent the increase in OWO among adults (WHO, 2017). In Uganda, overall prevalence of obesity in 2010 was 2.3% and overweight was 10.4% with males having a higher percentage than females (Baalwa 2010). The prevalence of OWO is attributed to the changes in PA and nutritional patterns that are often as the result of environmental and societal

changes in addition to failure to implement supportive policies in sectors as health and education (WHO, 2017).

PA is the movement of the skeletal muscles that involves using more energy than that at rest (Bauman et al, 2005). An active individual who engages in moderate and vigorous physical activities (MVPA) benefits by keeping the lungs and heart healthy in addition to keeping the body in shape. Such activities include, among others, brisk walking, jogging, gardening, aerobics, cycling and climbing stairs (Healthy people, 2010). Increased energy expenditure through PA can promote weight loss (Stiegler & Cunliff, 2006) while, on the other hand, inactivity may lead to overweight and obesity, exposing the body to the risk of NCDs. Trembley, Despres, and Bouchard (2010) noted that physical inactivity is the fourth leading factor that has caused NCDs hence death of approximately 3.2 million people globally.

Unfortunately, modern environments may restrict PA. For instance, the nature of some people's work makes them spend more time sitting in offices or in cars while driving. This can potentially lead to suffering from NCDs (Bauman et al, 2002). In Uganda, PA has shown a steady decline evidenced by people sitting for long hours either in classes or offices and increased use of motorized transport, which has been linked to the increased prevalence of overweight (Nsibambi, Wamukoya, Wanderi, Onywera &Goon 2015). Furthermore, many contemporary leisure time activities of urban dwellers have been characterized by sedentary activities linked to technology such as watching television, board games, use of mobile phones and internet (Nsibambi et al, 2015).

Nutrition is another major factor affecting body weight that has undergone transition in many parts of the world (Khor, 2002). Nutritional patterns are defined as quantities, proportions and different combinations of food and beverage in diets considering the frequency, timing and location when they are consumed (Ahmed et al, 2009). Globally, there has been an increased intake of energy dense foods (EDFs) that are high in fats, salt and sugar, but low in vitamins, minerals and other micronutrients (WHO, 2011). Such poor nutritional patterns have led to disease, diminishing qualities of life which have a negative effect on body weight (Khattak, Khan, & Khattak, 2002). Balanced and adequate nutrition on the other hand has been

recommended in maintaining good health, wellbeing and quality of life (Memis & Sanlier, 2010; Teixeira, Patrick & Mata, 2011).

In Africa, there has been a transition from traditional dietary patterns to a 'western pattern' that is characterized by energy dense foods and beverages (Titan et al, 2011). In Sub-Saharan Africa, there is a decrease in consumption of staple foods that are rich in starch and dietary fiber and increased intake of high calorie foods (WHO, 2008). Also, increased consumption of foods rich in fat and saturated fatty acids and increased alcohol intake has been linked to the increased rates of overweight and obesity (Trembley et al, 2010).

In Uganda, there has been a transition from staple foods to consumption of micro nutrient rich foods and highly processed foods, a trend that is leading to malnutrition and NCDs (Schwartz,Guwatudde,Nugent & Kizza, 2014). This transition can be counteracted by setting proper policies to promote good health. Members of Parliament can legislate laws and policies that aim at improving citizens' welfare. Policies targeting controlling sedentary living, poor nutritional habits can be formulated to improve the populations' health (Schwartz,Guwatudde,Nugent & Kizza, 2014). In order for them to be able to design appropriate policies that promote good health, these legislators must be aware of the negative influence of unhealthy lifestyles.

Unfortunately, it is apparent that many MPs themselves engage in poor lifestyle behaviors and sit for long hours during plenary to discuss and formulate bills. This is linked to the increased NCDs like lung cancer, heart disease that have led to death of some of them (Walugembe, 2016). According to Atkins (2010), there is increased risk of chronic diseases such as stroke, heart failure and high blood pressure for people aged 45 to 65 years and who sit for long hours, especially for those with a low Body Mass Index (BMI).

This notwithstanding, there has been increased global and national awareness on the dangers of overweight and obesity amongst the Ugandan population (Uganda Health Demographic Survey, 2012). However, the populations, including MPs, might not have been sensitized and educated about the causes of chronic diseases and this has impacted on the lives of many Ugandans. The

Uganda Parliamentary Forum on NCDs (2011) confirmed that there is a remarkable increase in OWO that is one of the factors leading to NCDs which is a major public health threat.

Fortunately, MPs have the power to help in the implementation of such policies to enhance health and welfare of the people (De-Graft, 2010). Although the MPs are legislators and have the ability to influence the involvement in PA and intake of proper nutritional patterns, there is hardly any information on the studies done to establish their PA, nutritional patterns and body weight status. It is therefore important to establish their PA and nutritional patterns which may be linked to their body weight status that has been unknown.

1.2 Statement of the Problem

In spite of the increased global awareness about the dangers of NCDs, it is evident that there is an increasing number of cases of NCDs in many countries including Uganda. For instance, 74,354 NCD cases were reported at several health facilities across Uganda in 2009-10 compared to 58,523 in 2005, showing an increase of 27% (Health Management Information System, 2010). Kyomya (2016) and Nsibambi et al (2015) further indicate that many officers and students in Kampala are exposed to the risk of NCDs related to nutritional patterns and inadequate engagement in PA. In 2015, three MP's died due to NCDs (www.parliament.go.ug 2015). With the increased exposure, the Global Health Statistics Report (2014) on NCDs calls on policy makers to develop and implement policies that aim at achieving the Sustainable Development Goals (SDG`s) that include, among others, combating NCDs (CEHURD, 2014). Therefore, this study aimed at establishing PA and Nutritional patterns in relation to the body weight status of MPs in order to have a basis of suggesting possible recommendations that can help in improving the health of the population.

1. 3 General objective

The general objective of the study was to establish the lifestyle of MPs in relation to their PA and Nutritional patterns that can largely affect their body weight status.

1.4. Specific Objectives

This research was guided by the following objectives;

- To establish the PA patterns of the members of the 9th Parliament of Uganda.
- To identify the nutritional patterns of the members of the 9th Parliament of Uganda.
- To determine the body weight status of the members of the 9th Parliament of Uganda.

1.5 Research Questions

This study aimed to answer the following questions

- What are the physical activity patterns of the members of the 9th Parliament of Uganda?
- What are the nutritional patterns of the members of the 9th Parliament of Uganda?
- What is the body weight status of the members of the 9th Parliament of Uganda?

1.6 Research Hypothesis

The study tested the following hypothesis;

$H0_1$ There would be no significant relationship between PA patterns and body weight status of the members of the 9th Parliament of Uganda.

$H0_2$ There would be no significant relationship between nutritional patterns and body weight status of the members of the 9th Parliament of Uganda.

1.7 Scope of the Study

The study considered the members of the 9th Parliament of Uganda. These are legislators who attend plenary at the Parliament of Uganda which is located on the Parliamentary Avenue in Kampala the capital city of Uganda. Uganda is one of the countries in the East African Community. In terms of content, the study was in the area of health and was delimited to the MPs' nutritional and PA patterns as well as their body weight status.

1.8 Assumptions of the Study

The assumption of the study was that PA and nutritional patterns were related to the MP's body weight status. It was also assumed that all respondents would respond honestly and provide reliable data.

1.9 Conceptual Framework

This study was based on the dependant variable (body weight status), independent variables (physical activity and nutritional patterns) and their relationships as shown in the conceptual framework

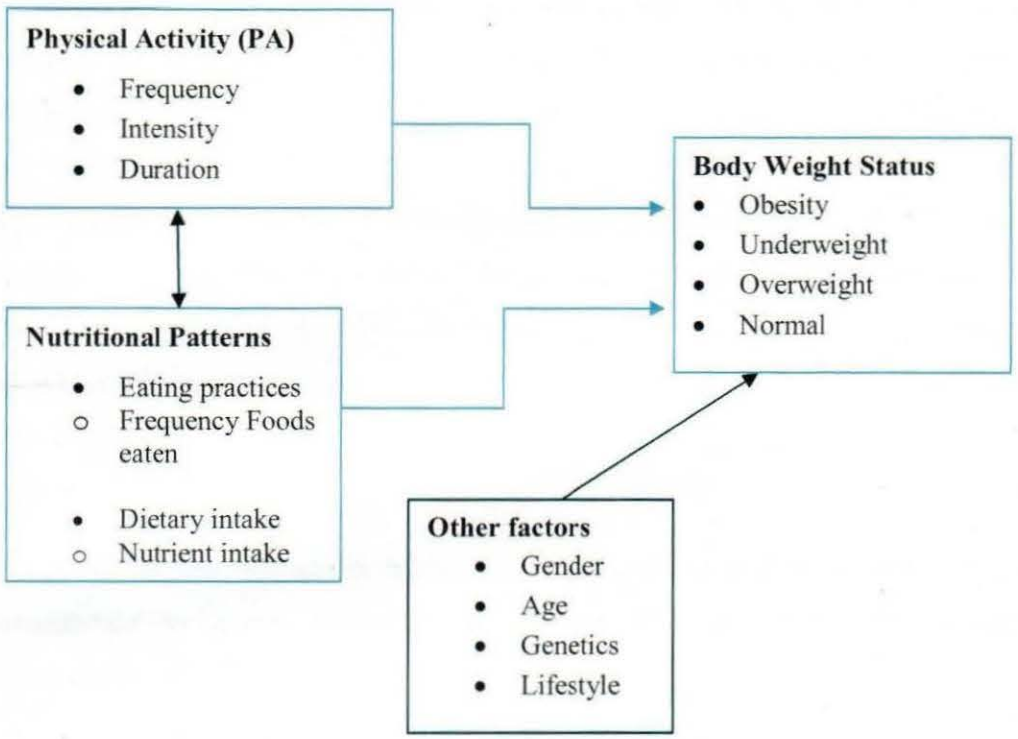

Figure. 1.1 Schematic overview of the conceptual framework of this study (*Adopted from Bellisle, 2004; Gebel, 2005; FAO, 2006; Allafi et al., 2013; and modified by the researcher).*

Figure 1.1 shows that based on PA as a fundamental factor in determining body weight status (Bellisle, 2004; Gebel, 2005). Physical activity (PA) is any body movement produced by skeletal muscles and results into energy expenditure (Centre for Disease Control and Prevention, 2002). Adequate PA considering the number of days (frequency), time (duration) and intensity of activity one engages in (Grubbs, 2002). Also, involvement in PA helps to increase the bone density, improves body image and mood, which develops physical fitness and promotes weight control through calorie expenditure (WHO, 2004).

In addition, the study was based on the concept that nutritional patterns in addition to other factors are vital to the body weight status (FAO, 2006; Allafi et al., 2013). Therefore, MPs need to have appropriate eating habits like eating all meals on time and using the recommended oils and appropriate dietary intake like eating foods with less cholesterol (Allafi et al., 2013). Being physically inactive with poor nutritional patterns that involve having a large consumption of processed foods, increased intake of alcohol and sugary drinks may lead to more calories being stored in the body as fat, ultimately increasing the body weight (Song et al 2005).

Body weight is conceptualized from the fact that it is majorly controlled by PA and nutritional patterns. Living a physically inactive lifestyle coupled with poor nutrition can cause overweight and obesity (Allafi et al., 2013). The risk factors associated with overweight and/or obesity include; cardiovascular diseases, hypertension, musculoskeletal disorders, cancer, disability and premature death (Grubbs, 2002).

1.10 Significance of the Study

The study findings will add to existing literature on Physical Activity, nutrition and body weight management. In Uganda, literature on these subjects has been scanty yet it is crucial for the well living and health of the population.

The findings from this study will help to raise awareness among the staff and members of Parliament, the Ministry of Health, as well as Ministry of Education and Sports officials regarding implementation of PA and Nutrition policies.

Information in this research may help legislators to set strategies that can be used to control physical inactivity and poor nutritional patterns in the country.

The Ministry of Health might use the results on nutritional patterns to control the amount of unhealthy foods on the market and this could help to limit the increase in NCDs.

The study will also provide information of the bodyweight status that might encourage the Ministry of Education and Sports to design and implement PA programmes in schools to help reduce physical inactivity and overweight and obesity rates.

The research findings will also provide information on bodyweight status which is useful to the Ministry of Health to know the status of legislators and devise means of preventing and managing chronic diseases like heart disease, diabetes, hypertension and respiratory disorders that might be caused by overweight and obesity.

The study might help families to encourage appropriate PA and nutritional patterns from childhood to adulthood since obesity can be controlled at a young age.

1.11 Operational Definition of Terms

Body Weight: The portion or quantity that a person weighs considering the height and weight. Body weight can be categorized as underweight, normal weight, overweight and obese (Region of Peel public health report, 2008)

Physical Activity: Any body movement that leads to energy expenditure above the resting energy (National Institute of Health, 2010)

Nutritional Patterns: Quantities and or proportions and combinations of different foods considering the frequency they are consumed (Khattak, Khan & Khattak, 2002)

Poor Nutritional Patterns: Frequent intake of high processed foods, fatty foods and intake of sugar sweetened foods. (Khattak, Khan & Khattak, 2002)

Member of Parliament: A person elected by Ugandans to represent an electorate/constituency in the 9th Parliament (Parliamentary directorate, 2010)

1.12 Limitations of the Study

This study had the following limitations:

The researcher had targeted 245 MPs out of 386 MPs who formed the 9th Parliament. However, it was difficult to access all of them to distribute the questionnaires and taking the measurements. Some participants were reluctant to provide information and due to their busy schedule, many opted not to participate. The researcher, however, sampled 245 MPs. Out of these, 150 returned the questionnaires. This was a 61% return rate which was lower than 80% that the researcher originally expected. However, for the participants who responded positively, sensitization was given to them about the significance of the findings of this study and adequate time was given them to fill the questionnaires with genuine and hopefully accurate responses.

The researcher used a single research methodological approach of data collection (structured questionnaire). This was found to limit the respondents' scope of answering since their views were predetermined. The researcher encouraged the respondents to give the right responses and write any aspect that could not be predetermined.

The researcher used a descriptive cross-sectional survey design to collect information whose accuracy is dependent on the respondents' level of honesty and ability to recall the appropriate information. Hence, there was a worry that in cases where participants may not have accurately recalled information or deliberately chosen to conceal the truth about their nutritional patterns, it could compromise the reliability of the findings. However, with the validity and reliability of the research instruments, the researcher was confident that the findings were reliable.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

This chapter presents the reviewed literature based on the following subtopics: concept of physical activity and its benefits, nutritional patterns, body weight status, related studies and summary.

2.1 Concept of Physical Activity and its benefits

Good health can be achieved with an increase in the amount of PA considering duration, frequency and intensity in moderate and vigorous PA (Bauman, 2002). According to Jakicic, Marcus, Gallagher, Napolitano, Lang (2003), the energy expended in PA is an important component in controlling body weight. Thus, PA is one of the recommended ways to keep the body healthy. Even modest amounts of PA are good for an individual's health (Cook et al, 2005). Children and the youth are expected to engage in moderate PA for at least 60 minutes a day and adults are advised to be active for at least 30 minutes a day to get more health benefits (Healthy people, 2012).

Physical Activity (PA) helps to maintain a healthy weight and enables one to perform daily tasks such as house hold chores and gardening. It also has various psychological and mental benefits like mood elevation, boosting of self esteem, and self efficacy and can play a big role on people with a wide range of mental health problems (Jones, martin, O'Beney & Caro, 2004). Physical Activity (PA) helps to reduce the risk of depression and improves cognitive functioning like thinking, learning and judgment skills (Bauman et al, 2005).

In addition, PA also has muscular skeletal benefits like maintaining muscle strength, joint structures, functioning of joints, and is also important in development of bones during childhood (Abdhalal, 2009). It also helps to prevent and manage bone diseases like osteoporosis a disease that makes bones fragile to break especially among women. (WHO, 2005) Also, PA prevents the risk of bone swelling and joint pains among people affected with arthritis and also lower the risk of other different NCDs like heart disease, cancer, type II diabetes, heart attack, hypertension, obesity, and blood clot (Perkins & Craig, 2003).

Physical Activity (PA) has cardio and respiratory benefits. A study on PA and body weight in rural and urban dwellers in Cameroon found high rates of cardio and respiratory diseases among the urban dwellers and this was associated with low levels of PA (Trembley, 2010). Inactive people may not experience the various benefits of PA and are more likely to be affected by Overweight and Obesity (OWO) that may lead to NCDs (Health and Human Services, 2008). More so, insufficient PA has been identified as one of the leading factors of mortality. Inactive people have 20% - 30% increased risk of all NCDs than those who engage in PA daily for at least 30 minutes (Kavishe & Samuel, 2015).

2.1.1 Methods of Determining Physical Activity

In order to determine the physical activeness of a person, researchers have developed several approaches such as direct observation and questionnaires which include a check list of frequency, intensity, and duration of specific PA (Kavishe &Samuel 2015; Humphrey 2006). According to Humphrey (2006), energy expenditure can be calculated using an individual's body weight and a table of standard metabolic equivalent of task (METS). This was developed in 1990 by the American Heart Association. It includes values for various physical activities and exercises that relate with oxygen consumption. The formula for calculation was developed as weight (kg) × METs. However, the results obtained can vary among individuals due to age, gender, body composition, and rate of metabolism.

Direct observation can also be used to determine PA. This method requires an observer to monitor and record PA patterns of the identified group during activity in a defined place like a specific training area. This method is mostly used among children and the elderly since they have difficult in recalling their PA (Macfarlane et al, 2006). The advantage of this method is that it helps to gather high quality data and there is ability to record various dimensions of PA. Although this method may be flexible, it is difficult to obtain ethical approval and there is no measure for energy expended. The other disadvantage is that it is costly since it requires training for the research assistants, it requires a lot of time and may be difficult to manage and score the data collected (Craig et al, 2003).

Heart rate monitors are also used to measure PA. These are physiological indicators of PA and energy expenditure. They provide time frequency, duration and intensity of PA. They can be worn as watches, chest belts to capture information during PA (Loprinzi et al, 2012). The advantage of this method is that it gives defined data on what effort level it takes a person to complete a given activity under any available circumstances like fatigue. However the disadvantage is that it may not be easy to determine the low score whether the person was not active or the device was removed (Craig et al, 2003).

Physical Activity (PA) can also be determined using International Physical Activity Questionnaire (IPAQ). The cut off points are based on PA and daily activities performed like walking.10,000 steps are recommended daily and if 12,500 steps are taken per day, an individual is considered to be highly active (De-graft et al, 2010). The IPAQ proposed cut off points for expressing PA levels in populations can be determined using categorical score and continuous indicators of PA. In the categorical score, time (minutes) and days spent on PA are used to determine whether one is active, minimally active or highly active. Where one PA is below the minimum required cut off, then the chances of being overweight or obese are high (Lee, Ewing & Sesso, 2009).

The advantage of using the IPAQ is that there is a possibility of including household and work related physical activities that MPs may engage in, the leisure time activities are already defined and identified and the examples given for moderate and vigorous PA are important to keep the body active. However, it requires a lot of calculation during analysis and it is also hard for respondents to provide minutes for sitting or walking (De-graft et al, 2010).

2.1.2 Prevalence and Effects of Physical Inactivity

On the global scale, the Health Statistics Report (2008) on NCDs indicated that 5.3 million people worldwide died in 2008 due to low PA levels and sedentary lifestyle. Physical inactivity is responsible for the death of one out of ten people per year in both developed and developing countries especially among sedentary people (Life Span, 2013). Worldwide, 5.3million deaths have been evidenced per year especially in the higher income countries that are least active. This

is due to modernization characterized by motorized transport, consumption of fast foods and use of various household gadgets (Cook et al, 2008).

According to WHO (2008), approximately 3.2 million deaths worldwide each year are due to insufficient PA among men and women. 31% of adults 15 years and above were insufficiently active and women had a higher percentage than men. In Sub-Sahara Africa, there is an increase in NCDs due to insufficient PA that is assumed to be as a result of increasing urbanization, adoption of western lifestyle behaviors and increasing sedentary lifestyle (Mirnalini, 2008).

Most people spend more than 80% of their time in sedentary activities with very little effort yet involvement in more PA may lead to considerable health benefits (Kruger et al., 2005). In Uganda, physical inactivity, tobacco use and poor diet are increasing rapidly in the lifestyle of various people. Research carried out among 400 students in paramedical institutions in Uganda shows that 41% of the students were inactive and prone to NCDs (Song et al, 2005).

According to WHO (2012), about 2 million people die every year due to conditions related to physical inactivity and these affect all stages from children to the elderly. Some of the medical conditions are; increased chance of developing hypertension which develops when a weak heart fails to work hard which creates less force put on the arteries hence low blood pressure. Heart disease can also be caused by physical inactivity that may lead to increased cholesterol levels. In addition, osteoporosis can also develop especially among adults. This condition makes the bones become weak and can fracture easily incase of injuries (Mikaela, 2012). Other conditions like arthritis, type II diabetes, gall stone formation, depression and anxiety may result due to physical inactivity (Shiroma et al, 2012).

Furthermore, People who are less active have twice the risk of developing OWO in both children and adults.OWO is thought to be responsible for the rise in NCDs and the increased mortality rates. On the other hand, involvement in PA lowers risks of these conditions (Bray, 2013). Thus, PA needs to be made a global public health priority with the aim of improving health, increasing life expectancy and reducing the burden of various medical conditions (Mirnalini, 2008)

2.2. The Concept of Nutritional patterns

Nutrition is the science of food and the components of food that a living organism requires to maintain the processes of life (Institute of Naval Medicine (INM), 2014). Nutritional patterns are also defined as the quantities, proportions, variety or combinations of different foods, and the frequency with which they are habitually consumed (Bull et al, 2005).

INM (2014) further indicates that an ideal nutritional pattern should follow a proper dietary eating behavior if one is to maintain a healthy body. Essential nutrients are nutrients that the body cannot synthesize on its own or not to an adequate amount and must be provided by the diet. These are necessary for the body to function properly and they include; Carbohydrates, protein, fat, vitamins, minerals and water.

Carbohydrates are the main source of energy for the brain. Without carbohydrates, the body may not function properly. Sources include fruits, breads and grains, starchy vegetables, sugars. Whole grains and fruits (South Africa food and Nutrition Guidelines, 2014). Protein is the major structural component of cells and is responsible for the building and repair of body tissues. Proteins have essential amino acids that must be provided in the diet since they cannot be synthesized (Deffey et al, 2012).

Another nutrient is fat that when consumed, it increases the absorption of fat soluble vitamins including vitamins A, D, E and K. healthy fat can be got from omega 3 rich foods like fish, and vegetable based oils (Sjostrom, 2002). A person should also limit the intake of saturated fats like high fat meats and full fat diary to limit chances of overweight and obesity. Vitamins also help synthesis of collagen which provides structure to blood vessels, bone and ligaments (DGA, 2015). These can be got from citrus fruits, strawberries. Vitamin D also helps to maintain calcium homeostasis. Minerals like, potassium maintains fluid volume and prevents the excess rise of blood pressure. Calcium helps to maintain and build strong bones and teeth. Water helps to transport nutrients in the body and also assists in removing waste products from the body (Rodriguez, 2009). Such nutrients when consumed in proper proportions help the body to keep healthy and maintain a healthy body weight (Tabu, 2013).

A healthy diet, as defined by the US Dietary Guidelines for Americans (DGA, 2015), has been associated with lower morbidity and mortality caused by major NCDs. Adherence to the DGA is associated with lower levels of obesity, as well as lower risks of type II diabetes, cardiovascular disease (such as heart attacks and strokes), and certain cancers (Tabu, 2013).

In Africa, traditional foods are one of the factors associated with preventing weight gain although diverse traditional foods have been replaced by industrialized convenience foods (Binghamet al, 2001).Traditional foods are thought to support normal growth, maintain a healthy body weight, reduce NCDs, and promotes overall health and well-being (Charlotte, Hilton& Andersen, 2015).

Conversely, poor nutrition can lead to impairment in basic functions of the body such as breathing, heart activity, temperature regulation, reduced cognitive skills, a predisposition to injury, ill-health and slower recovery from the impact of exercise, injury or illness. In Kenya a study carried out among Kenya integrated households carried out in 2005-2006 found out that cereals were the most consumed foods. Fruits, vegetables, milk, eggs, meat and sugars also among the most liked (Leitz, 2002).

In 2008, a food consumption survey carried out in one urban and two rural areas of Uganda among children and women on reproductive age using a 24hr recall method. The findings revealed that inadequate intake of vitamins and minerals are crucial to good health. And the deficiencies in the dietary patterns would have adverse consequences for Uganda. The limited access to natural sources of micro nutrients has led to continuous feeding on products with low micro nutrient density such as refined flours, sugar and oils (Alaska et al, 2011).

2.2.1 Methods of Determining Nutritional Patterns

Nutritional patterns can be determined using different methods. Assessment of nutritional patterns helps in determining the prevalence of nutritional disorders, planning corrective measures and ensuring appropriate nutritional habits. This in turn that can help to reduce on the prevalence of overweight, obesity and NCDs (USDA, 2010). Some of the methods used to determine nutritional patterns include; 24 hour recall, food frequency questionnaire (FFQ).

The 24 Hour Recall requires the respondent to remember in detail all the foods and drinks they consumed in the recent past especially 24hours (Dietary guidelines advisory committee, 2015). It requires one to have a very accurate memory to have the correct information on the intake of foods and beverages including the time they take the foods (Leitz (2002); Wendy, Heather, Julie &Karen (2003). It also requires a researcher to record the nutrition information which is checked later for errors and then coded for analysis.

One of the advantages is that it is suitable for large scale survey; and it also relies less on the long term memory. This method also has limitations since a record for a single day may not be representative of a person's intake day to day. There may also be biased on recording the bad and the good foods (Wriden, Connaghan, Morrison & Pedeo, 2003).

As already noted, another method of determining the nutritional patterns is food frequency questionnaire (FFQ). This is a limited checklist of foods and beverages with a frequency response section for the respondents to indicate the frequency of consumption of each food listed regarding times per day or weekly (Leitz ,Barton ,Longbottom, Anderson, 2002).

Food frequency questionnaire (FFQ) seeks information about the intake within a specified period thus capture habitual intake. The advantage with the FFQ is that it collects dietary information from large numbers and requires minimal training to be administered. Also, the questionnaires are pre-coded therefore there is no need for nutritional expertise which makes it cheaper to use (Leitz et al, 2002). Although the FFQ is efficient, it has disadvantages that include; involving standard responses which can make respondents bored, and requiring information that should be memorized like food consumed in seven days which may not be convenient for older adults (Ministry of health; Administration of food and nutrition, 2010).This study used the FFQ to collect data on nutritional patterns of MPs.

2.2.2 Influence of Nutritional patterns on body weight status

Urban and traditional nutritional patterns are associated with body weight. The urban patterns exhibit a higher intake of fat and sugar and are more closely associated with overweight and obesity (Augustine, Helene and Genevieve, 2012). Whereas the traditional pattern exhibit a higher intake of plant protein, complex carbohydrate and fiber and are more closely associated with normal weight and underweight. The traditional patterns are also associated with female sex, low income and lack of education (Centre for Nutritional Policy and Promotion, 2012).

The transition in nutritional patterns all over the world has been due to various factors like globalization that has led to various changes in lifestyle and food production. Other factors such as urbanization, cultural changes, economic status, and industrialization have also led to predictable shifts in diet and lifestyle (Dietary Guidelines Advisory Committee, 2015). In Uganda, there has been a transition from the traditionally grown foods to the westernized patterns that may be highly processed, contain a lot sugars and also have oils with high cholesterol (Stubbs &Lee, 2004).

The shift in nutritional patterns and the development of nutrition transitions characterized by changes in food supply and intake has been one of the major factors in the high prevalence of cardiovascular diseases (CVDs) that have led to death and disability worldwide (WHO 2011). In 2005, 17.5 million people died worldwide due to CVD especially coronary heart disease and strokes (WHO, 2006). The International Diabetes Foundation (IDF) showed that in 2011 the Middle East and North Africa region had the highest prevalence of diabetes (12.5%) compared to other regions worldwide. This was thought to be caused by consumption of junk foods, high sugar foods and intake of foods with high cholesterol. Also, WHO (2011) revealed a significant increase in the prevalence of CVD risk factors within African countries of which Uganda is inclusive, especially among the obese people which is responsible for almost 30–40% of CVDs.

Various studies have supported the fact that the traditional Mediterranean diet is associated with a reduction in overweight and obesity. For example, a cross-sectional survey in Lebanon showed that the traditional Lebanese dietary pattern (rich in olives oil, fruits and vegetables, whole wheat bread) is negatively associated with elevated body mass index and waist circumference among

type 2 diabetes patients and more associated with normal weight (Naja, 2013;Najlaa & Faruk, 2015). On the other hand, the refined grains and desserts dietary pattern, the fast-food dietary pattern, and the meat and alcohol dietary pattern were positively associated with high body mass index and waist circumference among type 2 diabetes patients (Naja, 2013).

2.3 The Concept of Body Weight Status and its measures

According to Kuczmarski and Flegal (2012), body weight and height are used in combination as simple and reliable measurements for evaluating nutritional, overall body status and screening for overweight. They state that the body weight can be screened to fall under four categories as; Overweight, Underweight, Normal and Obese. BMI can be used to assess body weight status which is calculated directly as weight (kg)/height(meters)or determined using published tables and calculator programs online (Prentice, 2011). There are cutoffs considered when using BMI namely, 18.5kg/m and below is considered underweight; 18.5-24.9 kg/m is normal weight or healthy weight; 25-29kg/m is overweight, above 30kg/m is obese with class I ranging from 30.0-34.9kg/m; class II ranges from 35.0-39.9 kg/m and class III ranges from 40kg/m and above (WHO, 2010).

Underweight is a term describing a person whose body weight is considered too low to be healthy. The definition usually refers to people with a body mass index (BMI) of under 18.5 or a weight 15% to 20% below that normal for their age and height group A person may be underweight due to genetics, metabolism, lack of food (frequently due to poverty), or illness (Al-haifi et al, 2013). Being underweight is associated with certain medical conditions, including hyperthyroidism, cancer, or tuberculosis, People with gastrointestinal or liver problems may be unable to absorb nutrients adequately (WHO, 2013) People with certain eating disorders can also be underweight due to lack of nutrients and or over exercising (Mayo clinic, 2014).

Overweight is a condition of weighing in excess of the normal for one's age and height. An adult with BMI between 25 - 29.9kg/m is considered to be overweight (Mayo, 2014). Overweight is generally defined as weight that exceeds the threshold of a criterion standard or reference value. Overweight has a larger number of people globally and its health implications can lead to death

by reducing an individual's life expectancy in addition to being the leading cause of chronic diseases especially type 2 diabetes, cancer, heart disease (WHO, 2004).

Obesity is a complex health disorder that involves excessive amount of body fat that increases the risk of diseases and health problems related to body weight. An individual is considered to be obese when the BMI is 30kg/m and above (Mayo, 2014). Mayo adds that even the modest weight loss can improve or prevent the health problems associated with overweight and obesity with increased PA and behavior changes.

According to WHO (2010), 64% of the United States adult population is considered either overweight or obese, and this percentage has continued to increase. Overweight and obesity are largely preventable by individuals through making healthier lifestyle choices and regular PA at least 60 minutes a day for children and 150 minutes per week for adults (WHO, 2014). Hormonal influences on body weight occur when an individual takes in more calories than what is expended and when the calories are not eliminated from the body, they are stored by the body as fat and this is due to inactivity and sedentary lifestyle which have been identified as some of the causes of overweight and obesity (Bray, 2013).

In addition, genetics also determines body weight status especially in developing countries where approximately 25% of the variation in body weight status is determined by genetic factors due to interaction of multiple genes and 75% is as a result of culture and lifestyle factors (Silventoinen et al, 2010).

2.3.1 Prevalence and Effects of overweight and obesity

Nearly 30% of the world's population is either overweight or obese (WHO, 2015). In developing countries, women have a higher rate of overweight and obesity and this is expected to continue increasing due to the low involvement in PA (Tremblay et al, 2010; Bakeri et al, 2007). In 2013, 42 million children worldwide under the age of 5 years were overweight and obese (WHO, 2015). According to Baalwa (2010), overweight and obesity in young adults and children continues to predict the risk of obesity at an adulthood age. This is attributed to sedentary lifestyle and continuous use of more processed foods mostly among the middle and high class

people in Uganda in addition to people citing work schedules as a limitation to engage in various physical exercises (Baalwa, 2010)

Overweight and obesity have affected different countries and regions including the sub-Sahara Africa which is not immune to the risk especially among women in urban populations (Amstrong &welson, 2006). In most African countries, 27% of adults aged 20 years and above are overweight and 8% are obese (Nelia, Zandile and Mchiza, 2014). This is assumed to be caused by unhealthy lifestyle that includes poor diet and physical inactivity. Countries like Burundi, Madagascar have 40% of the population in the OWO category with a less percentage in the normal weight category (Nelia, Zandile and Mchiza, 2014). South Africa has the highest rate of OWO in the sub-Saharan Africa (Mia, 2014). This makes it the third nation with the highest percentage (61%) of OWO worldwide. This is due to increased westernization and urbanization that involves less active lifestyle and consumption of fast foods with high salt, sugar and fat content (Mia, 2014).

In Uganda, 10.4% and 3.2% of adolescent girls and boys are in the overweight and obese category respectively (UDHS, 2011). A study conducted among pupils aged 6 to 9 years in central Uganda found out that 2% of the boys were overweight and 11.6% of the girls were overweight (Nsibambi, 2013). This indicated that overweight and obesity were prevalent among Ugandan children (Nsibambi, 2013). With the increasing percentages of overweight on the African continent which is highly attributed to physical inactivity and poor nutritional Patterns (WHO, 2011), it is important to establish these patterns in order to reduce on the prevalence of NCDs.

Increased income and urbanization have increased consumption of diets high in complex carbohydrates and fats (Fontainne et al, 2003). This has created a large shift towards less physically demanding work observed worldwide like increased use of automated transport and use of household gadgets in homes that has led to physical inactivity and hence OWO (Fontainne et al, 2003). The increase in OWO has led to NCDs that affect children and adults; approximately 85% of people worldwide in developing countries have type 2 diabetes, and of these, 90% are either obese or overweight (Al-Hazza et al, 2011).

Obesity starts when an individual is slightly overweight and keeps on increasing as the weight increases due to accumulated fat in the body (CDC, 2010). Extra fat in the body leads to various health consequences such as cardiovascular diseases that include heart disease, stroke, type 2 diabetes, musculoskeletal disorders that include osteoarthritis, abnormal blood fats, cancers especially postmenopausal breast cancer and these cause premature deaths and disability. Obese women are more prone to diabetes which increases the risk of cardiovascular diseases (National Institute of health, Uganda, 2012).

Overweight and Obesity cause economic and social consequences such as direct costs that include diagnosis and treatment of the different chronic diseases. This leads to continuous increase in health care costs and long term suffering of individuals and families. The costs contribute to low productivity due to absenteeism of people from work. (CDC,2015). More so, physiological effects are evidenced where overweight and obese people can be blamed for their condition and may be considered lazy or weak-willed. They also face bias and discrimination from colleagues, workmates which may lead to depression and sleeping disorders (Swinburn, Jolly & Kremer, 2006).

2.4 Related Studies

Sharma, Cao, Harris, Hennis, Leske (2009) conducted a research assessing dietary patterns in Barbados highlighting the need for nutritional intervention to reduce on the risk of chronic diseases. The research used Simple random sampling to collect data from 54 participants and a four day food diaries and a food frequency questionnaire was used to collect data from the selected participants.

In the research carried out by Sharma et al (2009) on dietary patteerns, it was found out that the fat intake had increased from 2.1% to 5.2% higher, sweetened drinks and juices provided over 40% of the total energy intake. The percentage of fat intake daily was higher than the recommended; for men, it was 26% and women it was 28% compared to the given rage of 15-20%. The sugar intake was also higher among women than men. The study recommended a nutritional intervention program to reduce on the dietary risk for chronic diseases with a transition in diet. They further recommend that research done considering frequency of

consumption and amount consumed could help to determine the nutritional patterns. Following this recommendation, this research used frequency of food intake to determine nutritional patterns of MPs.

Research by Al-Haifi, AL-Fayez, AL-Athari BI,Al-Ajmi, Allafi AR, AL-Hazzaa ,Musaiger (2013), Aimed at updating data on the prevalence of overweight and obesity among Kuwait adolescents about the relative contribution of selected lifestyle factors to overweight and obesity . Using a total of 909 adolescents (463 boys and 443 girls) from Kuwait schools, stratified random sampling and a validated questionnaire to collect data on PA was used. Total energy expenditure was calculated using metabolic equivalent energy expenditure per week and BMI calculated to determine the weight status.

The research found out that the prevalence of overweight and obesity was 50.5% in boys and 46.5% in girls. The boys were more involved in vigorous activities which were not associated with their being overweight and obese ($P<0.05$). Thus other factors would be responsible. Consumption of fast foods, sugary products was significantly associated with overweight and obesity. The research concluded that PA had a great impact on variation in BMI than the eating habits of the respondents especially in boys than in girls. The research therefore recommended that prospective studies be done to clarify the relative effects of sedentary behaviors on overweight and obesity. This relates to the PA patterns studied in this research in relation to body weight status.

Larsson, Karlsson and Sullivan (2002) carried out a research with an objective of investigating the impact of overweight and obesity on health related quality of life in the general population in Sweden. A cross -sectional survey was used with a total of 5633 respondents including men and women born in Sweden. A questionnaire was emailed to participants using simple random sampling, the research showed that the BMI was slightly less in the younger age group than in the older and differs between men and women. The research recommends that studies on the effect of overweight and obesity on health be done. Therefore this research follows this recommendation involving the correlation between PA and nutritional patterns with body weight status.

In a study carried out on the perceived constraints to PA among students in paramedical institutions in Uganda, a cross sectional survey was used to collect data among 400 students. Stratified random sampling was used to select students and a self administered questionnaire was used to collect data. It was found out that 59% of the students were physically fit and participated in different PA and 41% of the students were classified as inactive. The dominant limit to PA among male was lack of the right equipment and among women was lack of motivation and tiredness. This indicates the need for health promotion in Uganda (Nizeyimana, 2005).

Taru et al (2014) carried out a research on the prevalence of underweight, overweight, obesity and associated risk factors among school going adolescents in seven African countries. The study showed that, obesity and underweight coexist in middle income countries. A cross sectional survey was used to collect data, a clustered design was used to obtain data from 25815 students in randomly selected schools. The BMI of participants was calculated using height and weight of respondents and weight status classification was done using the 2007 WHO growth charts. The prevalence of overweight was recorded among women for every age group in 5 countries. And being overweight was more prevalent among young adults and decreased with age. Males were more prevalent to underweight than women.

Taru and colleagues (2014) concluded that the prevalence of overweight and underweight was high which indicated the existence of malnutrition in developing countries and therefore recommends that there is a need to explore potential risk factors for overweight and underweight. In relation to the research done by Taru et al (2014), this research used a cross sectional survey to determine nutritional patterns and PA patterns to relate them to the existing overweight and underweight numbers.

2.5 Summary and Conclusions

In summary, owing to influences such as increased office demand which necessitates officers to sit for long hours and urbanization that has led to inactivity the level physical activity has reduced (WHO, 2004). The food environment in urban Uganda has changed and has rendered many to consume more energy dense dietary items such as fast foods and sugar sweetened beverages (Dixon et al., 2007), (Adeboye et al, 2012). Dietary guidelines by WHO recommend

limited consumption of energy dense dietary foods which tend to be high in fat, salt and sugar (WHO, 2004).

The ANGELO framework developed by Swinburn et al. (1999) recognizes the role of environmental influences in the development of overweight and obesity. The excessive accumulation of body fat is one of the risk factors of NCDs (WHO, 2013). NCDs such as cardiovascular diseases are a growing health problem worldwide (Murray et al., 2012), including in sub-Saharan Africa (Dalal et al., 2011; Atkins et al., 2010). The life course approach has been used to understand the development of NCDs (Kuh et al., 2004). According to the life course perspective, NCD risk factors such as physical inactivity and unhealthy eating practices can persist from early developmental stages of life to adulthood (Kuh et al., 2004). Based on the life course perspective, globally, teenagers are viewed as a population group at risk of NCDs due to their unhealthy dietary behavior coupled with physical inactivity (Murray et al, 2012).

Currently, apart from the fact that NCDs are on the rise, little is known about the risk profile of NCDs among the people of Uganda. As noted in this literature review, there are some insights on the nutritional pattern and PA based on research from other countries. The available research suggests nutrition transition across gender. This dissertation aimed at identifying selected nutritional patterns and PA of MPs of the 9th Parliament in Uganda. MPs are exposed to the risk of adopting poor nutritional and PA patterns as a result of long hours of sitting in plenary and committee meetings. MPs are legislators and thus may influence appropriate PA and nutritional patterns among Ugandans.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the research design, location of the study, target population, sampling technique and sample size, research instrument, validity and reliability of instruments, data collection procedure, data processing, analysis and presentation.

3.1 Research Design

A descriptive cross sectional survey design was used to gather data on PA, nutritional patterns and body weight status of MPs in the ninth Parliament. This research design was helpful in collecting data on the respondents as it was at the time of data collection. It also helped to provide data without manipulation on a large population (Mugenda & Mugenda, 1999). Measurements of height and weight of the MPs were done to provide data on weight status. This research design was found to be most effective because the respondents were always busy and the process of assembling them more than once would have been challenging given the nature of their work.

3.2 Location of the study

The study was conducted on the members of the 9th Parliament of Uganda, East Africa.

3.3 Study variables

The independent variables were PA and nutritional patterns of MPs. These influence body weight status. Thus the dependent variable was body weight status which was categorized as either normal weight, underweight, overweight or obese.

3.4 Target population

The study population consisted of 386 members of the ninth Parliament of Uganda. Each MP represented a constituency or a district in Uganda and was elected by the people in that area. The number of constituency seats was 238 and the number of district seats was 112 and 36MPs included Ex-officials (Parliamentary directorate, 2015).

3.5 Sampling technique and sample size

Stratified random sampling technique was used in which MPs were grouped according to gender. Then systematic random sampling technique was applied to select the respondents from each stratum for the study. The respondents were randomly selected from the Parliamentary MPs' list that classifies men and women. This technique by Tustin et al., (2005) gives each element in the population an equal chance of being selected.

The sample size of 245 MPs that included both male and female out of the total 386 members was then arrived at using the above sampling technique. The sample drawn from two categories of the MPs based on their gender; the female respondents who included 118 and the males who included 127. This sample was arrived at using the sampling table developed by Krejcie and Morgan in 1970. This sample size was representative enough to the entire study population.

Table 3.1: Population and Sample size selection

Details	Population (N)	Sample (S)	Response	% age rate
Female members of Parliament	184	118	72	48%
Male members of Parliament	202	127	78	52%
Total members of Parliament	**386**	**245**	**150**	**61%**

Population source: Parliamentary Directorate, 2015

245 questionnaires were distributed to the sample of 118 female respondents and 127 male respondents in the ninth Parliament of Uganda. 72 females responded (48%) and 78 males responded by filling the questionnaires representing 52% as shown in Table 3.1. Overall, 150 MPs responded representing the response rate of 61% and this was the only number of respondents considered as the true participants in the study.

3.6 Research Instruments

The study involved using a research questionnaire, a protocol form for height and weight, a weighing scale and a stadiometer.

3.6.1. Questionnaire

The questionnaire had 3 sections; Section A for demographic aspects, height and weight. A protocol form was used to get height and weight to determine the body weight status of the MPs. Body weight status was established using body mass index arrived at through the weight and height of an individual MP. The weighing scale was used to measure body weight in kilograms using Seca 813 digital flat scale which was adjusted to the nearest 0.1kg. The stadiometer Seca 240 for height was adjusted to the nearest 0.1meters. The measurements taken with these instruments were used to determine the respondent's BMI. In this study, WHO, (2000) cut off point were used to classify the respondents in the categories of underweight, normal weight, overweight and obese as 18.5kg/m and below is considered underweight, 18.5-24.9 kg/m is normal weight or healthy weight, 25-29kg/m is overweight and above 30kg/m is obese with class 1 ranging from 30.0-34.9kg/m, and class 2 ranging from 35.0- 39.9 kg/m and class 111 ranging from 40kg/m and above.

Section B had questions from the International Physical Activity Questionnaire (IPAQ) short form which was modified by the researcher with an expert in sport science. This helped to gather information on PA. Physical activity was measured by taking into account the frequency of involvement, intensity and duration of the activities. IPAQ short form comprised of seven questions that sought data on the frequency, time spent on sitting, walking and moderate to vigorous PA (including PA related to occupation, transportation, household chores, and leisure time activity) in the last seven days. Only activities that lasted ten minutes were analyzed (Craig, Marshall, & Sjostrom, 2003).

Section C included Nutritional questions modified by the researcher from World Food Program (2008) and Wrieden etal (2003).The MPs' nutritional patterns were determined by taking into account two aspects; eating habits that involved frequency of meals eaten and dietary intake that involved nutrient dense foods and less dense foods (WFP, 2008). Eating habits were measured based on the frequency of food intake. Intake was measured based on the questionnaire by Wrieden et al., (2003) which included frequency of food intake and groups of foods eaten. It was later modified by the researcher and a sport scientist to make it more understandable to the respondents and to suit this study. Wrieden (2003) further stated that the diet is assessed over a period of 3-5 days and concentrates on the food and drinks consumed within 24 hours. The focus

was on the processed foods, unprocessed foods, low fat foods, high fat foods, nuts and seeds, eggs, soda and alcohol intake.

3.6.2 The Protocol Form

The protocol form included information on height and weight of the MPs which would help to determine the body weight status of the MPs.

3.6.3 Tools

A weighing scale (Seca) was used to measure the weight of MPs in kilograms and a stadiometer (Seca) was also used to measure the height of MPs in meters

3.7 Validity and Reliability of instruments and tools

The validity and reliability of instruments was tested to ensure that the results collected would be accurate and appropriate for the study. The IPAQ short form in section A did not need to be validated since it was a standardized questionnaire.

3.7.1 Validity of Section C: Questions on Nutritional patterns

To ensure validity, the questions in this section were subjected to a content validity index (CVI) where five nutritional, PA experts and lecturers in the sport science field were asked to rate the relevance of the questions set against the study variables using the scale of relevant and not relevant. The results were as shown below;

Table 3.2: Validity Test

EXPERT	**CVI**
Expert 1	0.75
Expert 2	0.81
Expert 3	0.72
Expert 4	0.86
Expert 5	0.78
Mean	**0.78**

According to Newman (2007), the score 0.7 and above was considered. In addition to the Food Consumption score for analyzing these questions was considered valid since it is associated with calorie intake (Coates et al, 2007). As reflected in the table 3.2 above, the CVI had a mean of

0.78 hence the questions were considered valid in line with Newman (2007) who recommended that a score of 0.7 and above was considered valid and would be able to give the required information

3.7.2 Reliability for the Section C (Nutritional Patterns)

To check for reliability, this section was tested using Cronbach's alpha (a) coefficient to test for the tools consistency and below were the findings

Table 3.3 : Reliability test results

ITEM	N of Items	Cronbach's Alpha
Nutritional patterns	13	.789

The reliability test carried out using Cronbach's Alpha value as observed from the results in table 3.3 above indicates that the nutritional patterns questionnaire had Cronbach's Alpha coefficient above 0.6. This proved that the research instrument used to collect data from the respondents was appropriate and reliable. This is also in line with Nunnally, (1978) and Instititute for Digital Research and Education, (2017) who observed that questionnaires whose Cronbach's Alpha coefficients are above 0.6 are reliable.

3.7.3. Reliability for the weighing scale and stadiometer

The weighing scale was checked, tested and adjusted to the right measure starting at zero for every person weighed. The stadiometer was also checked to ensure that it was in good condition before use. Also, two research assistants were trained for 1 week to ensure that they were in position to use the instruments appropriately and took the right measurements during the research.

3.8 Data collection procedure

The researcher got an introductory letter from Kyambogo University, sought permission from the Clerk to Parliament to collect data on MPs. Two research assistants were used (1 male and 1 female) to collect the data. The Research Assistants (RAs) whose education level was a diploma in secondary education and a degree in sport science were first oriented for one week on how to approach MPs and recording the measurements of height and weight of the respondents. Thereafter, they were divided

amongst the respondents in the order of; the male RA handled male MPs while the female RA handled female MPs. The researcher together with the RAs physically approached the MPs (one by one) in the Parliamentary premises especially at the gym and others in their offices and gave the selected MPs (respondents) the questionnaire. Each MP was allocated a maximum of 30 minutes to fill the questionnaire and 10 minutes to be measured. Upon completing each questionnaire, the RA handed it over to the researcher.

3.9 Data analysis and presentation

The collected data was sorted, summarized and coded using numerical codes (1, 2, 3,) and then the statistical package for social sciences software (SPSS version 22.0) was used for data analysis. Descriptive statistics that is frequencies means and standard deviation was used to analyze the data. In addition, Pearson correlation analysis (Pearson r: P-value$\leq$ 0.05) was used to test the hypotheses and determine the relationship between, PA and bodyweight status and nutritional patterns and bodyweight status (Ashley, 2016). The hypotheses were either accepted or rejected at P$\leq$0.05. The data analyzed was presented using tables and graphs.

3.10 Ethical consideration

The researcher obtained an introductory letter from Kyambogo University to conduct research. This was presented to the Clerk to Parliament for permission to conduct research on the MPs. The Clerk to Parliament is responsible for all the activities in Parliament and all information that come in and goes out of Parliament. The Clerk to Parliament upon accepting issued the researcher with a consent letter which was presented to the MPs that were approached to participate in the study.

Only MPs who accepted participated in the study upon the researcher approaching them and enlightening them more about the research aspects and the instruments that were used like the questionnaire. The researcher introduced herself, explained the procedure of the research and assured the respondents that their participation would be used strictly for academic purposes. To ensure confidentiality, each MP was given an identification number (1, 2, 3, 4, 5 ...) and names were not used.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

The purpose of the study was to establish PA, nutritional patterns and body weight status of MPs of the 9th Parliament of Uganda. This was done using a questionnaire that had 3 sections; Section A with questions on demographic data, body weight and height, Section B with questions (IPAQ) on PA and section C with questions on Nutritional patterns. To obtain the desired goal, three research objectives were formulated namely: To establish the PA patterns of members of the 9th Parliament of Uganda, to identify the nutritional patterns of members of the 9th Parliament of Uganda and to determine the body weight status of the members of the 9th Parliament of Uganda

4.1 Demographic data of MPs in the study

The sample of the study was 245MPs but the actual number that participated was 150. This was because some MPs did not complete the questionnaire and others did not return the questionnaire. The demographic data for the MPs was sought and recorded as shown below:

4.1.1 Age and gender of the respondents

The data on age and gender of the respondents are presented in figure 4.1below.

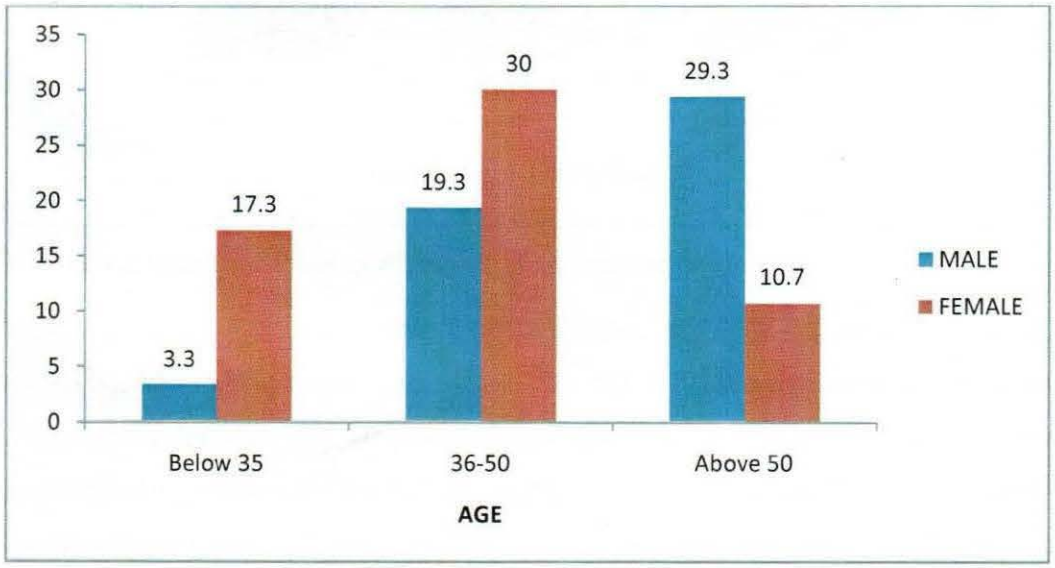

Figure 4.1: Age and gender of the respondents

Results in figure 4.1show that in the age bracket below 35 years, 11 of them (17.3%) were females and 5 (3.3%) were males out of the 16 (10.7%) MPs. The age bracket between 36 – 50 years had 45 (30%) females and 29 (19.3%) males out of 74 MPs (49.3%). The last age bracket of above 50 years had 16 (10.7%) females and 44 (29.3%) males making a total of 60 (40%) MPs in this age bracket. In total, 72 (48%) of the respondents were female MPs and 78 (42%) were males. Based on the above results, there are relatively young female MPs compared to males and majority of the MPs were above the age of 36 years which can be related to building up a name before becoming a politician.

4.1.2 Marital status of the MPs

Data on the MPs marital status was also collected and analyzed as indicated in figure 4.2 below:

Figure 4.2 Marital Status and gender of the respondents

Results in figure 4.2 indicate that 7 (4.7%) female and 7 (4.7%) male MPs were single out of 14(9.3%), 53 (35.3%) female and 61 (40.7%) male MPs were married out of the 114(76%) MPs and 12(8%) females and 10(6.7%) males out of 22(14.7%) MPs were divorced. Thus the majority of the MPs were married. According to Matt (2016) family is the most important voting block and being married is an indicator of stability, responsibility, and trustworthy. This gives a married person an advantage that he may have better character than the unmarried. Therefore this

may explain why most of the MP respondents were married and the single MPs had the least percentage. Women have more responsibilities like childcare, household responsibilities, also public belief in women ability and qualification for politics, confidence in their ability negatively impacted on the female participation in politics and this could explain the low percentage for married women compared to men (Ella, 2013).

4.2 Physical activity patterns of the respondents

This section shows the PA patterns of MPs in relation to days and time spent on vigorous physical activity, days and time spent of moderate physical activity, and time spent sitting during weekends and weekdays.

Good health can be achieved with an increase in the amount of PA considering duration, frequency and intensity in moderate and vigorous PA (Bauman, 2002). Basing on Bauman's recommendation, the rating scale was based on the number of days in a (week) and minutes spent on moderate and vigorous physical activities. The breakdown interpretation and discussion per item is indicated below;

Table 4.1: Physical activity patterns

The table below shows results for PA patterns of MPs

Item	N	Male	Female	Average Mean	SD
Days spent on vigorous physical activities	150	2.2	2.1	2.1	0.5
Time spent on vigorous physical activities per day in the last 7 days(minutes)	150	15.0	12.0	13.5	0.5
Days spent on moderate PA	150	2.5	2.7	2.6	0.4
Time spent on moderate physical activities on each day of the last 7 days (minutes)	150	22.0	24.0	23.0	0.2
Time spent sitting during weekends (hours)	150	2.8	3.1	2.9	0.1
Time spent sitting during weekdays (hours)	150	3.6	3.2	3.4	0.4

The results on the first item "number of days spent in vigorous physical activity" indicate that MPs spent on average mean of 2.1 days in a week (2.1 ± 0.5) on vigorous PA such as running,

fast swimming, competitive sport, and climbing uphill and moving heavy loads. The standard deviation (SD) in vigorous physical activity indicates that the mean could rise or fall by 0.5. According to Center for Disease Control (2016), to get more healthy benefits and prevent NCDs, it is recommended that an individual should engage in vigorous PA for at least 3 days in a week. Also, Abdhalal (2009) supports this recommendation and adds that vigorous PA has muscular skeletal benefits like maintaining muscle strength, joint structures, functioning of joints, and is also important in the development of bones during childhood. In relation to the results, the MPs engage in vigorous PA 2.1 days in a week which is less than the recommended. This can cause overweight and obesity and also lead to effects like depression and arthritis if not addressed.

On the time spent of vigorous PA in the last 7 days in Table 4.1, it is indicated that MPs spent an average mean of 13.5 minutes in each of the 2 days spent on vigorous PA in a week. With a standard deviation of 0.5 it implies that the mean could fall to 13 minutes or rise to 14 minutes. According to WHO (2017), it is recommended that an individual should spent at least more or equal to 20 minutes per day on vigorous PA to have a healthy and fit body and also be able to prevent overweight and obesity. MPs spent less time on Vigorous PA than the recommended which may either affect their body weight general wellbeing. vigorous PA are important in developing the lean body mass (muscles, tendons and bones) and also control body fat which is healthy (Bauman et al, 2005).

On the days spent on moderate PA in a week, Table 4.1 indicates that MPs spent an average mean of 2.6 days in a week on moderate PA with SD of 0.4 indicating that the mean could rise or fall by 0.4. The activities included, brisk walking, gardening, housework and domestic chores, dancing and aerobics. The MPs spent 2.7 days in a week on moderate PA and this was more than the days for men. According to CDC (2016), it is recommended that an individual should spend at least 3 days in a week on moderate PA and this could help to prevent overweight and obesity and control NCDs like hypertension. Also, Kruger et al (2005) recommended that an adult between 17-60 years should engage in moderate PA for at least 3 days in a week. From the results, MPs had a mean of 2.7 days in a week which was closed to the recommended 3 days.

On the time spent on the above moderate PA, table 4:1 indicates that MPs spent an average mean of 23 minutes on each of the days spent on moderate PA with SD of 0.2 indicating that the mean could rise or fall by 0.2 minutes. The female had a higher mean of 24 minutes than that for the men which indicates that they spent more time on moderate PA than the men spent. Children and the youth are expected to engage in moderate PA for at least 60 minutes a day and adults are advised to be active for at least 30 minutes a day to get more health benefits (Healthy people, 2012). This recommendation is supported by World Health Organization (2017) that recommends more or equal to 30 minutes to be spent on moderate PA per day for achieve more health benefits. Also, Laskowski (2011), recommended daily engagement in moderate PA for at least 30 minutes for any adult. In addition to that, Inactive people have 20% - 30% increased risk of all NCDs than those who engage in PA daily for at least 30 minutes (Kavishe & Samuel, 2015). Thus findings reveal that most MPs did not meet the recommended time and may be affected by the effects of being less active.

As per the item "time in hours spent sitting in a day during weekends and weekdays, it was found out that Mps had an average mean of 2.9 hours with women having a higher mean of 3.1 hours than men . The SD was at 0.1 indicating that the mean (2.9hours) could rise or fall by 0.1. During weekdays, it was found out that MPs had an average mean of 3.4hours sitting, with men having a higher percentage of 3.6hours sitting during weekdays than women. The time for sitting during weekdays was attributed to sitting in plenary, committee meeting and for weekends it was attributed to watching TV, socializing, attending church.

According to (Kruger et al, 2005), most people spend more than 80% of their time sitting or in sedentary activities with very little effort yet involvement in more PA could lead to considerable health benefits. Brays (2013) adds on that when the calories consumed are not eliminated from the body, they are stored by the body as fat and this is due to inactivity and sedentary lifestyle which have been identified as some of the causes of overweight and obesity (Bray, 2013). Owing to influences such as increased office demand which necessitates officers to sit for long hours and urbanization that has led to inactivity the time spent sitting can be controlled by regular involvement in PA (WHO, 2004).

According to Reilly and Kelly (2011), it is recommended that an adult should not sit for more than 2hours without having any breaks. Reilly and Kelly (2011) continue to recommend that adults need to have breaks after every 15 minutes of continuous sitting to avoid health related problems that may constrain the spinal cord and may result into several pains gradually. The recommendations indicate that MPs were sitting longer than the recommended time which could affect their health and contribute to overweight and obesity. According to Park (2012), sitting for more than 2hours a day can cut two years off a person's life expectancy and also it can contribute to weight gain even if he or she exercises regularly.

4.3 Nutritional patterns of MPs

The Nutritional patterns of MPs in relation to quantities, proportions and or different kinds of combinations of food and beverage in diets were considered. The results of this section were analyzed using the frequency of meals and food consumption score developed by World Food Program (WFP) (1996). The results of this study aim at answering one of the objectives of the study which was "To identify the nutritional patterns MPs in the 9th Parliament of Uganda". Several questions in relation to MPs nutritional patterns were designed, and answered. The results are presented in Table 4.2.

Table 4.2. Nutritional patterns

Item	Male	Female	Mean	SD	Frequency	%age
Number of times you take non processed foods like brown rice, millet in a day	2.7	2.8	2.8	0.7	52	34.6
Number of times you take processed foods in a day like spaghetti, white rice	3.1	3.1	3.1	0.9	115	76
Number of times you take high fat foods in a in a day(Ghee, fatty meat, blue band)	2.3	3.5	2.9	1.1	101	67
Number of days in a week you take nuts and seeds in a week	2.2	3.3	2.7	0.9	48	32
How many eggs do you eat in a week	3.7	3.1	3.4	1.4	71	47
Number of times you take fried food per day	3.6	3.4	3.5	1.1	93	62

Number of glasses of water taken in a day	2.9	3.1	3.0	1.0	85	56
Bottles of soda I take in a week	2.5	3.8	3.1	0.2	117	78
Number of times I take skimmed milk in a week	3.2	3.5	3.3	1.3	69	46
Bottles of beer you take in a day	2.7	2.5	2.6	1.2	95	63
Number of meals skipped in a week						
• Breakfast	1.7	2.2	1.9	0.3	78	52
• Lunch	0.1	2.2	1.2	1.0	42	28
• Supper	1.4	1.4	1.4	0.1	38	25

Table 4.2 presents the nutritional patterns that the MPs are accustomed to in their daily eating life/habits. It was revealed that 76% of the MPs took processed foods such as white rice, spaghetti, white bread 3 times a day as indicated by the mean 3.1 and SD of 0.90 meaning that that the mean could fall or rise by 0.90. Murray, (2014) indicates that white bread, white posho, white rice and refined sugar, all if taken at once in the same meal, might lead to an increase in cholesterol in the bile which might cause gallstones. He therefore recommends that processed foods should be taken once in a day. By comparing the findings and the recommended food intake, it was found out that MPs took processed foods more times than the recommended as this could have an impact on their body weight status (Murray, 2014).

It was further established that 34.6% of the MPs eat approximately 3 times a day among the variety of the unprocessed foods like milled, unpolished posho, brown rice. This was with a mean score of 2.8 which could fall or rise with SD of 0.7. According to the healthy eating, PA and healthy weight guideline (2010), it states that achieving a healthy weight requires maintaining a balance between energy intake as concerns the unprocessed foods and energy output. However, sustaining this balance is challenging within today's social, cultural and physical environments. It recommends having single food stuff among the categorized unprocessed foods per meal in a day if one is to achieve a healthy weight. By relating the results

and the recommended, MPs were well aligned to the recommendations and this could help them maintain a healthy body weight and control health risks.

The MPs were further asked about the number of times in a day they take high fat foods such as ghee, fatty meat, blue band and full cream milk. It was found out that 67% of the MPs took high fat foods approximately 3 times a day with an average mean of 2.9 and SD which could fall or rise by 1.1. The Department of Nutrition and Diabetics of Norfolk and Norwich University Hospitals (2014) warns against food stuffs with a high fat content. It recommends that if they are to be taken, it should not exceed once a day. This includes ghee, fatty meat, full cream milk, red meat and blue band. They recommend that the fatty foods be substituted with lean meat protein sources such as cold water fish, chicken and turkey. In light of this, MPs took fatty food stuffs more than the recommended and this could increase the cholesterol levels, increase the risk of NCD and also lead to overweight and obesity (WHO, 2011)

In relation to the intake of skimmed milk, only 46% MPs took it 3 times per week with an average mean of 3.3. Whole fat dairy products pose a risk for those diagnosed with gallstones Zulfa, 2011. Milk, cheese, yogurt, ice cream, heavy cream and sour cream contain high levels of animal fat, a common link to gallbladder complications (Zulfa, 2011). It is advisable to reduce on the amount of dairy product intake in one's diet or purchase low fat and skimmed substitutes. Accordingly, this could provide the necessary dietary calcium required to maintain healthy bones and teeth.

With respect to taking of nuts and seeds, the findings indicate that 32% of the MPs took nuts and seeds approximately 3 days in a week with a mean 2.7 that could raise or fall by SD 0.9. Accordingly, the fat found in nuts and seeds are mostly the unsaturated fat, which may help to reduce the risk of developing heart disease (Mercola, 2015). Intake of nuts and seeds which are free from cholesterol helps in maintaining a healthy heart, keeping bones stronger. They are also cholesterol free, which is important in a heart healthy diet, they keep bowels healthy and will also help make one feel full (important if one is trying to manage weight) and are a good source of protein, which fills one up and keeps muscles strong (Canadian Heart and Stroke Foundation 2015).

Wrieden et al (2003) and the Canadian Heart and Stroke Foundation (2015) recommend that eating nuts and seeds should be done at least every day and the amount taken should just fit into the palm of one`s hand or one serving is equal to 2 tablespoons. This is supported by World a healthiest food (WHF, 2017) which recommends 14-15grames of nuts and seeds to be eaten per day if an individual consumes 1800-2000 calories per day. They further warn that although nuts and seeds are healthy choices, one should not over eat them since they are high in fat and contribute to increase in calorie intake.

Also, the findings in Table 4.4 indicated that 47% of the MPs ate three eggs in a week with mean of 3.4 which could rise or fall by SD 1.4. Akinyemi and Ibraheem (2009) and the American Heart Association (2015), recommend one egg per day, because of their high cholesterol levels and the possibility of a correlation between gallbladder conditions and food allergies. According to the University of Maryland Medical Center (2012), eggs are a high-allergen food and are high in cholesterol. Both of these factors make them a likely cause of gallbladder irritation. With this recommendation it is an indication that MPs eat less egg than the recommended and this could lead to nutrient deficiency that can cause underweight and increase health related risks.

More so, it was found out that 62% of the MPs took fried foods on average mean of 3.5 which could rise or fall by SD1.1. According to Sharma (2008) and the Healthy Eating Index (2010), individuals need to eliminate fried foods from their diet since they aggravate gallstone pain, create discomfort in the digestion system and pile up fats that cause overweight and obesity. Sharma (2008) recommends that using olive oil or canola oil as a healthy alternative for frying. According to the new vision dated 6th April 2017, NCDs testing was done at Parliament and revealed that 80% of MPs were overweight, 70% had high cholesterol, 30% were diagnosed with high blood pressure and 10% had diabetes. The increased number of MPs with NCDs was attributed to consumption of junk foods and fatty foods which pose a threat to their health and wellbeing (Kiwuuwa 2017).

The results in Table 4.2 also indicate that 56% of MPs took approximately 3 glasses of water every day as represented by an average mean of 3.0 that could raise or fall by 1.0. According to

WHO (2011) adults should take at least 8 glasses of water in a day which is equivalent to not less than 1 litre a day.
Therefore MPs take less water compared to the recommended yet water is a body's principal chemical component and makes up about 60 percent of body weight (Mayo School of Health Science 2015).

Results further show that 63% of the MPs drink alcohol approximately 3 bottles (half litre per bottle) per day with a mean of 2.6 with could rise or fall by SD 1.2. However, some respondent's respondents did not fill this part. In line with the scholarly recommendations from the Mayo School of Health Science (2015), it is recommended that if one chooses to drink alcohol or wine, one should do so only in moderation. For healthy adults, 1bottle a day for women and two bottles a day for men age 65 and younger. Examples of one drink include: Beer: 12 fluid ounces (355 milliliters), Wine: 5 fluid ounces (148 milliliters) and Distilled spirits (80 proof): 1.5 fluid ounces (44 milliliters). Accordingly, moderate alcohol use may be of most benefit if one is an adult or if one has existing risk factors for heart disease. If one is middle-aged or younger adult, s evidence from the Mayo medical school (2015) shows that even moderate alcohol use may cause more harm than good.

The MPs were asked whether in a week they missed breakfast, lunch and supper. The results indicate that 52% of MPs missed breakfast with an average mean of 1.9 in a week which could increase or reduce by 1.0, 28% of the MPs missed lunch with an average mean of 1.2, and 25% of the MPs missed supper with an average mean of 1.4 times in a week that could increase or reduce by SD 1.0. The most missed meal was breakfast which is contrally to the recommendations according to the American National Institutes of Health (2010), skipping a meal is likely to make you feel hungrier when it comes time to eat next, and this could cause eating more calories than if all the meals were taken.

This is also in line with Song et al., (2005) who stated that skipping breakfast, in particular, is associated with obesity especially with adults, implying that missing a meal can make one so hungry and lead to double/triple consumption for the next meal. Song (2005) goes on to

recommend that for a healthy weight, all meals should be taken in the right quantities and at the right time.

From the food groups consumed by the MPs, a Food Consumption Status was determined based on the score consumption following Food consumption scores developed by World Food Program (1996). This considers frequency of food groups containing nutritionally dense foods and those with less dense foods

Table4.3: Food Consumption Status

Food group	**Frequency**	**Standard food weight**	**Weight food scores**
Non processed foods like brown rice, millet	2.8	2	5.6
Processed foods like spaghetti	3.1	3	9.3
High fat foods like meat	2.9	4	11.6
Nuts and seeds	2.7	1	2.7
Fried foods	3.5	0.5	1.75
Food Consumption Status			**30.95**

From the consumption status (30.95), the nutritional patterns for MPs were considered Borderline since the status falls between 21.5-35 following World Food Program (2008) score. Being on Borderline status reflects inappropriate nutritional patterns and can be attributed to poor lifestyle that may lead to various health risks like overweight and obesity if the status is not addressed (Coates etal, 2007).

4.4 Body weight status of MPs

In order to gauge the body weight status of the MPs, their weight and Height were measured to be used to calculate their BMI and hence. This was done due to the fact that PA and Nutritional patterns influence body weight status. The results are shown in the figure below:

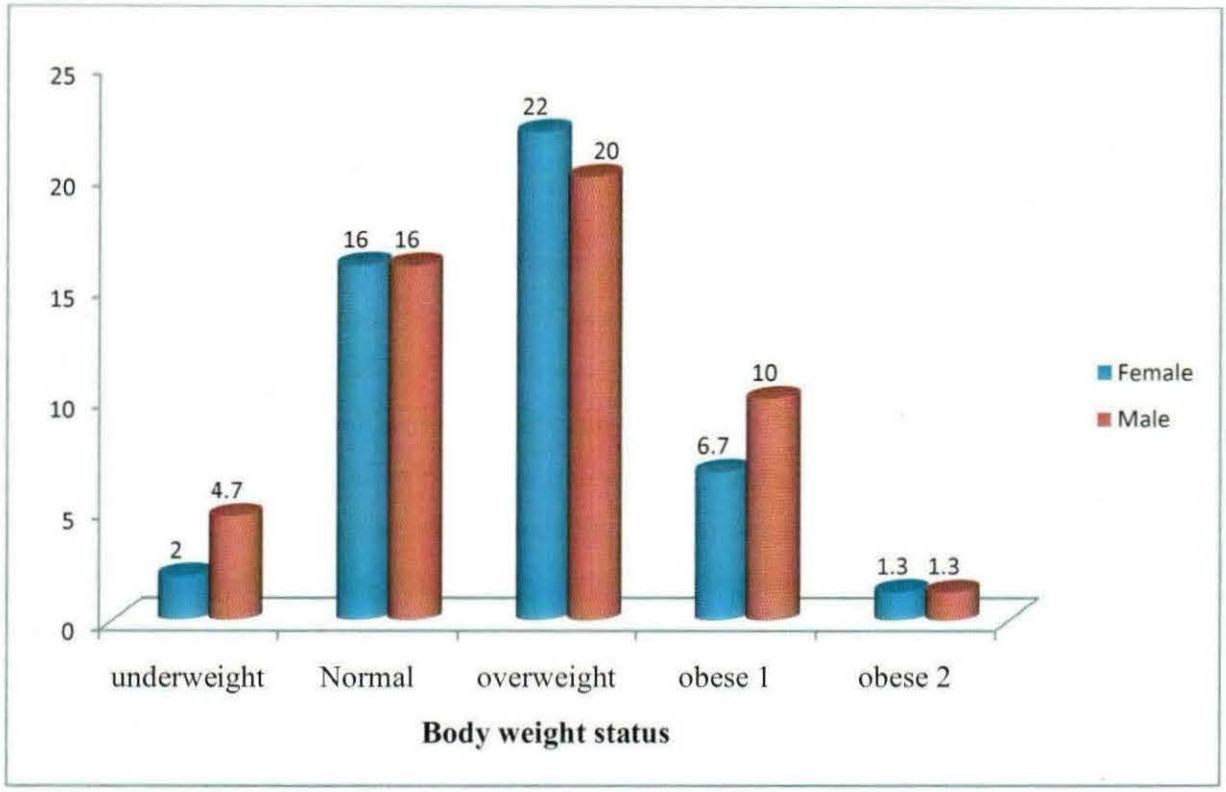

Figure 4:3 Body Weight Status of MPs

Out of the 150 MPs studied; in the underweight category with body mass index of less than 18.5 kg/m^2, 3 (2%) were females and 7 (4.7%) were males making it a total of 10 (6.7%). In the Normal weight category with the BMI ranging from 18.5– 24.9 kg/m^2, 24 (16%) were females and 44 (16%) were males making it a total of forty eight (32%). In the Overweight category with BMI ranging from 25-29.9 kg/m^2, 33 (22%) were females while 30 (20%) were males making a total of 63 (42%) MPs. In the Obese (type1) with BMI between 30 – 34.9 kg/m^2, 10 (6.7%) were females and 15 (10%) were males making it a total of 25 (16.7%) MPs. The remaining 4 (2.6%) of the MPs studied had Obese type 2 with their BMI ranging between 35-39.9 kg/m^2.

In figure 4:3, it is shown that even the underweight category existed among the MPs with female having 2% and male 4.7%. According to Ingrid (2012), underweight can be caused by enzyme deficiencies in the body. Inappropriate nutritional patterns like frequent intake of high fat foods can cause deficiencies like stomach acid which may hamper digestion and absorption of food

hence leading to underweight. Also, Krause (2000) reveals that cancer can cause rapid weight loss and inability to gain weight if appropriate nutrition is not put into consideration such as intake of low fat foods like skimmed milk, fruits and vegetables, non processed foods like millet that have iron and various nutrients.

According to Al-haifi et al (2013), A person may be underweight due to genetics, metabolism, lack of food (frequently due to poverty), or illness (Being underweight is associated with certain medical conditions, including hyperthyroidism, cancer, or tuberculosis, People with gastrointestinal or liver problems may be unable to absorb nutrients adequately (WHO, 2013). Also, people with certain eating disorders like missing meals, intake of highly fat foods, can be underweight due to lack of nutrients (Mayo clinic, 2014). Mayo continues to recommend that for a healthy weight, all nutrients should be taken in the right quantities and at the right time.

In the normal weight category, both males and females had the same percentage (16%). MPs with a BMI between 18.5 and 24.9 kg/m^2 were considered to have Normal weight according to WHO (2002) cutoff points. Normal weight can be achieved with involvement in regular PA, reducing time spent sitting, and taking all meals in the right quantities and at the right time. (Mercola, 2014). According to National Heart, lung and blood institute (2016), having a normal weight is important for the overall body health and can help to control NCDs and other health conditions like depression. These is supported by Kris (2012) who emphasizes that maintains a healthy weight is beneficial to the overall healthy and help to prevent over weight and obesity that come along with health problems like hypertension, diabetes and lung cancer.

Majority of the MPs 22% of females and male 20% were overweight with a body mass index between 25 to 30 kg/m^2. According to Peupert et al (2002), overweight is linked to sedentary life style and poor nutritional patterns which can be attributed to the fact that MPs sit for long hours, do not meet the recommended 30 minutes on moderate PA and consume processed foods, high fat foods more than the recommended times.

In addition to that, the female had a higher percentage (22%) than male (20%) in the overweight category. This is similar to the findings by Peupert et al (2002); Bakeri et al (2007); WHO (2015), who found out that women in developing countries had a higher rate of overweight and

obesity than men and that this is expected to continue due to low involvement in PA. They further state that limited involvement in PA and inappropriate nutritional patterns would be among the highest causes of overweight and obesity hence NCDs by the year 2030.

Also, in 2004, WHO stated that overweight has a large number of people globally and its health implications can lead to death by reducing an individual's life expectancy in addition to being the leading cause of chronic diseases especially type II diabetes, cancer, heart disease (WHO, 2004). WHO continues to recommend that Overweight and obesity are largely preventable by individuals through making healthier lifestyle choices and regular PA at least 60 minutes a day for children and 150 minutes per week for adults (WHO, 2014).

The overall percentages in obese class 1 (16.7%) with BMI between 30 to 35 $kg/m^2$and obese class II (2.6%) with BMI between 35 to 40 kg/m^2. The results in obese category could be related to the MPs' nutrition since the results show that they consume more of processed foods like white rice, spaghetti and white posho in table 4.4. Such processed foods are high in refined carbohydrates, contain artificial ingredients and are most times low in nutrients and if consumed too often can lead to overweight and obesity (Mercola, 2014). Also according to Kris (2012), processed foods and fat affect the body function due to the added chemicals like preservatives and flavor which can eventually lead to NCDs like lung cancer.

Further analysis was carried out to establish whether there was a correlation between PA, nutritional patterns and body weight status. The set hypotheses were:

Ho_1. There would be no significant relationship between PA patterns and body weight status of Members of Parliament of Uganda.

Ho_2. There would be no significant relationship between nutritional patterns and body weight status of Members of Parliament of Uganda.

The results from the correlation analysis are indicated below

Table 4.4: Correlation results

Variables	Physical activity	Nutritional pattern	Body weight status
Physical activity	1.000	1.000	1.000
Nutritional patterns	0.437**	1.000	1.000
Body weight status	0.339**	0.186*	1.000

*. Correlation is significant at the 0.05 level (2-tailed).

The results of the correlation in Table 4:4 indicate that there is a significant and positive relationship between PA and body weight status (r=0.339**; p-value≤0.05). This result implied that body weight status can strongly depend on PA patterns. In this respect, the null hypothesis which stated that there would be no significant relationship between PA patterns and body weight status MPs of Uganda was not accepted.

These results are in agreement with Healthy people (2010) that physical activity patterns closely influence the body weight status since they work on all the major muscle groups of one`s body ranging from the legs, hips, back, chest, abdomen, shoulders, and arms among others (Healthy people,2010). The vigorous PA such as running, fast swimming, carrying heavy loads, gardening, dancing, house work are among others are the key attributes that MPs should not miss.

Table 4.4, further shows that there was a significant relationship between nutritional patterns and body weight status (r=0.186*; p-value≤ 0.05). This result indicates that following appropriate nutritional patterns could improve the body weight status of the MPs. Therefore the earlier set null hypothesis that there would be no significant relationship between nutritional patterns and body weight status of the MPs was not accepted. This result implies that when appropriate nutrition is taken considering eating habits and dietary intake, it would result into normal weight.

Appropriate nutritional patterns are important for achieving a normal weight status. For instance, taking the recommended amount of water, daily intake of nuts and seeds to provide high fiber,

minerals and antioxidants that help to reduce the risk of overweight and obesity, heart disease, cancer, and type 2 diabetes. This result is in agreement with that of an earlier scholar Naja(2013) who found out that appropriate nutrition (Mediterranean diet) is associated with normal body weight.

Since the analysis and the presentation of results was done reflecting gender, it was deemed fit to determine whether there would be a relationship between gender and body weight status thus the paired sample correlation test was carried out and the results are indicated in the Table 4.5.

Table 4.5: Gender and body weight status

	Paired differences					t-values	Df	Sig(2 tailed)
	Female		Male		Std. error			
	Mean	SD	Mean	SD				
Pair1:Weight	85.5	8.0	75.8	7	0.08	21.74	149	.000
Pair2: Height	1.8	0.7	1.76	0.54	0.06	20.546	149	.000

Significant at $p<0.05$ (paired samples t-test = 0.000 for weight, height and BMI)

Table 4:5 indicates that the average mean weight of female MPs was 85.5 kilograms. With a variation of 8.0 kilograms, an indication that the female MPs weight was between 93.5kilograms and 77.5 kilograms. As concerns the male members of Parliament, the male MPs had an average body weight of 75.8kilograms with the variation of 7 kilograms. This implies that the weight for males was between 82.8 kilograms and 68.8 kilograms. In relation to height, the results indicate that the mean height of female MPs was 1.8 meters with the variation of 0.7. This implies that the height for females ranged between 2.5metres to 1.1metres. As concerns the male MPs, the average height was 1.76 meters with the variation of 0.54 meters. This implies that the male height was between 2.3 meters and 1.22 meters. Therefore, the results show that female MPs had a higher height than their counter part male MPs on the average.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter covers the summary of the findings, conclusions and recommendations to relevant stake holders for future actions.

5.1 Summary of the findings

The study was conducted amongst the MPs of the 9th Parliament of Uganda in 2015. A total of 150 MPs were involved in the study and out of these, 72 were female and 78 were male. Based on the findings, the following were established considering PA, Nutritional patterns and Body weight status.

5.1.1 Physical activity patterns

During the study, PA patterns of MPs were found out in relation to days and time spent on Vigorous PA, Moderate PA, and time spent sitting during weekends and weekdays. The results show that MPs engaged in Vigorous PA with an average mean of 2.1 days in a week and a mean of 13.5 minutes on each of these days. This included engaging in exercises like running, fast swimming, and moving heavy loads. MPs spent an average mean of 2.6 days in a week on moderate PA and each day they spent an average mean of 2.3 minutes on each of these days. Exercises include brisk walking, aerobics and gardening. MPs had an average mean of 2.9 hours spent sitting during weekends and a mean of 3.4 hours sitting during weekdays.

It was also found out that MPs spend an average of 3hours sitting (2.9±0.8) every day during weekdays which is thought to contribute to their level of inactivity. In addition, during weekdays mps spent more than 3 hours seated either in office, plenary or committee meetings (3.4±0.9). This may be a factor contributing to the level of overweight among both males and females.

5.1.2 Nutritional patterns

In determining nutritional patterns, proportions and food combinations in diets were considered. And a Food Consumption status of MPs was determined in relation to frequency of foods.

The study found out that 76% of the MPs took processed foods like white rice, spaghetti, white bread with a mean of 3.1 times per day (3.1±0.90). With the processed foods, 34.6% of the MPs

also ate unprocessed foods at an average mean of 2.8 times per day (2.8±0.74). These included millet, brown rice and sweet potatoes which are healthy, have a lot of fiber and can be digested easily in the body. High fat foods like ghee, full cream milk, and blue band were taken at an average mean of 2.9 times in a day (2.9±1.1) which was higher than the recommended.

Also, 32% of the MPs took Nuts and seeds on an average mean of 2.7 days in a week (2.7±0.9) and 47% ate eggs at an average mean of 3.4 eggs in a week (3.4±1.4). 62% took fried foods at an average mean of 3.5 times per week (3.5±1.11) and take an average mean of 3.0 glasses of water per day (3.0±1.0) which is a very low intake since water is an important nutrient to the body that enhances digestion. 63% of the MPs also took alcohol at an average mean of 3.1 for men and 2.4 for women days in a week which was more than the recommended and could be attributed to the high percentage in overweight. The results further indicate that 52% of the MPs missed breakfast most than other meals at an average mean of 1.9 times in a week yet it is recommended that all meals should be taken in the right proportions. A Food consumption status was determined using WFP (2008) scores and it was found out that the status of MPs was borderline which was inappropriate according to Coates et al (2007).

5.1.3 Body weight Status

In determining body weight status of the respondents, BMI was calculated considering weight (kg)/ height (m^2) (Kg/ m^2). This was used to address the third objective that aimed at determining body weight status of the MPs. Out of 150 MPs,10 (6.7%) were underweight with BMI less than 18.5 Kg/ m^2 and of these, 3(2%) were female and 7 (4.7%) were male. In the normal weight category with BMI 18.5– 24.9 kg/m^2, they were 48 (32%) respondents in this category and of these, 24(16%) were female and 24(16%) were male. In the Overweight category (25.–29.9 kg/m^2) they were 63(42%) respondents and of these, 33(22%) were female and 30(20%) were male. This category had the highest percentage. In obese class I (30–34.9 kg/m^2) they were 25(16.7) respondents and of these, 10(6.7%) were female and 15(10%) were male. And lastly, in obese class II (35–39.9 kg/m^2) the overall number was 4(2.6%) and of these, 2(1.3%) were female and 2(1.3%) were male. Of all the respondents measured, none of them had in obese class III. Therefore majority of the Mps both male and female were in the overweight category.

5.2 Conclusions

The conclusions of the study are drawn from the findings in relation to PA, nutritional patterns and the body weight status of MPs. The MPs engaged in both moderate and vigorous PA although the time spent on moderate PA was less than the recommended. They also spent more time sitting both during weekend and weekdays which may have affected their body weight status. It was concluded that there is a significant correlation between PA and body weight status ($r=0.339^{**}$; p-value<0.05). Engaging in PA can improve body weight status. Therefore the null hypothesis was not accepted and this implies that PA is important for the body both vigorous and moderate.

Members of the 9th Parliament (MPs) consumed more of the processed foods than the unprocessed foods. They also consumed fried foods, junk foods and fatty foods like ghee and milk. These may also have contributed to the high levels of overweight. The water intake was also below the recommended yet water is an important nutrient to the body. Therefore there was a significant and positive relationship between nutritional patterns and body weight status ($r=0.186^{*}$; p-value<0.05). Appropriate nutritional patterns can improve body weight status of MPs also rejects the null hypothesis.

With the body weight status, there was an equal number of male and female in the underweight category which may be as a result of missing meals and low nutrient intake and also, most of the MPs both male and female were in the overweight category with the female having the highest percentage, the male had more percentage in the normal weight category and also in obese class I than the female. It was fortunate that there was no one in the obese class III category.

5.3 Recommendations

The following recommendations are offered to MPs, Ministry of Health, Ministry of Education and Sports to promote appropriate PA and Nutritional patterns to improve the body weight status.

- The MPs should increase on the frequency, time and intensity on PA and reduce on time spent sitting during weekends and weekdays. This will help them to be more physically active, reduce on the risks of continuous sitting without breaks hypertension, diabetes and reduced rate of metabolism.

- MPs should take appropriate food to improve on their Food consumption score to make it acceptable and this can be done by following the recommended food nutrient amounts and food groups to achieve a healthy lifestyle and also prevent the risks brought about by overweight and obesity.

- MPs should also embark on setting proper bills that can enable Ugandans engage in PA like setting national days for exercise and also limit the amount of processed food on the market to reduce their intake. In addition, MPs can also sensitize the people in their constituencies about proper nutrition during their campaigns and also as they perform their duties. This will help to increase awareness.

- The ministry of health should put in place health promotion programs among Ugandans particularly using PA and nutrition. This would help nationals to know more about the benefits of PA which will encourage active lifestyles and intake proper nutrition like eating unprocessed foods and taking adequate amounts of water. This will help to reduce on the NCDs caused by sedentary lifestyle.

- The Ministry of Education and Sports should also endeavor to raise awareness and sensitization on PA among Ugandans and also implement the policies through media, seminars and presentations about the importance of PA and the kind of exercises like walking and household chores that people can engage in to reduce the risk of being overweight and NCDs.

- There is also need for social support by families to promote PA. Parents should encourage children to engage in PA since if started at childhood; it can carry on throughout the youthful stage and also at adulthood. Parents can embark on playing with

children at home, gardening and doing household chores with children at home. This can play a great role in preventing overweight and NCDs.

5.4 Areas for further research

This study was limited to members of the 9th Parliament of Uganda and it was limited by time, and did not explore other aspects relating to MPs. The following areas can be researched about to add value to this research;

i. Constraints to PA among leaders. Since this study was based on MPs but other leaders that can implement policies were not part of this study. Therefore the results may differ if other leaders like councilors are considered.

ii. A study with a combination of quantitative and qualitative methods could be done to obtain more results on PA and nutritional patterns among MPs.

iii. This study concentrated on the MPs in the 9th Parliament, other studies can look at the PA, nutrition patterns and body weight status of the current Parliament.

iv. The level of fitness of members of Parliament of Uganda

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Appendix I: Research Questionnaire

Physical activity and Nutritional patterns and Body weight status among members of Parliament of Uganda

Iam **TAYEBWA PATIENCE** conducting a research on Physical activity, Nutritional patterns and Prevalence of Overweight and Obesity among Members of Parliament of Uganda. You have been selected to participate in this study by filling this questionnaire. The information you give will be treated with confidentiality and there is no need for personal identification.

Kindly tick in the most appropriate box

SECTION A: Demographic information

Age (years)

1) 35- below ☐ 2) 36-50 ☐ 3) 51-above ☐

Sex

1) Female ☐ 2) Male ☐

Marital status

1) Single ☐ 2) Married ☐ 3) Divorced ☐

Body weight status

Weight (kgs)..... Height (m)..... BMI.....

SECTION B PHYSICAL ACTIVITY PATTERNS

This questionnaire requires information about activities that you get involved in at work, home, activities in your spare time for recreation, exercise or sport. Considering only physical activities that you did in the last 7 days for at least 10 minutes at a time.

1. During the last 7 days, on how many days did you do vigorous physical activities?

Activity	Never	Less than 3 days	3 days	More than 3 days
Running				
Climbing up hill				
Fast swimming				
Competitive sport				
Carrying/moving heavy loads>20kg				
Any other specify.....				

2. How much time **(in minutes)** did you usually spend doing vigorous physical activities the last 7 days?

Activity	**Never**	**Less than 30 min.**	**30 min**	**More than 30 min**
Running				
Climbing up hill				
Fast swimming				
Competitive sport				
Carrying/moving heavy loads>20kg				
Any other specify.....				

3. During the last 7 days, on how many days did you do moderate physical activities?

Activity	**Never**	**Less than 3 days**	**3 days**	**More than 3 days**
Brisk walking				
Gardening				
Dancing				
Aerobics				
Housework and domestic chores				
Carrying or moving loads<20kg				
Any other specify.....				

4. How much time **(in minutes)** did you spend doing moderate physical activities in the last 7 days?

Activity	**Never**	**Less than 30 min**	**30 min**	**More than 30 min**
Brisk walking				
Gardening				
Dancing				
Housework and domestic chores				
Carrying or moving loads<20kg				
Any other specify.....				

5. During the last 7 days, how much time do you spend sitting in a day during weekdays? (add up total time spent sitting e.g. in office, plenary/meeting, watching TV, reading, having a drink, in church/mosque)

1 -2 hours	
3-4 hours	
5-6 hours	
More than 6 hours	

6. During the last 7 days, how much time did you usually spend sitting on weekend? (add up time spent watching TV, socializing, church/mosque etc.)

1 -2 hours	
3-4 hours	
5-6 hours	
More than 6 hours	

SECTION B NUTRITIONAL PATTERNS

Tick the most appropriate

7. I take ….. daily;

Type of Food	**Never**	**once**	**Twice**	**3 times**	**More than 3 times**
White rice					
White posho					
Spaghetti					
White bread					

8. I take ……..daily;

Food	**Never**	**once**	**Twice**	**3 times**	**More than 3 times**
Brown rice					
Millet					
Brown posho					
Bananas (matooke)					

9. Number of times I take low fat foods such as skimmed milk in a day

Never ☐ once ☐ twice ☐ 3 times ☐ more than 3 times ☐

10. Number of times I take high fat foods in a day

Food	**Never**	**Once**	**twice**	**3 times**	**More than 3**
Ghee					
Fatty meat					
Blue band/butter					
Full cream milk					

11. Number of times I take nuts and seeds in a day;

Nuts and seeds	**Never**	**Once**	**twice**	**3 times**	**More than 3 times**
Peas					
Groundnuts					
Beans					

12. How many eggs do you eat in **A WEEK**?

Never ☐ once ☐ twice ☐ three ☐ four times ☐ more than 4 times ☐

Number of times I eat such proteins in **A WEEK**	**Never**	**Once**	**twice**	**3 times**	**More than 3**
Milk					
Chicken					
Fish					
Beef					

13. Type of cooking oil I usually use for frying

☐ Olive oil ☐ Cowboy ☐ Kimbo ☐ Mukwano oil ☐ Ghee

Any other specify.....

In a week I take fried…..	**Never**	**Once**	**Twice**	**Three times**	**More than 3 times**
Chips					
Fish					
Chicken					
chapatti					

14. Number of bottles of soda I take in a **WEEK**

1 ☐ 2☐ 3☐ 4☐ 5 ☐ More than 5 ☐

15. Number of glasses of water I take daily

1-2 ☐ 3-4☐ 5-6☐ More than 6 ☐ Never ☐

16. Number of bottles of beer I take daily

Never ☐ 1 ☐ 2☐ 3☐ 4☐ 5 ☐ more than 5 ☐

17. Do you take spirits? Yes☐ No ☐

18. Do you take wine? Yes ☐ No ☐

19.

Number of days I take …. in a week;	Never	1-2 days	3-4 days	5-6 days	everyday
Breakfast					
Lunch					
Super					

THANK YOU

KYAMBOGO UNIVERSITY

P.O Box 1 Kyambogo
KAMPALA – UGANDA

Phone: 285001/2
DIR Line: 285272
Fax No: 256-041-220464

FACULTY OF SCIENCE
Department of Sportscience

27-02-2015

To whom it may concern

Dear Sir / Madam

INTRODUCTION OF MASTER OF SCIENCE RESEARCH STUDENT

The bear of this letter, ***Ms. Tayebwa Patience*** is a M.Sc. Sportscience research student (Reg.No. 13/U/2095/GMSS/PE) in the Sportscience Department.

She is conducting research for her M .Sc. in Sportscience titled, ***" Physical Activity, Nutritional Patterns and Body Weight Status of members of the 9th Parliament of Uganda."***

The purpose of this letter is to introduce to you the student and request you assist her conduct research in your organization.

Looking forward to your cooperation,

Yours faithfully.

Dr. Eunice Kateshumbwa
Head of Department [Sportscience Department]

Appendix III: Request Letter

TAYEBWA PATIENCE

GYM INSTRUCTOR

P.O. Box 7178,

Kampala, Uganda.

30th .02. 2015

THE CLERK TO PARLIAMENT

P.O.Box 7178,

Kampala, Uganda.

RE: REQUEST TO CARRY OUT RESEARCH IN PARLIAMENT.

I am currently pursuing a master's degree in Sportscience at Kyambogo University and research is a requirement for the completion of the degree. I hereby request to carry out my research on MPs in the 9th Parliament under the topic **"Physical activity, Nutritional Patterns and BodyWeight Status of Members of the 9th Parliament of Uganda"**

Attached is my letter of introduction from Kyambogo University.

Thank you very much for your kind consideration.

Yours sincerely,

Tayebwa Patience

THE PARLIAMENT OF UGANDA
OFFICE OF THE CLERK TO PARLIAMENT

Parliament House P. O. Box 7178 Kampala Uganda.
Telephone: 0414-377000/377152 Facsimile: 0414-346826 Email: clerk@parliament.go.ug
Plot Nos. 16 - 18 Parliament Avenue

In all correspondence on

4th February, 2015

Tayebwa Patience
Gym Instructor

PERMISSION TO CONDUCT RESEARCH ON MEMBERS OF PARLIAMENT

In reference to application, you have been granted permission to go on with your research on the basis that Members of Parliament names shall not appear in you study.

Okello G. Obabaru
FOR: CLERK TO PARLIAMENT