UNIVERSITY OF GHANA
COLLEGE OF BASIC AND APPLIED SCIENCES
DEPARTMENT OF NUTRITION AND FOOD SCIENCES

NUTRITIONAL STATUS, SOURCES OF NUTRITION INFORMATION, WEIGHT PERCEPTIONS AND WEIGHT MANAGEMENT PRACTICES AMONG YOUNG ADULTS IN THE ACCRA METROPOLIS

BY
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THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MPHIL NUTRITION DEGREE

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DECLARATION

I, Esi Yaabah Quaidoo, author of this thesis do hereby declare that this work was done in whole by me in the Department of Nutrition and Food Science of the University of Ghana, under the supervision of Dr. Agartha Ohemeng and Dr. Margaret Amankwah-Poku. All references cited in this work have been fully acknowledged.

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DEDICATION

I dedicate this work to my mother, Margaret Obeng-Quaidoo, and my brothers, Nana Kwamina Quaidoo and Kobina Obeng Quaidoo for their endless love, support and encouragement. Also, to Mr. and Mrs. Obed Obeng-Addae, Mr. Daniel Boateng Kusi, Mr. Emmanuel Osa, Mr. and Mrs. Michael Akuamah-Boateng, Edwina Abbey and Abena Twumasi, thank you for supporting and believing in me.
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To the management of the Accra shopping mall, I say a big thank you for opening your doors to me. I am also grateful to all the young adults I met at the Accra shopping mall and Makola market, who agreed to participate in this study. To my dependable field assistants, thank you for your reliability and devotion throughout the period of data collection.

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Thank you all so much for taking time and energy to assist me.
ABSTRACT

Background: Young adults experience significant life changes which often give them prime control over their nutritional choices; there is however limited information from developing countries on the factors that influence nutritional habits in this life stage. This study sought to provide data on the nutrition information acquisition behaviours, how weight was perceived and managed by a sample of young adults living in the Accra metropolis.

Methods: This study was cross-sectional involving young adults (N=192) between 18-25 years recruited at the Accra shopping mall (n=93) and the Makola market (n=99) in the Accra metropolis of Ghana. A pretested questionnaire was used to collect information on demographic characteristics, sources of nutrition information, weight perceptions, weight management strategies, lifestyle and dietary habits. Anthropometric measurements of all study participants were taken using standard procedures. Pearson chi-square test and logistic regression were conducted in order to identify possible associations between sources of nutrition information and the nutritional status; and the possible relationship between weight perception and the nutritional status of young adults.

Results: Online resources were the most used source of nutrition information; healthcare professionals were the least used source, although they were perceived as the most reliable. Half of the study’s participants thought that they were slimmer than they actually were in reality. Majority of study participants perceived normal weight status as the ideal body for themselves and for members of the opposite sex; majority also felt Ghanaian society wanted them to be normal weight. For participants who were actively managing their weight, three major strategies were identified: engaging in physical activity (39.0%), dieting (35.6%) and making lifestyle modifications (25.4%). There was no significant relationship between sources of participants’
nutrition information and their nutritional status {((95% CI: 0.46 – 1.64) and (95% CI: 0.58 – 2.20)}. However, a significant relationship was observed between weight perception and nutritional status of participants (95% CI: 0.15 – 0.61): young adults who had an inaccurate body image perception were 70% less likely to have a healthy nutritional status than young adults who had an accurate body image perception.

**Conclusion:** There is a need to enlighten the Ghanaian youth on scouting and identifying quality online nutrition and health information. It would also be helpful for healthcare professionals to use online resources as a mode to offer credible information to young adults on nutrition and nutrition-related topics from a Ghanaian point of view so as to provide guidance to members of the young adulthood population.
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CHAPTER ONE

1.0 INTRODUCTION

The unique life stage that typically occurs between the ages of 18 to 25 can be termed emerging adulthood or young adulthood. This is where a young person moves from the tussles of adolescence and prepares to take on the responsibilities of adulthood (Majors, 2015; Maruf, Akinpelu, & Nwankwo, 2012; Poobalan & Aucott, 2016). Young adulthood is a life-stage set apart from any other. One cannot be referred to as an adolescent since adolescence is characterized by dependency on caretakers and neither can one be referred to as a full-fledged adult since adulthood is characterized by enduring social responsibilities and self-sufficiency which has not usually been fully attained at young adulthood (Arnett, 2000). Relative independence from caretakers during young adulthood, changes in finance, living arrangements, and time availability are factors that influence young adults’ food choices (Papadaki, Hondros, Scott, & Kapsokefalou, 2007). Young adults who previously had little to no control over their food choices shift to having prime control over what, when and how they want to eat (Chimeli, 2015). Many individuals develop habits that are harmful to their health such as drinking excessive amounts of alcohol and eating unhealthily during young adulthood (Abel, Hofmann, Ackermann, Bucher, & Sakarya, 2015). Apart from dietary patterns changing, young adults tend to be concerned about their physical appearance and how to change or maintain it for various reasons including to appeal to romantic partners, fit into certain peer groups or simply gain confidence in themselves (El Ansari, Vodder Clausen, Mabhala, & Stock, 2010). The way young adults perceive weight influences their weight management behaviours (Sirang et al., 2013). In Ghana, the traditionally appreciated body type tends to equate what is referred to as the
overweight body type in developed countries (Adusei, 2014). West African social desirability for overweight states has been observed through some African ethnic groups’ cultural practices that encourage obesity, for example, the pre-marital “fattening rooms” practiced in Nigeria (Benkeser, Biritwum, & Hill, 2012). Young adults seeking to conform to their society’s beauty ideals may seek counsel from inappropriate sources on how to achieve their body goals (Ali, Rizzo, & Heiland, 2013). The desire a young person may have to meet beauty ideals set by their society may result in looking up information on certain weight management strategies which may be questionable. Practicing some of these weight management practices could lead to adverse health outcomes later on in life (Malinauskas, Raedeke, Aeby, Smith, & Dallas, 2006).

Young people in general have a heavy online presence and are exposed to different online resources which offer a myriad of information to a young person (Perloff, 2014; Zhang, 2012). The world has become a global village; the speed at which information spreads in society is overwhelming making the acquisition of information on nutrition-related matters such as managing one’s weight relatively easy. Yet, sources of information vary in their degree of credibility and accessibility; the problem is that information can be fabricated or can bring about contradictory theories (Hillis, 2015; Obasola & Agunbiade, 2016). There is an overwhelming amount of information and perspectives available on nutrition, fitness and strategies to manage weight causing nutrition and public health scientists to endeavor to pinpoint the exact information that brings about health and well-being throughout life (Hillis, 2015).

Positive health and dietary habits formed during adolescence, and taken into the young adulthood period, form the basis for continued healthy nutritional habits in future stages of development (Poobalan & Aucott, 2016). The race-specific link between body size and beauty (Ali et al., 2013) indicates the need to understand the nutritional behaviours and nutrition-related topics
such as weight perceptions of individuals within specific age demographics in order to create public health interventions that are innovative, population specific and culturally acceptable for healthy weight promotion within communities. In Ghana, to my knowledge, no accessible study has reported on nutrition information acquisition methods of young adults and linked this to weight management practices within the young adult population. This research adds to the body of scientific literature regarding the means through which young adults in an urban African capital gain information concerning their nutrition, their weight perceptions and their weight management practices, given the unique life circumstances they face.

1.1 Rationale

There has been high interest in body image and how weight is perceived around the world, with several studies documenting a prevalence of different body weights as ideal in different parts of the world (Maruf et. al., 2012). However, majority of these studies come from outside of Africa. Studies investigating weight perceptions in adolescents abound but studies describing the nutritional behaviours of 18 to 25 year olds in developing countries are rare to come across even though this is a critical stage of development. The few studies that address young adults from developing countries report on the relationship between nutritional status of study participants as the key outcome of interest and variables such as obese parents and family socioeconomic status (Baalwa, Byarugaba, Kabagambe, & Otim, 2010; Olusanya & Omotayo, 2011; Poobalan & Aucott, 2016). Yet, variables such as the nutrition information acquisition behaviours and how this information translates into practiced weight management strategies has not been reported even though the factors that contribute to a person’s nutritional status is multifaceted. Sirang et al., (2013), indicated that weight perceptions have the ability to influence weight management
practices which in turn affects the nutritional status of the individual. Further questions can be asked as to where exactly information on selected weight management techniques comes from. Obasola and Agunbiade, (2016) investigated where young adults from a Nigerian university accessed information on nutrition and fitness; online resources was the major source. This study however did not address perceptions on health-related matters such as weight and usage of acquired information.

Also, the studies that have sought to describe some nutritional habits of study participants within the 18 to 25 age bracket have been done using institutionalized young adults, with the primary outcomes to assess weight, body mass index and fat composition. Institutionalized young adults (i.e. young adults in post-secondary institutions of learning) are convenient to study due to their ease in locating at institutions, but can limit the generalization of results since not all young adults pursue a post-secondary education. This study therefore sought to examine young adults visiting shopping centres, thus having a high likelihood of including both institutionalized and non-institutionalized participants. There is lack of information on young adults’ sources of nutrition information. For reasons which include relatively easier accessibility to the internet and the fact that young adults are more experienced than ever with digital media, there may be dynamics in nutrition information seeking behaviours among young adults which may be different from older adults especially in light of global technological advancements. Additionally, information on nutritional behaviours such as weight management strategies concerning the emerging adult population, especially at this critical life-stage of their development, is limited. Studies related to perceptions and influences regarding body ideals of young Ghanaians is lacking. Such information is needed to develop interventions that can promote a lifespan of good nutrition and good health.
1.2 Study objectives

1.2.1 Main Objective

This study sought to assess the sources of nutrition information, weight perceptions and the weight management strategies of young adults in the Accra Metropolis.

1.2.2 Specific Objectives

The specific aims of the study were:

1. To investigate sources from which nutrition information is acquired and current weight perceptions among the young adults living in the Accra Metropolis
2. To assess the lifestyle and physical activity level of participants
3. To identify weight management strategies employed by young adults in the study area
4. To examine the relationship between source of nutrition information and the nutritional status of young adults
5. To ascertain the relationship between weight perceptions and the nutritional status of participants.
CHAPTER TWO

2.0 LITERATURE REVIEW

Young adults are required to make big adjustments while learning to cope with new life situations, such as leaving the home they were brought up in, in order to pursue activities and to an extent fend for their own needs (Poobalan & Aucott, 2016). Individuals going through young adulthood are demographically diverse and exposed to different life circumstances: some pursue post-secondary educations as soon as they complete their secondary school education while others engage in activities outside of academia such as working yet all the same relevant to progressing in life (Larson, Neumark-Sztainer, Laska, & Story, 2011). Literature on young adults has been examined extensively and certain trains of thought are presented in this chapter to identify the factors that directly or indirectly impact on the nutritional behaviours and inevitably the nutritional status of young adults.

2.1 Conceptual framework

The conceptual framework was constructed based broadly on the theoretical model of ‘Attitude, Social influences and Self-efficacy’ (i.e. the ASE model) from de Vries, Dijkstra, & Kuhlman, (1988), who described an individual’s approach towards their health using these three variables. Inferentially, the ASE model suggests that nutritional behaviours are a result of one’s attitude, social influences and self-efficacy; which are all personal factors. However, according to Brown et al., (2011), personal factors interrelate with environmental factors and these range of factors influence the lifestyle of a young person leading to the nutrition behaviours observed. In an attempt to explain young adults’ nutrition behaviours which inevitably lead to their nutritional
status, two major interrelated stages are portrayed in Figure 2.1, environmental and personal factors.

**Figure 2.1.** Conceptual map showing the factors that influence young adults nutrition choices and nutrition-related behaviours (author’s own construct)

Per the literature reviewed, the environmental factors that could influence a young person’s nutrition behaviours involve the socioeconomic systems of the society he or she belongs to; this refers to how the said society is advancing, or remaining the same, or regressing as a result of local, regional or the international economy (Renzaho, McCabe, & Swinburn, 2012). Other environmental factors include matters related to the food security of a young adult such as the production of food, availability of food and the distribution of food. Disseminators of
information in the society include old media (traditional media) and new media (online resources) which may play a role in determining nutrition behaviours as they market ideas and products that have the ability to influence behaviours (Perloff, 2014). Also, the cultural unit one belongs to and the ideals of said unit, the food trends (e.g. fast food or fads), a young adult’s living arrangements and the peer group one belongs to can all influence a young person’s approach to nutrition as discussed in the literature that follows.

Personal factors identified were the belief a young adult has in their capability to perform behaviours vital to attain specific health goals in response to a need to change or remain the same out of an awareness of certain health statuses. Also, the perceptions one has about body ideals can influence a young adult’s lifestyle and in turn have an impact on the nutrition choices made. Physiological needs (Corleone, 2014) and genetic dispositions (Brown et al., 2011) contribute in affecting a young adult’s nutrition choices as well. Personal preferences towards food, skills related to preparing one’s own meals and eating habits formed from childhood and adolescence as a result of family unit socialization and parental modelling all influence a young adult’s nutrition behaviours (Brown et al., 2011).

2.2 Nutritional habits of young adults

Young adulthood is a new period in life where young individuals have significantly more freedom to choose when it comes to food than previous life stages (Chimeli, 2015). A cross-sectional study conducted by Papadaki et al., (2007), assessed how living arrangements affect the nutritional habits of a sample of young adults aged 20 to 24 years attending a Greek university. A total of eighty-four participants filled a food habits questionnaire on their present food habits and their food habits before they started university. Study participants who still lived with their
family did not show much changes in their eating behaviours since starting university while participants who had moved away from their family reduced their weekly intake of fruits, olive oil, pulses, vegetables and fish, but increased their sugar, fast food and alcohol consumption (Papadaki et al., 2007). This study suggested that young adults who were away from caretaker/parental observation and had taken on the duties of putting together their own meals had taken on unhealthy dietary habits.

Greiner, Holmes, & Hollenbeck, (2005), reported of a similar finding in their study conducted in the United States of America on 352 students who had just started university and were living away from their families for the first time in their lives. Information on their nutrition-related behaviours was collected using a questionnaire. Majority of participants gained weight after a year of living away from home. Alcohol consumption increased significantly, while physical activity dropped and the intake of vegetables and fruits decreased significantly. The study concluded that there were significant negative changes in the young adults’ nutrition related behaviour after they left home (Greiner et al., 2005).

Many parents do try to restrict their children from consuming excessive amounts of certain foods but young people tend to show different eating behaviours when away from home or parental scrutiny (de Castro, King, Duarte-Gardea, Gonzalez-Ayala, & Kooshian 2012; Song, 2016). Self-prepared food tends to be healthier than food made away from home yet young adults consume a chunk of their total daily energy away from home (Eisenberg & Burgess, 2015; Larson et al., 2011). Larson, Perry, Story, & Neumark-Sztainer, (2006), investigated meal preparation behaviours, culinary skills, resources for meal preparation and the links with nutrition quality among a sample of 1,710 young adults aged 18 to 23 years. The authors reported personal meal preparation in general was low and even though both sexes had basic
culinary skills it was particularly low among young adult males. Males, who were African American and living away from home were significantly related to less frequent meal preparation. Most participants ate out at fast food joints and the common reason given for not preparing their own meals was time constraints (Larson et al., 2006). Driskell, Meckna, & Scales, (2006), arrived at a similar conclusion that males spent less time preparing their own meals. In their study that investigated the eating habits of a group of young adults, it was observed that significantly more young male adults (i.e. 84%) reported typically eating fast foods for lunch while only 58% of female participants reported doing this (Driskell et al., 2006). Larson et al., (2011), conducted a cross-sectional study that examined 2,287 young adults eating meals not prepared at home and the associations with dietary intake and weight status. As observed by Larson et al., (2006), there was frequent patronage of fast food eateries that mainly served sugar-sweetened beverages and energy-dense meals with low key nutrients. Fast food consumption was associated with poorer diet quality and a higher risk of developing an overweight status (Larson et al., 2011).

The studies discussed above are researches that were conducted in developed countries. The situation with young adults who live in developing countries, especially those residing in countries making socioeconomic shifts, is that they experience a greater amount of financial freedom than their predecessors (Popkin, Adair, & Ng, 2012). There is an availability of convenience foods and fast foods from numerous shopping malls, convenience shops and food outlets which have sprouted up remarkably in recent years and have changed the means through which food is acquired as compared to previous years when it was deemed a luxury to an average young person in a developing country to eat out (de Castro et al., 2012; Poobalan & Aucott, 2016). Developing countries are experiencing an increase in more educated and
wealthier young individuals who engage in less physical activity but consume greater amounts of energy dense foods; hence the rises in the prevalence of obesity being recorded especially in the urban areas of sub-Saharan Africa and South Asia (Ettarh, Van de Vijver, Oti, & Kyobutungi, 2013). Health professionals now not only have to tackle the high prevalence of life-long nutrition-related diseases, but the fact that these diseases are showing up at younger ages than before (Hillis, 2015).

2.2.1 Dietary guidelines for young adults

Constituents of a healthy and diversified diet differs depending on a person’s food preferences, food environment, beliefs regarding food, physiological and psychological traits but the basic guidelines for a healthy diet remain the same (Larson et al., 2006; Papadaki et al., 2007; World Health Organization, 2015). Dietary guidelines for early adulthood generally encourage the daily intake of fruits, vegetables as well as fibre while limiting intake of saturated fats as well as sodium and avoiding trans-fats altogether (Brown et al., 2011).

Fruits, vegetables, legumes, nuts and whole grains should be eaten on a daily basis to ensure the body is receiving adequate amounts of vitamins and minerals and that the daily dietary fibre recommendation has been met. According to the World Health Organization, young adults who consume a minimum of 400 grams (i.e. 5 portions: filling one-third of a flat plate) of vegetables and fruits a day, lessen the chances of developing nutrition-related diseases (World Health Organization, 2015). To ensure meeting the 400 gram mark, a wide array of vegetables should always be added to meals; one can simply fill their plate with clean raw vegetables and make fruits a first choice snack (Brown et al., 2011). According to registered dietitian and health coach Jill Corleone, a young adult only needs 142 to 200 grams of protein foods a day; plant-
based protein such as protein from seeds, nuts and beans diversify diet and provide essential vitamins and minerals that promote optimal bodily function (Corleone, 2014).

Young male adults’ calorie needs is approximately 2,400 to 3000 calories a day while young female adults need about 1,800 to 2400 calories a day to carry out normal metabolic function and maintain a healthy weight status (Corleone, 2014). Free sugars in the diet should be less than 50 grams (i.e. approximately 12 leveled teaspoons) for a person of normal weight status and a reduction in consumption to less than 25 grams provides additional health benefits (World Health Organization, 2015). Free sugars refers to sugars naturally found in honey, syrups, fruit juices and fruit concentrates and also the sugars added to food products and drinks (Brown et al., 2011; Larson et al., 2011). Intake of free sugars can be reduced by reducing the intake of sugar-sweetened beverages, pastries, sweetened snacks and confectionaries; instead a young adult is encouraged to snack on fruits and raw vegetables (World Health Organization, 2015).

A total energy consumption of less than 30% should come from fats. Trans-fats, which are present in processed foods, fast foods, fried foods, pastries and spreads, do not constitute a healthy diet (World Health Organization, 2015). Unsaturated fats (sources include nuts, avocados, fish, canola and olive oil) have been found to be healthier than saturated fats (sources include fatty meat, butter, cheese, palm oil and coconut oil) (Yeung & Laquatra, 2003). Consumption of fats can be reduced by eating less processed foods containing trans fats (checking the nutritional facts panel can help identify this) and limiting the intake of foods containing large quantities of saturated fats such as fast food (World Health Organization, 2015).

Dietary guidelines exist to guide young adults to achieve diversified and balanced diets in order to promote overall good health, yet, the reviewed literature found that young adults make unhealthy food choices. In an attempt to reduce unhealthy dietary practices among young adults,
questions are raised on where nutrition information is acquired to influence their food choices and nutrition behaviours.

2.3 Young adults’ nutrition information acquisition behaviours

Acquisition of information occurs intentionally or per chance. The deliberate attempt to acquire information refers to a conscious determination to obtain information in response to a need or a lack of know-how in one’s mind, whereas opportunistic gaining of information refers to a situation where a person without warning comes across fascinating or beneficial information (Basic & Erdelez, 2014).

Nutrition information forms a component of health information (Obasola & Agunbiade, 2016). Miller & Cassady, (2015), defined nutrition knowledge as having an awareness of practices and concepts related to nutrition including adequate food intake and wellbeing, food intake and disease, foods signifying key sources of nutrients and dietary guidelines and references. Acquiring nutrition information is important because it could inform nutrition choices positively and promote the maintenance of a healthy weight status (Hillis, 2015).

A study in 2007 investigated whether increased knowledge in nutrition really translated into positive dietary behaviours. Two hundred college students, majority of who were between 18 and 20 years old, self-reported their eating habits in a survey. It was observed that an increase in the understanding of nutrition was directly proportional to the increased probability of meeting dietary guidelines for fruit, dairy, protein and whole grains (Kolodinsky, Harveyberino, Berlin, Johnson & Reynolds, 2007). Borgmeier & Westenhofer, (2009), found that highly educated people were more aware of the relationship between diet and health, and as a result were more inclined to use nutrition labels and make better food choices.
Both studies reported above by Kolodinsky et al., (2007), and Borgmeier & Westenhoefer, (2009), describe overall better eaters as having a higher understanding of nutrition. Yet, a study conducted by Misra, (2007), brings about an interesting alternate point of view. A total of 537 young adults’ nutrition knowledge was assessed. One would have expected the graduate student participants would have higher nutrition knowledge than the undergraduate student participants because of presumed better understanding yet it was the undergraduate participants who had more of a positive attitude towards their nutrition as well as having higher nutrition knowledge than the graduate participants (Misra, 2007). Where participants in these studies gathered their information on nutrition on was however not highlighted.

### 2.3.1 Sources of nutrition information

According to Percheski & Hargittai, (2011), sources of health information can broadly be categorized as: family and friends, healthcare professionals, online resources and traditional media. Family members and friends make up our physical social networks (Perloff, 2014). Healthcare professionals consist of individuals with certification and expertise in the healthcare service that provides curative, preventive, rehabilitative or promotional health services (Percheski & Hargittai, 2011). Online resources consist of the internet, websites, blogs, vlogs, search engines, apps and a wide variety of social media sites such as Facebook (Zhang, 2012). Traditional media includes radio shows, television shows, newspapers, magazines, newsletters, tax press and other printed publications made to disseminate information (Perloff, 2014).

Where a young person looks for information depends on their social context. According to Majors, (2015), more young American females than males access nutrition information from family members and magazines. An Iranian study found television programmes to be the first
go-to for health information, followed by family members and/or close friends, books and public libraries whereas a British study reported of the internet being the first go-to for health information, followed by books and asking friends or family (Percheski & Hargittai, 2011). Percheski & Hargittai, (2011), listed web sites, healthcare professionals and traditional media as common sources of health information in their study that tested 1,060 young adults. Using a self-administered questionnaire, they found that the internet served purely as a complementary source of information and not as a substitute for other sources such as healthcare professionals, family members and peers among their sample. Interestingly, family members and friends was the most popular source of health information with 89.5% of participants reporting that they frequently used this source more than all the others (Percheski & Hargittai, 2011). Perloff, (2014), backs this finding with the observation that young adults who still live with their family are less likely to use any other source of information apart from family members and friends.

Apparently, young adults go to the internet when looking up topics that they feel is sensitive or embarrassing talking to family members or friends about. The internet provides anonymity to access information on sex, diet, nutrition, medications, exercise and mental health information (Basic & Erdelez, 2014; Obasola & Agunbiade, 2016). Basic & Erdelez, (2014), conducted a study on 2,193 undergraduate university students’ health information acquisition behaviours using a softcopy survey. The study sample of young adults reported using the internet, to a greater extent, for information on everyday life matters. The most common topics looked up was diet/nutrition and fitness/exercise (Basic & Erdelez, 2014).

Another study by Head & Eisenberg, (2010), using a sample size of 8,353 undergraduate students attending different American universities, investigated the sources of information for participants’ personal use as well as course work. Study participants reported in the survey that
they took little at face value regardless of where the information came from although they used the internet the most and the campus library to a lesser extent (Head & Eisenberg, 2010). Participants in this study did not wholly trust information that came from the internet. Zhang, (2012), had a similar observation as Head & Eisenberg, (2010).

Zhang, (2012), conducted interviews on 38 college students in order to investigate their usage and opinions of social networking sites for health and fitness information. Information on health was intentionally sought by young adults using search engines but unintentionally encountered when they used social networking sites. Interestingly social networks, for example, Facebook were not an effectual venue for interacting on health-related issues because young adults felt maintaining a positive image of themselves as a fit person in their online network was important even though they might have been struggling with a health issue (Zhang, 2012). On the other hand a Nigerian study conducted by Obasola & Agunbiade, (2016), found that majority of their study participants (72.7%) perceived health information from the internet as accurate and dependable. The study examined online health seeking behaviours of 400 university undergraduates in Nigeria using a cross-sectional study design. Through the use of surveys they found that daily internet use was on the average and use was constrained by poor electricity supply, the high cost of internet access and poor delivery of services (Obasola & Agunbiade, 2016). These were three different studies, two conducted in a developed country and one conducted in a developing country. Even though online resources were the most popular source of health information in the studies, there was a stark difference in its perceived reliability.

Young adulthood is a time also characterized by a concern with physical appearance management (Ali et al., 2013; Perloff, 2014) and with literature indicating that young adults
actively seek information on nutrition-related topics such as fitness and weight management, the views young adults have on weight is of interest.

2.4 Weight perceptions

Perceived body image consists of: 1) the body an individual identifies as the way they look, 2) the body an individual actually desires for them self, 3) the body an individual considers ideal for the opposite sex and 4) the body an individual feels the society he or she belongs to dictates as ideal (Maruf et al., 2012). When a person has a realistic and positive attitude about their body, they tend to show appreciation, respect and acceptance for themselves and as such these individuals are more likely to have control over their dietary behaviours (Andrew, Tiggemann, & Clark, 2016; Maruf et al., 2012; Quick & Byrd-Bredbenner, 2014).

El Ansari et al., (2010), studied differences in body image perception between participants from two European countries. Eight hundred and sixteen (816) British and 548 Danish young adults were given self-administered questionnaires in a cross-sectional survey that assessed their body image perceptions. Participants who thought of themselves as “too thin” were 8.6%, “just right” were 37.7% and “too fat” were 53.7% although these were not their actual weight statuses using anthropometric measurements. Andrew et al., (2016) stated that individuals with a precise awareness of their own weight status have more control over their eating behaviours and are more likely to be happier and confident with themselves. Participants in the study by El Ansari et al., (2010), study who perceived themselves as “too fat” (although they were not necessarily ‘fat’) were more likely to be females and reported feeling stressed and unhappy with their lives. The observation made by El Ansari et al., (2010) that participant who perceived themselves as too fat had a desire to be slimmer corresponds to Grogan, Gill, Brownbridge, Kilgariff, &
Whalley’s, (2013), study on 20 women’s experiences of dress fit and body image in the United Kingdom. Study participants’ spontaneous reaction to clothes they tried on was audio-recorded. Participants were also body-scanned and photographed in their favourite dress and told to discuss both the scan and the photograph in semi-structured interviews. A slender hourglass physique with full breasts and full hips along with a small well-defined waist was the body idealized by all the women examined regardless of their actual physique. All these women wanted to be “in proportion” and not to be “fat” or masculine-looking (Grogan et al., 2013).

Other studies have examined body image discrepancies using indices which indicated how realistic or unrealistic individuals’ opinions of their bodies are. Body image discrepancies can be calculated using the body mass index (BMI) of a person and the person’s self-perceived body image. Anthropometry, the study of the measurements of bone, muscle and adipose tissue of the human body provides a commonly applicable, convenient and non-intrusive technique for measuring parts and composition of the human body (Ogunlade & Adalumo, 2015). Body mass index (BMI) is an anthropometric parameter calculated as the weight in kilograms divided by the square of the height in meters (kg/m$^2$); a BMI of less than 18.5 kg/m$^2$ is recorded as underweight and greater than 25 kg/m$^2$ is recorded overweight, falling between these ranges is considered normal weight status (World Health Organization, 2004). An interesting study from Italy conducted by Zaccagni, Masotti, Donati, Mazzoni, & Gualdi-Russo, (2014), used 354 young female adults with a mean age of 21.5 ± 2.9 years and 380 young male adults with a mean age of 22.1 ± 3.6 years. The body image discrepancy results were positive in most female participants and negative in most males, indicating an inclination for the females to overestimate their weight status and of the males to underestimate it. Interestingly, both female and male participants in this study felt that the opposite sex would prefer a thinner ideal than they actually did; in fact,
male participants wanted curvier females and the females wanted a more muscular male (Zaccagni et al., 2014). The results of the study showed a high dissatisfaction with weight status in females, with most preferring thinner bodies than in males examined. A similar study by Maruf et al., (2012), examined the perceived body image and weight of 121 Nigerian university undergraduates with a mean age of 22.34±1.88 years. Sixty percent (60%) of male study participants perceived themselves to have normal weight when they were actually overweight while 50% of females perceived themselves to be normal weight when they were actually overweight. Interestingly, normal weight participants thought that they were fatter than they actually were. The overweight female participants estimated their personal ideal and desired body images bigger (fatter) than their self-perceived body image (showing a desire to be fatter). Male participants perceived smaller body images for the female than the female perceived for the male.

Most study participants in Zaccagni et al’s., (2014), study indicated that they would have liked to be thin (slender) whereas study participants in Maruf et al’s., (2012) study, had desires that run through being normal weight and overweight. The fact that there was a desire to be thinner among the Italian sample than the Nigerian sample may be explained by socio-cultural influencers of weight perception. One of the barriers to reducing the rise in obesity in developing countries could be its cultural acceptability. Black people tend to receive positive feedback about their bodies from friends and family even though they are clearly overweight (Quick & Byrd-Bredbenner, 2014; Maruf et al., 2012).
2.4.1 Sociocultural influences on body image cultivation

Weight patterns and body image perceptions are greatly influenced by social settings. Physical attractiveness is a valuable tool in many situations of human interaction and as such, many are keen to live up to the standards set by the society they belong to; stigmatization of certain weight statuses (overweight or underweight) may lead to a search for the perfect body (Ali et al., 2013; Coetzee et al., 2012). Many societies in sub-Saharan Africa attribute large body sizes to good living and high social status, hence consider it desirable (Coetzee et al., 2012; Ettarh et al., 2013). Thus, ideal body weight perceptions of a society can influence the development of certain nutritional statuses. Quick & Byrd-Bredbenner, (2014), found in their study that among Black and Hispanic communities, big full-bodies (curves, big breasts and round buttocks) are considered signs of wellness and high status. Studies show Black people as less likely than other racial groups to perceive themselves as overweight and this may be due to many Blacks belonging to collectivist cultures (Ali et al., 2013; Renzaho et al., 2012).

Collectivist cultures are characterized by a deeply vested interest in promoting social relationships and this is often shown through nurture and food exchange. Bodies are seen as indicators of success or failure in family members being able to cater for others in the same family (Renzaho et al., 2012). Many western cultures are quite opposite and promote individualist lifestyles. Typical characteristics of individualist cultures are that individuals are loosely associated with others and they are primarily motivated by their own preferences (Renzaho et al., 2012). Individualist cultural values are more likely to be prejudiced against ‘fat’ people because thinness in such societies is associated with having self-control, being attractive, youthful and elegant (Maruf et al., 2012; Zaccagni et al., 2014). In fact, young obese Caucasian females are more likely to be socially marginalized compared to their non-obese white
counterparts but this is not the case with obese Black females (Ali et al., 2013). The westernized ideal body for males, though more flexible than the stereotypical ‘thin’ female physique, holds several typical features: thinness, strength (vigor) and height (Perloff, 2014). Young adults from developing countries who are acculturated to the individualist culture are more likely to want to attain the ‘ideal’ buff or thin image (Coetzee et al., 2012; Quick & Byrd-Bredbenner, 2014). Current political and economic progress in Africa may have altered body size favourites among young Africans. According to Coetzee et al., (2012), modern Black African female fashion models in South Africa are much thinner than their Caucasian European-descended colleagues. Also, African female university students have reported more eating disorders than their White female counterparts.

A young person’s body image is important to them, and as a result some seek physical forms using a wide range of behaviours and activities. Weight perception has been found to be an excellent predictor of weight management behaviour than a person’s actual weight status (Sirang et al., 2013). Thus, improving the way one view’s their body, plays a role in increasing appropriate weight management behaviours in young people (Zaccagni et al., 2014).

2.5 Weight management practices

Weight management strategies aim to help individuals gain weight, lose weight or maintain a healthy body weight. Altering weight in the first place can be an odious task to complete but the real challenge comes when one is to maintain weight change once it has been achieved. Whether a person is trying to gain, maintain or lose weight it all starts with motivation (Ceccarini, Borrello, Pietrabissa, Manzoni, & Castelnuovo, 2015). In other words, the issue is not starting a weight management regimen but how to stay committed to a goal, pursue it and avoid slipping
back into previous habits (Strychar, 2007). It can be tempting to take ‘short-cuts’ even though some weight management strategies are clearly unhealthy. For example, the lucrative diet industry promotes assortments of products which advertise quick results with minimal fuss (Andrew et al., 2016). Fad diets (i.e. popular diets that generally promise quick results) which restrict consumption of key nutrients altogether (e.g. no carbohydrates), severe energy restriction of 800 calories or lower, strict food limitations (e.g. never eat red meat) and gimmicks (e.g. eat peppers to speed up metabolic activity) can be unhealthy as well (Brown et al., 2011). Some of the most maladaptive weight loss behaviours include smoking cigarettes to reduce appetite in order to lose weight and skipping meals intentionally with the aim of losing weight (Malinauskas et al., 2006).

Several studies have investigated interventions for young adults to achieve their set out weight goals. Stice, Orjada, & Tristan, (2006), for example, focused on educational interventions through courses on a university campus to improve nutrition knowledge. The outcome of a 15-week course on obesity and eating disorders among 25 women compared with 70 control participants (females as well) from another eating disorder symptomatology course were assessed. The mean participant age was 21.3 years and it was carried out in order to address weight gain issues, eating habits and body dissatisfaction. Intervention participants maintained their self-reported BMI at post-test and 6-month follow-up, whereas control participants experienced an increase in BMI ($p=0.025$). Intervention participants also exhibited significant decreases in body dissatisfaction, dieting, and eating disorder symptoms at 6-month follow-up; showing that nutrition education as an intervention played a role in meeting set out weight management targets (Stice et al., 2006). A similarly designed study by Gow, Trace, & Mazzeo, (2010), assessed the outcome of a 6-week internet-based intervention course on a sample of
American freshmen; the authors assessed BMI and weight-related behaviours. The study subjects had a lower mean BMI at post-intervention assessment, after controlling for baseline BMI \((p = 0.05)\) indicating that course-based interventions can result in positive weight management outcomes (Gow et al., 2010). Another study focused on intervening on multiple weight related behaviours i.e. physical activity, diet, sleep, stress control, alcohol and drug usage (Werch et al., 2007). The study showed encouraging results with an underlining theme of adherence to long-term healthful eating habits and consistent physical activity in achieving and maintaining healthy weight among young adults.

Brown et al., (2011), recommended that a certified health professional should be consulted when one seeks to alter their weight in order for a comprehensive anthropometric assessment, biochemical assessment, clinical assessment, food environment assessment and diet history to be conducted to understand the patient’s personal experience in order to formulate an effective individualized weight management plan. Weight management strategies can be categorized into five broad groups: physical activity, dieting, pharmacotherapy, surgery and lifestyle modifications (Ayisi-Addo, Ayisi-Addo, & Ohemeng, 2016; Grief & Miranda, 2010; Joo & Lee, 2014).

2.5.1 Physical activity

Studies in physical activity have revealed that persons with normal body mass index engage in more exercise than their underweight or overweight counterparts (Sirang et al., 2013), and, active individuals regardless of their body weight, tend to be more satisfied with their body than less active individuals (Zaccagni et al., 2014). Young adulthood is a period where weight easily fluctuates; in fact, a moderate decrease in physical activity than previously participated in
contributes to weight gain (Majors, 2015). An interesting longitudinal observational study in the United States conducted by Wengreen & Moncur, (2009), gives credence to Majors’, (2015) statement. Wengreen & Moncur, (2009), investigated 159 young adults’ changes in eating behaviours, physical activity, and body weight during their move from high school to university. Baseline weight was measured at the beginning of their first semester and the new weight taken at the end of the same semester. Participants also filled surveys on their eating behaviours, physical activity and a few other health-related behaviours during their final six months at high school in August, 2005 and throughout their first semester at university in December, 2005. The mean BMI at baseline assessment was 23.0±3.8 kg/m². Almost one quarter of the young adults in this study gained a significant amount of weight during their first semester at university. Even though the mean amount of weight gained during the study was modest (i.e. 1.5 kg), 23% of participants gained ≥ 5% of their baseline body weight. The average weight gain among those who gained ≥ 5% of baseline body weight was 4.5 kg. Study participants who gained ≥ 5% of body weight reported less physical activity during their first semester at the university than at high school as compared to the participants who did not gain ≥ 5% of body weight. The World Health Organization recommends that healthy adults aged 18 to 64 years participate in at least 150 minutes per week of moderate intensity aerobic physical activity and for additional benefits 300 minutes per week is sufficient (World Health Organization, 2010). Moderate-intensity aerobic physical activity refers to movements of the body that require a person to exert themselves in a manner that makes one breathe hard or sweat due to an elevated heart rate (Centers for Disease Control and Prevention, 2015). Even without a diet change, aerobic physical activity equal to walking at 4 miles per hour for a total of 150 minutes a week or jogging at 6 miles per hour for 75 minutes a week results in reductions in body fat and significant losses in
intra-abdominal fat which are consistent with improved metabolic function (Brown et al., 2011). Individuals who are active are very likely to achieve weight maintenance, have a healthy body mass and body composition (World Health Organization, 2010).

2.5.2 Dieting

Dieting strategies are advertised everywhere (Brown et al., 2011) to the extent that one may not be aware that they are actually dieting, unless specifically explained to that eating behaviours used to consciously alter weight is dieting. Dieting refers to any method of food limitation, use of food supplements or changes in normal food consumed with the intention of altering weight (Malinauskas et al., 2006). Majors, (2015) reported in his study that women are more likely to diet than men. According to Brown et al., (2011), it is estimated that 71% of females and 42% of males are dieting at any given time. Malinauskas et al., (2006), studied the dieting practices, weight perceptions, and body composition of 185 females aged 18 to 24 years attending a university. Anthropometric measurements were taken to assess body composition and a questionnaire was filled on dieting practices as well as a 30-day physical activity recall. Findings in this study showed majority of participants (83%) used dieting for weight loss and believed that they would be fatter had they not dieted. Many participants in this study reported using physical activity to control their weight, but only 19% exercised at a level that would promote significant weight loss. Despite it being common knowledge that dieting alone is quite ineffective, it still remains a popular weight management tool of choice.

Ayisi-Addo et al., (2016), researched on weight management practices among clients on a commercial weight loss programme in Ghana. It was a cross-sectional study with 50 participants. A survey was used to gather information on previous weight loss regimen and the reasons for
dropping out of stated programmes. Over half of the study participants had tried a weight loss regimen before the current one they were on and 88.5% left the regimen before their desired weight alteration had been achieved. The common strategies that had been tried were internet sourced diets (67.9%), commercial weight loss shakes (42.9%) and exercise (28.6%). According to the attrition rates, it is inferential to say that the previous programmes lacked the qualities to be an effective weight loss strategy (it was not sustainable). The observation made in this study that majority of participants had tried an online diet or commercial shakes correlates with the statement made by Malinauskas et al., (2006), that dieting alone is one of the most common weight management strategies employed by people, irrespective of weight status.

Not all diets are unhealthy or ineffective. Dieting strategies that allow modest weight loss and its maintenance emphasize eating food which is low in energy density, for example vegetables and whole grains. This permits individuals to eat more food but less energy is consumed, which increases satisfaction and prevents energy overconsumption. Energy overconsumption would lead to excess calories in the body which would accumulate and result in weight gain (Raynor et al., 2011). Some popular diets such as the Mediterranean diet are very healthy (Brown et al., 2011). Other popular diets include the Atkins diet (which advocates high-fat ‘good fat’ and a low-carbohydrate diet) and the South Beach Diet has a similar regimen that promotes the increased consumption of ‘good carbohydrate’ (complex carbohydrates) (Grief & Miranda, 2010). Several studies however emphasize that considerable weight change would require a combination of a healthy dieting routine that encourages physical activity and behavioural change.
2.5.3 Pharmacotherapy

The use of medication as a weight management strategy has shown modest success, with weight regain usually reported after therapy was stopped (Grief & Miranda, 2010). Hence, healthcare professionals usually combine medication with lifestyle modification interventions (Joo & Lee, 2014). Pharmacotherapy agents are grouped by the duration of treatment i.e. short term usage or long term usage: drugs such as benzphetamine, phendimetrazine and phentermine are for short term treatment (Joo & Lee, 2014). Sibutramine (Meridia) and orlistat (Xenical) are the only drugs permitted by the United States’ Food and Drugs Board as acceptable to use for long-term weight loss regimens in treating obesity (Grief & Miranda, 2010).

2.5.4 Surgery

This is an effective tool that can be used to lose weight, although the surgery alone will not help a person who has lost weight to maintain it (Richardson et al., 2009). Surgery is not the first point of call in treating overweight or obesity statuses; these strategies are only applied in critical morbidly obese cases (Joo & Lee, 2014). Bariatric surgery is one medical means for achieving successful long-term weight loss in individuals with morbid or complicated obesity (Grief & Miranda, 2010). Common surgeries done for weight reduction are laparoscopic adjustable gastric band (LAGB) and laparoscopic Roux-en-Y gastric-by-pass (LRGBY), with the latter making up majority of all bariatric procedures (Richardson et al., 2009). Vomiting is often reported after weight-loss surgeries and chronic issues with malnutrition occur because of nutrient malabsorption making it vital to monitor patients for some time after the procedure (Richardson et al., 2009). Studies demonstrate that the bulk of obese people, who reduced weight through hospital-originated interventions, returned to their original weight in three to five years after they
were treated (Ceccarini et al., 2015). Weight loss will only remain if a long-term change in physiology occurs, otherwise a person will revert to their original or worsened state (de Castro et al., 2012). The main influences to successful weight loss maintenance after bariatric surgery are the patient’s ability to make lifestyle modifications with nutrition and exercise being the most important aspects (Grief & Miranda, 2010; Richardson et al., 2009).

2.5.5 Lifestyle modifications

The best way to alter weight is to have a long term lifestyle change that emphasizes consumption of nutrient-dense foods to meet nutrient requirements coupled with physical activity to shape and firm the body and a strong psychological support system in order to maintain the weight change when it occurs (Brown et al., 2011; Ceccarini et al., 2015). Decreasing the amount of sedentary activities and consuming a balanced diet of 2 to 3 healthy diversified meals, contribute to managing one’s weight especially within the young adult population (Hillis, 2015; Majors, 2015). According to Grief & Miranda, 2010, the National Weight Control Registry in the United States of America, is a comprehensive and extensive compilation of information from individuals who have successfully lost weight and maintained said weight loss. Nighty-eight percent (98%) of study participants improved their food intake in some way to lose weight, 94% increased their exercising (brisk walking being the most commonly reported type of exercise), 90% exercised about one hour every day, 78% consumed breakfast every day, 75% measured their weight at least once a week and 62% of the participants watched less than 10 hours of television per week (Grief & Miranda, 2010). Strategies that can help young adults achieve and maintain a healthy weight include nutrition education for individuals entering this life stage since
an increase in overall nutrition awareness is said to result in better nutrition behaviours (Laska et al., 2012; Majors, 2015).

Food choices, as well as lifestyle factors, genetic make-up, and the environment one resides in, determine an individual’s ability to maintain good health and abate the development of chronic nutrition-related diseases. Young adults need access to a range of healthful foods, knowledge to guide appropriate food choices, and positive attitudes towards food and eating, balanced with discipline in order to achieve healthy nutritional statuses (Brown et al., 2011). Good nutrition choices come from accurate sources of nutrition information (Chimeli, 2015). Nutrition choices in early adulthood years affect health and nutritional status in future years. Weight perceptions that young individuals have pushes them to seek certain body types through certain weight management behaviours which also affect nutritional status. Individuals with a positive body image accord their body with care and respect and are comfortable even with those body parts which are contrary to a society’s ideals (Andrew et al., 2016). Promoting lifestyle modifications through nutrition education and counselling from healthcare experts and the use of a theoretical perspective (i.e. the health belief model, the theory of planned behaviour, the social cognitive theory or the trans-theoretical model) can go a long way in improving the well-being of a person who would like to alter their weight (Ceccarini et al., 2015; Strychar, 2007).
CHAPTER THREE

3.0 METHODOLOGY

3.1 Research design

This was a cross-sectional study conducted at two key shopping areas in Accra. Participants of different ages but similar characteristics were studied at one point in time.

3.2 Research setting

The study took place in the Accra metropolis in the Greater Accra Region of Ghana. Accra is the capital city of Ghana; an urban and vibrant setting that comprises of people of diverse ethnicities, occupations, and backgrounds. Accra has many shopping areas which are heavily populated with young individuals. Shopping areas are a central point of convergence for people from different localities, especially the youth (Matthews, Taylor, Percy-Smith, & Limb, 2000). Participants in a study conducted by Ahmed, Ghingold, & Dahari, (2007), described shopping areas as a welcoming place for the youth especially, to socialize with friends. This indicates that shopping areas can be used as an alternative convenient research setting for collecting data on young adults due to the fact that shopping areas have evolved from mere venues for purchasing items and into convergent points for young adults to socialize and participate in other recreational activities. Also, shopping areas are open to a diverse range of people, including young adults who are not in post-secondary educational institutes as well as those who are in post-secondary educational institutes. Thus, this setting provides researchers with a wide range of participants to select from and thus bring variability to a study’s results. According to google map data 2016, the shopping malls and major markets located in the Accra metropolis were as follows:
**Shopping malls:** Marina mall, A&C shopping centre, Makola shopping mall, Achimota retail centre, Accra mall, Oxford street mall, Junction mall-Nungua, Palace Hypermarket interchange, Melcom plus, Melcom shopping mall-Accra central, Shaaba shopping mall, and the Legon mall.

**Markets:** Agbosbloshie market, Nima market, Makola market, Kaneshie market, Osu market, Salaga market and Kantamanto market.

The names of the shopping malls and markets were written on pieces of papers and mixed up in two different bowls for each. A volunteer, who had nothing to do with this study, was asked to pick a paper from each bowl; the Accra mall and Makola market were randomly selected using this technique i.e. the fishbowl technique

The Accra Mall is a retail and shopping center located in the Accra metropolis of Accra, Ghana, on the Tetteh Quarshie Interchange adjacent to the Tema Motorway. It is one of the modern and most patronized shopping areas in Ghana. The mall is enclosed, has 20,322 square metres of retail space and accommodates 65 line-shops and 9 restaurants, all of which are highly patronized by the youth (www.accramall.com). Makola market is located in the Accra metropolitan area and is an extensive open-space shopping area. It consists of rows upon rows of stalls, people selling openly on pavements; one can purchase several food products, African textiles, clothes, shoes and cosmetics. The market’s central location ensures that it enjoys a lot of patronage from residents of Accra and tourists alike (Oteng-Ababio & Sarpong, 2015).

### 3.3 Study population

The target population was young adults between the ages of 18 to 25.
3.4 Inclusion criteria and exclusion criteria

Young adults were included if they: a) had completed at least their junior high school education, b) were residing in the Accra metropolis at the commencement of the study and c) were willing to participate in the study.

Individuals with symptomatic diseases, pedal oedema, physically disabled or who were pregnant were excluded from the study as this would have affected the accuracy of anthropometric measurements.

3.5 Sample size determination

According to the Ghana Statistical Services (GSS), 2010 Population and Housing Census, 15 to 19 year olds in the Greater Accra Region make up a sum total of 388,403 (9.7%); 20 to 24 year olds are 458,075 in number (11.4%) and 25 to 29 year olds are 443,383 in number (11.1%).

The age demographic of Ghanaians has been stratified such that getting an exact figure for the population of 18 to 25 year olds from the 2010 population and housing census would not be possible; hence estimates had to be made from data provided.

In view of this, the first assumption was that, 18 to 19 year olds made up $\frac{2}{5}$th of the 15 to 19 year old population i.e.

$$2/5 \times 388,403 = 155,361 \text{ people}$$

The second assumption was that 25 year olds made $\frac{1}{5}$th of the 25 to 29 year old population i.e.

$$1/5 \times 443,383 = 88,677 \text{ people}$$
The 20 to 24 year old population, which was 458,075, was not mathematically manipulated since this age group fell within the study’s target group.

Therefore, the estimated population of 18 to 25 year olds in the Greater Accra Region was 702,113 people (i.e. 155,361 people + 88,677 people + 458,075 = 702,113).

The sample size was calculated based on Yamane’s Formula:

\[ n = \frac{N}{1 + Ne^2} \]

Where:

- \( n \) = sample size
- \( N \) = approximated population size
- \( e \) = margin of error

Thus, using a confidence level of 92%: \( N = 702,113 \quad e = 8\% = 0.08 \)

\[
\begin{align*}
n &= \frac{702,113}{1 + (702,113 \times 0.08^2)} \\
&= 156.22 \\
&\approx 157
\end{align*}
\]

This was approximately 157 young adults.

Using a contingency rate of 10%, 173 subjects were calculated to be the minimum number of study participants to be recruited for this study.

### 3.6 Data collection

Participants were recruited using convenience sampling method at both the Accra mall and Makola market. The researcher and her field assistants briefly engaged young adults encountered at the research settings to establish if they resided in the Accra metropolis, their date of birth to confirm their age and whether they met every aspect of this study’s inclusion criteria. The
objectives of the study were thoroughly explained to prospective participants, after which, written consent to participate in the study was obtained from all interested participants once they verbally agreed to participate. A pretested questionnaire was used to obtain demographic information, as well as data for the three major sections of the study i.e. sources of nutrition information, weight perceptions and weight management practices. The structured questionnaire was interviewer administered and hence interviews and anthropometric measurements were conducted in-person by the researcher and field assistants. Study participants spent approximately 20 minutes on the questionnaire. A total of 192 study participants completed the questionnaire and had their anthropometric measurements taken.

3.7 Measures and instruments

A structured questionnaire was used to obtain data from the participants (see Appendix II). This assessed several variables as described below.

3.7.1 Demographic information

This included gender, ethnicity, age, marital status, occupation and highest education qualification.

3.7.2 Assessment of sources of nutrition information

The questions posed in this section were adapted from Percheski & Hargittai (2011), in their study on health information-seeking behaviours in a college-aged population. According to Percheski & Hargittai, (2011), sources of health information could be categorized into four major groups i.e. family and friends, healthcare professionals, online resources and traditional media.
Alternatively, family and friends could be treated as separate entities. In this study, five sources of information were provided in a table: Family members, online resources, friends and peers, healthcare professionals and traditional media. A Likert scale with options: ‘always’, ‘sometimes’, ‘rarely’ and ‘never’, was provided for participants to identify how often they turn to these sources when they seek information regarding their nutrition. The researcher made room for any other likely option that a participant may mention. Perceived trustworthiness of these sources was also assessed, using a Likert scale with options: ‘unreliable’, ‘fairly reliable’, ‘very reliable’, and ‘accurate’.

3.7.3 **Assessment of weight management practices and lifestyle**

In this section, questions addressed whether a participant was trying to do something about their weight. Participants were asked whether they were currently trying to lose weight, gain weight, maintain their current weight or were not trying to do anything about their weight.

In assessing the perceived sources of pressure to be a certain weight, an open-ended question was posed to identify who talked the most about the participant’s weight. Further questions were posed to identify any approaches or treatments actively being used by a participant to alter or manage their weight. Questions were adapted from Majors, (2015) and pilot tested before use. Lifestyle behaviours were examined using a series of questions that assessed alcohol consumption, whether participants were smokers or not and their physical activity levels in a typical week. Questions were adapted from Majors, (2015) and Zaccagni *et al.*, (2014). Information was gathered on the number of complete meals a participant ate on a typical day, whether these meals were home-cooked or bought, how often one ate out and how many sachets of water a participant drank on a typical day. A food frequency questionnaire was adapted from
Majors, (2015) and the United States’ National Health & Nutrition Examination Survey (NHANES); it was slightly modified to fit into the Ghanaian context. Statements questioning how often food options were consumed in a typical week were presented and a Likert scale was attached to these questions with the options: 1-2 times a week, 3-4 times a week, 5-6 times a week, 7 times a week or never. This was to identify dietary patterns of the participants.

3.7.4 Assessment of weight perceptions

Pulvers’ figure rating scale (Pulvers et al., 2004) was shown to participants in this section of the questionnaire. This particular standardized figure rating scale was used because of its cultural relevance as a body image rating instrument for people of African descent (Pulvers et al., 2004). Participants were presented a series of nine male and nine female silhouette pictures that depicted body sizes starting from very thin (assigned ‘1’) and ending at morbidly obese (assigned ‘9’). The assignment of body weight status on the figure rating scale was as follows: underweight (silhouettes 1 and 2), Normal Weight (silhouettes 3, 4 and 5), Overweight (silhouettes 6 and 7) and Obese (silhouettes 8 and 9). The pictures were arranged in two rows. The top row depicted male body sizes while the one below represented body sizes for females. Participants were required to circle one of the nine silhouettes that fit the participant’s idea of what their current body looks like, the body type the participant wants for them self, the body type the participant thinks Ghanaian society wants for their sex and the ideal body for the opposite sex. This section of the questionnaire was adapted from Pulvers et al., (2004); Maruf et al., (2012); Zaccagni et al., (2014).
3.7.5 Anthropometric measurements

All anthropometric measurements were taken as per standard procedures (CDC, 2007). The height of study participants was taken using a portable wall-mounted stadiometer (Seca GmBh & Co. 2171821009 Stadiometer). Participants stood upright with their back against a wall and their head in the Frankfurt horizontal plane while the researcher and field assistant took the height measurement. Weight was measured using a digital weighing scale (Ohaus SD 200 Digital Scale); participants wore light clothing and were barefoot or wearing light socks whilst their weight and height were being measured. The waist and hips was measured using a flexible tape measure, in order to calculate the waist-to-hip ratio of participants.

3.8 Statistical analyses

Demographic data, sources of nutrition information, perceived reliability, weight perceptions, anthropometric measurements, weight management strategies, lifestyle habits and dietary habits of participants underwent descriptive analysis.

The analysis of participants’ Feel-weight-status-minus-Actual-weight-status Index (FAI), i.e. a section of weight perceptions, was as follows: the BMI of a participant was referred to as their ‘Actual-weight-status’. Actual-weight-status was categorized based on WHO’s cut-points for adults: underweight i.e. a BMI below 18.5 kg/m², normal weight i.e. BMI from 18.5kg/m² to 24.9 kg/m², overweight i.e. BMI from 25 kg/m² to 29.9 kg/m², and obese i.e. above 29.9 kg/m². As described by Zaccagni et al., (2014), in their study, FAI is an index used to assess if there is or not a realistic weight status perception in a participant on the basis of body size assessment (i.e. Actual-weight-status) and the feel figure (i.e. the silhouette a participant picked as their opinion of what their current body looks like). Scores were calculated by subtracting the actual-weight-status score from perceived current body weight score (i.e. feel-weight-status). An
underweight actual-weight-status got a score of 1, normal weight actual-weight-status got a score of 2 and overweight actual-weight-status got a score of 3, and an obese actual-weight-status got a score of 4. This conventional code was subtracted from the perceived current body weight (i.e., very thin/thin silhouette, average silhouette, slightly heavy/overweight silhouette and obese silhouette scored 1, 2, 3 and 4 respectively). Scores of zero indicated accurate body image perception. Positive scores indicated that participants perceived that they were heavier (fatter) than they actually were, whereas negative scores indicated that individuals perceived that they were thinner than they actually were in reality.

Logistic regression was conducted to examine the possible association between sources of nutrition information and the nutritional status of participants. Source of nutrition information was the independent variable (coded as yes, I use this source or no, I do not use this source) and nutritional status was the dependent variable (coded as unhealthy BMI and healthy BMI for one aspect of the test and unhealthy waist-to-hip ratio and healthy waist-to-hip ratio for the other aspect of the test; both aspects of the test were used to explain participants’ nutritional status).

Binary logistic regression analysis was used to examine the possible relationship between weight perceptions and the nutritional status of participants in this study. There were seven independent variables which included Feel-weight-status-minus-Actual-weight-status Index (FAI) which was used to represent weight perceptions (coded as inaccurate body image perception and accurate body image perception). Nutritional status was the dependent variable (coded as unhealthy BMI and healthy BMI for one test-run and unhealthy waist-to-hip ratio and healthy waist-to-hip ratio for another test-run both tests were used to explain participants’ nutritional status).

Statistical package for social scientists (SPSS) 16.0 software was used to analyze all data at 95% confidence interval.
3.9 Ethical consideration

Ethical approval to conduct this study was obtained from the Ethics Committee for Basic and Applied Science (ECBAS), University of Ghana (ECBAS 006/16-17). Permission to collect data from the Accra mall was obtained from management of the mall. Makola market is an open market, thus this process was not required. Participants were enrolled into the study only after they had given consent by signing two copies of the consent form, one of which was kept by each participant and the other by the researcher. They were assured of anonymity and confidentiality in the management of the information that they would provide. They were also made to understand that they had the right to withdraw from the study at any point in time if they wished to.
CHAPTER FOUR

4.0 RESULTS

4.1 Demographic characteristics of participants

One hundred and ninety-two participants took part in this study; 98 were females (51.0%) and 94 were males (49.0%). Ninety-three participants (48.4%) were interviewed at the Accra shopping mall while 99 participants (51.6%) were interviewed at the Makola market. At the time of survey, 76.0% of participants were single and 24.0% were in romantic relationships. None were married (see Table 4.1).

The age of study participants ranged from 18 to 25 years and the mean age was 21.8(2.2) years (Table 4.1). Akans were the major ethnic group in the study. Most of the participants were students (66.1%) and had completed a senior high school level education.
Table 4.1. Demographic classification of participants (n=192)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD)</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>21.8 (2.2)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akan</td>
<td>94(49.0)</td>
<td></td>
</tr>
<tr>
<td>Ewe</td>
<td>45(23.4)</td>
<td></td>
</tr>
<tr>
<td>Ga-Adangbe</td>
<td>40(20.8)</td>
<td></td>
</tr>
<tr>
<td>Northerner</td>
<td>13(6.8)</td>
<td></td>
</tr>
<tr>
<td>Occupation*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>127(66.1)</td>
<td></td>
</tr>
<tr>
<td>Services/Sales workers</td>
<td>23(12.0)</td>
<td></td>
</tr>
<tr>
<td>Professionals</td>
<td>19(9.9)</td>
<td></td>
</tr>
<tr>
<td>Crafts and related trades workers</td>
<td>9(4.7)</td>
<td></td>
</tr>
<tr>
<td>Clerical support workers</td>
<td>3(1.6)</td>
<td></td>
</tr>
<tr>
<td>Elementary Occupation</td>
<td>1(0.5)</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>5(2.6)</td>
<td></td>
</tr>
<tr>
<td>Other(^1)</td>
<td>5(2.6)</td>
<td></td>
</tr>
<tr>
<td>Highest Qualification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior high school</td>
<td>127(66.1)</td>
<td></td>
</tr>
<tr>
<td>Post-secondary school</td>
<td>44(22.9)</td>
<td></td>
</tr>
<tr>
<td>Junior high school</td>
<td>21(10.9)</td>
<td></td>
</tr>
</tbody>
</table>

*Aside from ‘student’, occupation of participants was categorized based on the International Standard Classification of Occupations (ISCO) by the International Labour Organization (ILO)

\(^1\)Other occupations reported were footballer and actor/actress

\(^2\)Includes clerical, vocational, polytechnic and university institutes

4.2 Participants’ reported sources of nutrition information

Figure 4.1 illustrates the various sources of nutrition information and the extent to which these sources were used by study participants when seeking information on nutrition.

Of the several sources mentioned, online resources were the most popular source used to seek information on nutrition among study participants. Only 5 participants (2.6%) indicated that they never used online resources when seeking information on nutrition. Of the total sample, 178 participants (92.7%) reported that they always turned to online resources when they sought
nutrition information. Traditional media was the second most used source when young adults in this study sought nutrition information. One hundred and twelve participants (112; 58.3%) always sought nutrition information from traditional media which include television programmes, radio programmes and newspaper articles. Healthcare professionals were the least used source of nutrition information as 168 participants (87.5%) never sought nutrition information from healthcare professionals, including nutritionists and dietitians.

**Figure 4.1.** Sources of participants’ nutrition information (N=192)
4.2.1 Participants’ perceived reliability of sources of nutrition information

Figure 4.2 illustrates that majority of study participants, i.e. 166 participants (86.5%), perceived nutrition information from healthcare professionals as very reliable, 14 participants (7.3%) felt information from healthcare professionals was fairly reliable while the rest perceived nutrition information from healthcare professionals as unreliable. One hundred and fifty study participants (150; 78.1%) perceived nutrition information from online resources as very reliable. Nutrition information from friends/peers was perceived by almost half of participants, (46.9%), as the most unreliable source of nutrition information.

![Figure 4.2. Perceived reliability of sources of nutrition information (N=192)](image)
4.3 Weight perceptions of participants

Figure 4.3 illustrates the sources of perceived pressure on participants to be an ‘ideal’ weight. One hundred and thirty six (136) participants (70.8%) believed that friends/peers pressured them to be an ‘ideal’ weight.

Figure 4.3. Participants’ perception on source of pressure to be an ‘ideal’ weight (N=192)
*Friends/Peers includes significant others and a football coach
Figure 4.4 shows participants’ body image discrepancies using Feel-weight-status-minus-Actual-weight-status Index (FAI). Ninety nine of the participants (51.6%) perceived that they were thinner than they actually were in reality.

![Figure 4.4](image)

**Figure 4.4.** Feel-weight-status-minus-Actual-weight-status index of participants; (N=192)

Participants’ body ideals are shown in Table 4.2. The last section of table 4.2 shows the silhouette selected by study participants as the ideal body for members of the opposite sex. Majority of the male participants (80 participants) selected normal weight silhouettes as their idea of the perfect body for themselves. A similar observation was made with female participants. Also, majority of participants selected normal weight silhouettes on answering what
they perceived Ghanaian society idealized as the perfect body for their sex. Again, majority of
the participants selected normal weight silhouettes when they described what they perceived was
the ideal body for members of the opposite sex.

Table 4.2. Participants’ perceptions on body ideals; (N=192)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideal body for one’s self</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td></td>
</tr>
<tr>
<td>Selected an underweight silhouette</td>
<td>14(14.9)</td>
</tr>
<tr>
<td>Selected a normal weight silhouette</td>
<td>80(85.1)</td>
</tr>
<tr>
<td>Selected an overweight silhouette</td>
<td>0(0.0)</td>
</tr>
<tr>
<td>Females</td>
<td></td>
</tr>
<tr>
<td>Selected an underweight silhouette</td>
<td>16(16.3)</td>
</tr>
<tr>
<td>Selected a normal weight silhouette</td>
<td>78(79.6)</td>
</tr>
<tr>
<td>Selected an overweight silhouette</td>
<td>4(4.1)</td>
</tr>
<tr>
<td>Ghanaian society considers the ideal body for my sex...</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td></td>
</tr>
<tr>
<td>Selected an underweight silhouette</td>
<td>9(9.6)</td>
</tr>
<tr>
<td>Selected a normal weight silhouette</td>
<td>81(86.2)</td>
</tr>
<tr>
<td>Selected an overweight silhouette</td>
<td>4(4.3)</td>
</tr>
<tr>
<td>Females</td>
<td></td>
</tr>
<tr>
<td>Selected an underweight silhouette</td>
<td>5(5.1)</td>
</tr>
<tr>
<td>Selected a normal weight silhouette</td>
<td>81(82.7)</td>
</tr>
<tr>
<td>Selected an overweight silhouette</td>
<td>12(12.2)</td>
</tr>
<tr>
<td>Ideal body for members of the opposite sex</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td></td>
</tr>
<tr>
<td>Selected an underweight silhouette</td>
<td>6(6.4)</td>
</tr>
<tr>
<td>Selected a normal weight silhouette</td>
<td>85(90.4)</td>
</tr>
<tr>
<td>Selected an overweight silhouette</td>
<td>3(3.2)</td>
</tr>
<tr>
<td>Females</td>
<td></td>
</tr>
<tr>
<td>Selected an underweight silhouette</td>
<td>12(12.2)</td>
</tr>
<tr>
<td>Selected a normal weight silhouette</td>
<td>86(87.8)</td>
</tr>
<tr>
<td>Selected an overweight silhouette</td>
<td>0(0.0)</td>
</tr>
</tbody>
</table>
4.4 Anthropometric measurements of study participants

Table 4.3 is a summary of the participants’ anthropometric measurements.

Table 4.3. Mean (SD) of anthropometric measurements grouped according to sex (N=192)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*BMI (kg/m²)</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>22.2(3.0)</td>
</tr>
<tr>
<td>Females</td>
<td>22.7(3.8)</td>
</tr>
<tr>
<td>**WHR</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>0.79(0.05)</td>
</tr>
<tr>
<td>Females</td>
<td>0.76(0.04)</td>
</tr>
</tbody>
</table>

*BMI refers to Body Mass Index categorized based on WHO cut-offs for adults
**WHR refers to Waist-to-Hip Ratio categorized based on WHO cut-offs for adults

More than half of the participants (69.3%) had a normal body mass index (BMI). Waist-to-hip ratio (WHR) was normal for 66.1% of the participants. However, more females (58.2%) than males (8.2%) were overweight according to standard waist-to-hip ratio measurements.

Figure 4.5. Nutritional status of study participants (N=192)
4.5 Weight management strategies

Figure 4.6 illustrates the distribution of participants based on their personal concerns about their own current body weight. In all, more than half of the participants were not satisfied with their current body weight.

![Figure 4.6](image)

**Figure 4.6.** Participants’ personal concerns on their current body weight (N=192)

4.5.1 Assessment of study participants who were actively managing their weight

Figures 4.7 and 4.8 illustrate what study participants were doing about their weight at the time of the interview. Sixty four of the female participants (65.3%), were dissatisfied with their weight and 48.4% of the 64 were trying to lose weight. Forty nine of the male participants (52.1%) were satisfied with their weight and 51.0% of the 49 were trying to maintain their current weight.
Figure 4.7. What female participants were doing about their weight at the time of the interview (N=98)

- 98 females (51.0% of sample)
  - 64 females (65.3%) were ‘dissatisfied’ with their weight
    - 31 dissatisfied females (48.4%) were trying to lose weight
    - 30 dissatisfied females (46.9%) were trying to gain weight
    - 2 dissatisfied females (3.1%) were trying to maintain their weight
  - 34 females (34.7%) were ‘satisfied’ with their weight
    - 18 satisfied females (52.9%) were not trying to do anything about their weight
    - 14 satisfied females (41.2%) were trying to maintain their weight
    - 1 satisfied female (3.0%) was trying to gain weight
    - 1 satisfied female (2.9%) was trying to lose weight
Figure 4.8. What male participants were doing about their weight at the time of the interview (N=94)

94 males (49.0% of sample)

45 males (47.9%) were ‘dissatisfied’ with their weight

- 2 dissatisfied males (4.4%) were not trying to do anything about their weight
- 22 dissatisfied males (48.9%) were trying to lose weight
- 20 dissatisfied males (44.4%) were trying to gain weight
- 1 dissatisfied male (2.2%) was trying to maintain his weight

49 males (52.1%) were ‘satisfied’ with their weight

- 24 satisfied males (49.0%) were not trying to do anything about their weight
- 0 satisfied males (0.0%) were trying to lose weight
- 25 satisfied males (51.0%) were trying to maintain their weight

0 satisfied males (0.0%) were trying to gain weight
4.5.2 Strategies employed by participants to alter or maintain weight status

A total of 118 participants (61.5% of the total sample) were actively trying to maintain or alter their weight at the time of the interview. Three major strategies were identified among participants; engaging in physical activity being the most employed strategy reported. Twelve (12) females and 34 males were engaged in physical activity. Thirty one (31) females and 11 males were involved in some form of dieting. Sixteen females and 14 males were making lifestyle modifications (participants in this category used combinations of physical activity, eating a balanced diet and changes in daily routines that may have hampered wellness previously). Figure 4.9 shows the distribution of study participants who were consciously managing their weight.

Figure 4.9. Weight management strategies employed by participants; (N=118)
Of the 41 participants who were actively dieting, 20 (48.8%) felt that dieting was helping them to reach their weight goals. Forty-one (89%) of the 46 participants who were using physical activity to attain their weight goals, reported that this strategy was working for them. Nineteen (63.3%) of the 30 participants, who had made lifestyle modifications reported that this strategy was helping them achieve their weight goals.

4.6 Lifestyle habits of study participants

Majority of participants, (153, 79.7%), did not drink alcohol and did not smoke cigarettes (189 98.4%). On the other hand, majority of participants i.e. 137 (71.4%), dined at eateries more than 3 times in a typical week.

4.6.1 Physical activity levels of study participants in a typical week

Figure 4.10 shows the amount of time participants reported to be involved in moderate-intensity aerobic physical activity in a typical week. One hundred and two study participants (102; 53.1%) reported that in a typical week they spent less than thirty minutes involved in moderate-intensity aerobic physical activity.
Figure 4.10. Participants’ time spent in moderate-intensity physical activity in a typical week (N=192)

4.6.2 Reported dietary habits of study participants

Half of the participants (50.5%) drank at least 3 liters of water on a typical day; 37.5% drank 2.0 liters to 2.5 liters of water and 12.0% reported drinking less than 1.5 liters of water on a typical day.

Ninety five participants (49.5%) reported eating two complete meals on a typical day; 75 participants (39.1%) ate three complete meals on a typical day, 18 participants (9.4%) consumed more than three complete meals and 4 participants (2.1%) consumed one complete meal on a typical day.
Figure 4.11 shows the meals study participants consumed and the sources on a typical day. Breakfast, as compared to lunch and dinner, was the least consumed meal on a typical day.

**Figure 4.11.** Meals consumed by participants’ on a typical day and the sources of meals (N=192)

Figure 4.12 illustrates participants’ consumption of certain foods in a typical week. Consumption of green vegetables was low; about half of the participants i.e. 103 (53.6%) reported never eating green vegetables. Consumption of fast food was high as majority of participants, 139 (72.4%) reported eating fast food 3 or more times in a week.
Figure 4.12. Participants consumption of certain foods in a typical week (N=192)
4.7 Association between sources of nutrition information and nutritional status

A Pearson chi-square test was performed to examine possible associations between sources of nutrition information and nutritional status of study participants (BMI and WHR were used as indicators). A significant association was observed between nutrition information from family members and BMI \(X^2(2) = 7.1, p=0.031\), with over three-quarters of underweight participants (78.6%) having used family members as a source of nutrition information. A significant association was also observed between nutrition information from friends/peers and WHR \(X^2(1) = 4.4, p=0.044\), with 72.3% of overweight participants using friends/peers as a source of nutrition information. Results are presented in Table 4.4 below:

<table>
<thead>
<tr>
<th>Source of nutrition information</th>
<th>*BMI [n (%)]</th>
<th>**WHR [n (%)]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Underweight</td>
<td>Normal</td>
</tr>
<tr>
<td>Family members</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11(78.6)</td>
<td>65(48.9)</td>
</tr>
<tr>
<td>No</td>
<td>3(21.4)</td>
<td>68(51.1)</td>
</tr>
<tr>
<td>Friends/Peers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>12(85.7)</td>
<td>80(60.2)</td>
</tr>
<tr>
<td>No</td>
<td>2(14.3)</td>
<td>53(39.8)</td>
</tr>
<tr>
<td>Healthcare professionals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3(21.4)</td>
<td>17(12.8)</td>
</tr>
<tr>
<td>No</td>
<td>11(78.6)</td>
<td>116(87.2)</td>
</tr>
<tr>
<td>Online resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14(100)</td>
<td>131(98.5)</td>
</tr>
<tr>
<td>No</td>
<td>0(0)</td>
<td>2(1.5)</td>
</tr>
<tr>
<td>Traditional media</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14(100)</td>
<td>114(85.7)</td>
</tr>
<tr>
<td>No</td>
<td>0(0)</td>
<td>19(14.3)</td>
</tr>
</tbody>
</table>

*BMI refers to Body Mass Index  
**WHR refers to Waist-to-hip ratio  
#p-value < 0.05
Based on the results described in Table 4.4, family members and friends/peers were selected for entry into logistic regression to determine whether they were related to nutritional status (shown in Table 4.5 and Table 4.6).

The odds of a male participant having a healthy waist-to-hip ratio was five times more than a female participant. There was not a significant relationship between family members as a source of nutrition information and the nutritional status of participants.

**Table 4.5.** Logistic regression showing relationship between family members as a source of nutrition information and nutritional status of participants (N=192)

<table>
<thead>
<tr>
<th>Variable</th>
<th>*Normal weight status</th>
<th>**Normal WHR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds ratio</td>
<td>95%CI</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.4</td>
<td>0.74-2.59</td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>1.2</td>
<td>0.41-1.74</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Education qualification</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-secondary</td>
<td>0.8</td>
<td>0.29-1.54</td>
</tr>
<tr>
<td>Secondary</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Family members</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.9</td>
<td>0.46-1.64</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

*Refers to Body Mass Indices which indicate normal weight status

**Refers to Waist-to-hip ratios which indicate normalcy

#p-value < 0.05

Similarly, participants’ sex, but not occupation status, education qualification and the use of friends or peers as a source of nutrition information was significantly related to the waist-to-hip ratio of participants (Table 4.6): the odds of a male participant having a healthy waist-to-hip ratio was five times more than a female participant.
Table 4.6. Logistic regression showing relationship between friends/peers as a source of nutrition information and nutritional status of participants (N=192)

<table>
<thead>
<tr>
<th>Variable</th>
<th>*Normal weight status</th>
<th>**Normal WHR</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds ratio</td>
<td>95%CI</td>
<td>p-value</td>
<td>Odds ratio</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.3</td>
<td>0.72-2.56</td>
<td>0.347</td>
<td>4.5#</td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>1.2</td>
<td>0.56-2.37</td>
<td>0.701</td>
<td>1.1</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Education qualification</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-secondary</td>
<td>0.7</td>
<td>0.29-1.56</td>
<td>0.362</td>
<td>0.8</td>
</tr>
<tr>
<td>Secondary</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Friends/peers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.1</td>
<td>0.58-2.20</td>
<td>0.709</td>
<td>0.9</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>1</td>
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<td>1</td>
</tr>
</tbody>
</table>

*Refers to Body Mass Indices which indicate normal weight status

**Refers to Waist-to-hip ratios which indicate normalcy

# p-value < 0.05

4.8 Relationship between weight perceptions and nutritional status of young adults

The result of the logistic regression used to examine the possibility of a relationship between weight perception and the nutritional status of young adults is shown on Table 4.9. Significant factors were sex, age and Feel-weight-status-minus-Actual-weight-status Index (FAI) of participants. Young adults who had an inaccurate body image perception were 70% less likely to have a healthy nutritional status (normal BMI) than young adults who had an accurate body image perception (95% CI: 0.15 – 0.61). Also, male participants were almost 5 times more likely to have a healthy nutritional status (WHR) as compared to female participants (95% CI: 2.19 – 10.12). Participants aged 18 to 21 were 40% less likely to have a healthy nutritional status (WHR) when compared to participants aged 22 to 25 (95% CI: 0.18 – 0.93).
<table>
<thead>
<tr>
<th>Variable</th>
<th>*Normal weight status</th>
<th>**Normal WHR</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds ratio 95% CI P-value</td>
<td>Odds ratio 95% CI P-value</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.3 0.74 – 2.59 0.302</td>
<td>4.7# 2.19 – 10.12 &lt; 0.001#</td>
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<td></td>
</tr>
<tr>
<td>Female</td>
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<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-21 year olds</td>
<td>0.6 0.30 – 1.41 0.276</td>
<td>0.4# 0.18 – 0.93 0.031#</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22-25 year olds</td>
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<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Education Qualification</strong></td>
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<td></td>
</tr>
<tr>
<td>Post-secondary education</td>
<td>0.6 0.23 – 1.51 0.271</td>
<td>0.8 0.35 – 1.98 0.667</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary school education</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sufficient physical activity</strong>¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.4 0.25 – 2.34 0.772</td>
<td>1.3 0.48 – 3.46 0.610</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eating out</strong>²</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1.3 0.43 – 3.69 0.673</td>
<td>1.7 0.41 – 6.78 0.479</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eating breakfast</strong>³</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>0.8 0.42 – 1.70 0.626</td>
<td>0.7 0.32 – 1.48 0.341</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FAI</strong>²</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inaccurate body image perception</td>
<td>0.3# 0.15 – 0.61 &lt;0.001#</td>
<td>0.5 0.25 – 1.09 0.807</td>
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<tr>
<td>Accurate body image perception</td>
<td>1</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

*Refers to Body Mass Indices which indicate normal weight status
**Refers to Waist-to-hip ratios which indicate normalcy
¹Refers to a participant meeting the WHO recommendations for time spent in aerobic physical activity in a typical week
²Refers to whether a participant dines out at fast food places in a typical week
³Refers to whether a participant eats breakfast on a typical day
⁴Refers to the Feel-weight-status-minus-Actual-weight-status Index
#p-value < 0.05
CHAPTER FIVE

5.0 DISCUSSION

This study assessed young adults’ sources of nutrition information, their weight perceptions and weight management practices at selected shopping areas in the Accra metropolis.

5.1 Background characteristics of participants

Less than a quarter of the participants were in romantic relationships and none were married. According to Arnett, (2000), few modern-day young adults are likely to marry at this life-stage (18 to 25 years), as they are exploring various options and may not want to be tied down to commitment. Over half of the study’s participants were students from various educational institutions in the Accra metropolis. According to Larson et al., (2011), young adults go through an array of different life circumstances; some pursue post-secondary educations as soon as they complete their secondary school education whereas others are engaged in activities outside of academia yet all the same relevant. The decision to conduct this study at shopping areas made it possible to meet young adults in different circumstances such as studying and working in various occupations, while others were unwillingly unemployed.

5.2 Participants’ sources of nutrition information and perceived reliability of sources

Online resources were the first place most participants turned to when looking for information on nutrition. In searching for information to carry out weight management strategies, online resources were also the predominant source of information. This finding correlates with a study conducted in the United Kingdom by Percheski & Hargittai, (2011). The study found that the
internet was the first place young people sought health information from. Another study conducted by Head & Eisenberg, (2010), reported that young adults used the internet the most when they needed health information. With the increase in the improvement of telecommunication technologies in Ghana, more Ghanaians have access to the internet than previous years when telecommunication infrastructure was not as advanced (Obasola & Agunbiade, 2016). This may account for why online resources were heavily patronized as a source of nutrition information among participants. The fact that many young people have the internet at their service on several portable digital devices, anywhere and at any time (Perloff, 2014) has allowed more opportunities to look up information rapidly and conveniently. The finding that many participants always turn to online resources when they deliberately look for information on nutrition and its related topics is consistent with a finding by Zhang, (2012), who observed in his study that information on health is intentionally sought by young adults using search engines on the internet. Participants in the present study said that there were times when they were following up on friends on social media and happened to come across information on nutrition-related topics. This confirms the observations made by Zhang, (2012), and Chimeli, (2015), that young adults passively encounter information related to nutrition while using social networking sites. According to Chimeli, (2015), young adults are more likely to unexpectedly come across nutrition information rather than intentionally seek it for themselves since most do not prioritize nutrition at this point in their lives. Majority of participants in the present study considered online resources as very reliable. This finding contradicted Zhang, (2012), who reported that young adults did not perceive online resources as wholly reliable when looking for health-related matters because young adults on social networking sites felt it was important to
represent themselves as a healthy person even though they may be struggling with health issues offline.

Traditional media was the second most used source of nutrition information. According to Perloff, (2014), traditional media puts forth ideals through television, radio and printed publications. The information disseminated by traditional media is often made for heterogeneous audiences and not tailored to meet specific needs of individuals (Perloff, 2014). Traditional media can be impersonal. This may be the reason why many participants in this study indicated that information they acquired from traditional media came about passively. Participants expressed that they did not go out of their way to look for television shows, radio programmes, magazines or newspaper articles with information on nutrition; they just happened to come across it and, at times, they found it useful in the end. Online resources and traditional media were in the top three sources of information on how to manage weight; this finding gives credence to the concept that disseminators of information play a role in influencing a young adult’s nutrition-related behaviours.

Friends and peers were the third most used source of nutrition information. Surprisingly, friends and peers were the second most used source of information to carry out weight management strategies although study participants perceived nutrition information from friends and peers as the least reliable source of information. This outcome supports the notion put forth in the conceptual framework that peers do influence young adults’ lifestyles which affects their nutrition-related behaviours as observed with several participants receiving information on how to manage their weight from friends and peers. According to Ali et al., (2013) and Maruf et al., (2012) young adults’ perceptions of weight is influenced by the weight of their friends and this
may lead them to seek information from them. Some participants indicated that after consulting friends they would use the internet to verify whatever information their friends or peers gave them. Others included that they would only speak to friends and peers if they were certain they could give useful information on their nutritional inquiries. This finding is consistent with Zhang, (2012), who reported that young adults questioned the quality of health information that came from their friends and that they doubted the level of medical knowledge of their friends and peers. However, they did use friends to find lifestyle information and ask about treatments for mild conditions. Also, more female participants than males turned to friends and peers for information on nutrition. Maruf et al., (2012), reports in his study, that young women are influenced by evidence of others competence; females are more vocal about health challenges they go through and are hence influenced more than males by feedback from peers. This may be the reason why females in this study used their friends and peers for nutrition information more than males reported.

Family members was the fourth most used source of nutrition information with more female participants, once again, turning to members of their family for information on nutrition than male participants. This finding affirms Majors’, (2015), report on a study where significantly higher percentages of young women than men accessed nutrition information from family members. According to Perloff, (2014), young adults who live with their parents are less likely to use any other source of information except for family; this may be a reason why family members as a source of nutrition information was not keenly patronized as many participants were living away from home. Interestingly, in the present study, participants who turned to family members for nutrition information were less likely to have a healthy nutritional status. This may be the result of some participants who reported that they felt their family members lacked technical
know-how on nutrition-related matters that affected them and hence they felt they were unqualified to give them information on nutrition. This is consistent with Percheski & Hargittai’s, (2011), observation that young adults whose parents have a higher education had greater odds of seeking health information from family and friends than those with less educated parents.

Healthcare professionals were the least used source of nutrition information, although they were perceived as the most reliable source, even more so than online resources. According to Percheski & Hargittai, (2011), individuals who had health insurance during childhood and had regular medical checkups growing up, probably have set habits of consulting medical professionals with regards to various aspects of their health and not just for curative medical purposes. In the present study, only a few participants had ever approached a healthcare professional with the intention of seeking information on nutrition. Participants indicated that they would only see a healthcare professional when sick and not because they had questions on nutrition per se. Obasola & Agunbiade, (2016), pointed out in their study that in many developing countries there are firmly held cultures of self-care practices. When it comes to health only severe malaise would push one to seek professional medical assistance. A random sample of medical facilities in Accra indicated that to see a registered dietitian or nutritionist in a medical facility would attract a fee ranging from ten Ghana cedis to thirty Ghana cedis. Many young adults have limited financial freedom and may not be willing to part with their money for one session with a healthcare professional while they can purchase data at a cheaper price and go online for nutrition information.
5.3 Participants’ weight perceptions

More females were dissatisfied with their current weight status than males. This finding may be explained by the observation made by El Ansari et al., (2010), and Perloff, (2014), that young females appear to be more concerned about appearance management and are more likely to show discontent with their appearance than young males.

5.3.1 Participants’ self-assessment of weight status

About two-thirds of participants had normal actual-weight-statuses (i.e. BMIs), yet, less than half of the participants had an accurate self-assessment of their weight. The assessment revealed that half of the participants thought that they were thinner than they actually were in reality. Renzaho et al., (2012), reported that Blacks were less likely than other racial groups to perceive themselves as ‘fatter’ than they actually are and this may be due to many Blacks belonging to collectivist cultures which encourage weight ideals that are usually overweight-looking. This affirms why perhaps half of the study participants supposed they were of a lower weight status when in reality they were of a higher actual-weight-status. A few participants thought that they were of a higher actual-weight-status (fatter) when in reality they had a lower actual-weight-status.

Over three quarters of the participants considered a normal weight silhouette as the ideal body for them selves. Poobalan & Aucott, (2016), reported of a study on weight perception among 21-year-olds in Nigeria. They found that less than half of overweight males perceived overweight as their personal ideal weight status whereas all the overweight females perceived normal weight as their personal ideal weight status. This was not the case with participants in this study; over half
of the participants had a normal body mass index and most selected normal weight silhouettes as their personal ideals.

An interesting find was that while no male participant selected an overweight silhouette as their personal ideal body, female participants did. El Ansari et al., (2010), stated in their study that some young men are alarmed about being overweight and are determined to get a leaner stature; this observation corroborates the present finding that male participants were not keen on having an overweight-looking physique. Zaccagni et al., (2014), reported that male participants in their study found a greater variety of body shapes to be acceptable than their female participants who seemed to have a narrower range of what they considered acceptable. This observation by Zaccagni et al., (2014), did not correlate with findings in this study with majority of male participants selecting normal weight silhouettes and the rest choosing an underweight silhouette (slender-looking) - it was one or the other. On the other hand, female participants in this study showed that they were more open to a wider range of body types; they selected a wide range of silhouettes from underweight all the way to obese although majority selected normal weight silhouettes as their personal ideal.

5.3.2 Participants’ perceptions on ideal body of the opposite sex

Majority of male participants preferred females who had a normal weight status. Interestingly, only a few male participants felt an overweight physique was ideal for a female; in fact, more male participants indicated that they preferred females who had slender physiques than overweight physiques. Perhaps the ‘ideal’ traditional Ghanaian form of ‘full-bodied’ females being considered attractive has changed among young Ghanaian male adults. This was an interesting finding that contradicted reports from Benkeser et al., (2012); Coetzee et al., (2012);
Ettarh et al., (2013); Poobalan & Aucott, (2016), and Renzaho et al., (2012) who in separate studies stated that members of sub-Saharan African societies considered overweight women attractive because traditionally this is associated with fertility and prosperity.

Interestingly, not a single female participant considered an overweight physique desirable in a male. In fact, majority of female participants felt that a normal weight status was ideal for a male while the rest considered a lean frame the best physique for a male. This observation corroborates findings of a study conducted by Zaccagni et al., (2014), where female participants described more muscular-looking men as the ideal male body with none considering a chubby-looking man desirable. The finding that female participants preferred leaner male frames is not a very African concept, it comes across as more westernized body ideals for males i.e. leanness, strength (muscularity) and height (Perloff, 2014).

5.3.3 Participants’ perceptions on Ghanaian society body ideals

As stated by Adusei, (2014), Ghanaian culture favours overweight figures, yet over three-quarters of participants felt that Ghanaian society wanted them to look like normal-weight-status silhouettes. More males than females considered underweight silhouettes as the Ghanaian society’s body ideal for their sex. More females were of the view that Ghanaians preferred women who were overweight while a few males felt that Ghanaians wanted men to have an overweight physique.

Adusei, (2014), described in her study that Ghanaians traditionally tend to idealize the well-rounded individual, a shape that in the western part of the world approximates ‘overweight’. Both Poobalan & Aucott, (2016), and Renzaho et al., (2012), pointed out in separate studies that collectivistic societies (many of which are sub-Saharan African nations) show preferences for a
full-bodied physique, and a rounded body is the norm for both men and women; it was therefore interesting to find in this study that most study participants perceived normal weight statuses as Ghanaian society’s ideal. Adusei, (2014), also made mention in her work that overweight individuals were at times taunted as ‘oboshie’ or ‘obolo’- words which translate into ‘fat person’ in the local Ghanaian dialect- and that these names may be stigmatization tools which may deter a modern-day young person from thinking that being overweight is beautiful. According to Coetzee et al., (2012), young men and women from developing countries who are acculturated to Westernized lifestyles are more likely to want to attain the ‘ideal’ thin image portrayed by the West. Many young adults have a heavy online presence and this has exposed them to different cultures and perspectives; pictures of people- celebrities to normal individuals on frequented online platforms can impact on a young person’s perception of what it means to be ‘beautiful’ (El Ansari et al., 2010; Zhang, 2012). With the observation that almost all of this study’s participants used online resources to access information on nutrition and its related topics, perhaps there is a change in the traditional Ghanaian preference as described by Adusei, (2014), to a leaner frame due to there being more opportunities for social comparison and constant surveillance of body parts through online resources. Coetzee et al., (2012), stated that with recent political and economic progress in Africa, this may just have altered body size preferences among young Africans who are being exposed to more westernized ideas.

5.4 Lifestyle habits of participants

Studies by Majors, (2015) and Abel et al., (2015) reported of young adults developing harmful habits such as smoking, drinking excessive amounts of alcohol and eating unhealthily during the young adulthood period. Personal attitudes and principles may explain why almost all study participants were non-smokers as they indicated that they believed that smoking was bad for
them and over three-quarters of participants did not drink alcohol at all. According to Brown et al., (2011) moderate alcohol consumption is not unhealthy; it was observed that of the study participants who did drink alcohol, majority reported drinking alcohol sporadically. On the other hand, an unhealthy habit was observed as majority of participants dined at fast food eateries more than three times in a typical week. This finding corroborates other observations that it is common to see fast food restaurants bustling with young adults as young adults ate meals from fast-food restaurants on an average of two to three times a week in the studies mentioned (Driskell et al., 2006; Larson et al., 2006; Larson et al., 2011; Song, 2016). Study participants who did not eat out at fast food eateries in a typical week were more likely to have a healthier nutritional status than the participants who did eat out at fast food eateries. It was alarming that majority of participants patronized fast food eateries on such a regular basis. This may not be a source of concern to a young adult at this point in their life, but frequent consumption of high energy dense meals could lead to unwanted health outcomes such as the development of nutrition-related diseases (Poobalan & Aucott, 2016).

5.4.1 Participants’ physical activity levels

Any physical activity is better than none according to Brown et al., (2011); even ten minute sessions of moderate-intensity exercise contributes positive health benefits than uninterrupted inactive behaviour. Yet, over half of the participants in the present study spent less than thirty minutes involved in moderate-intensity aerobic physical activity in a typical week. Individuals aged 18 to 64 are recommended by the WHO to do at least one hundred and fifty minutes of moderate-intensity aerobic physical activity throughout the week (World Health Organization, 2010). Over a quarter of the participants spent between thirty to one hundred and fifty minutes in
moderate-intensity aerobic physical activity in a typical week. Less than a quarter of participants spent the WHO recommended one hundred and fifty minutes or more in moderate-intensity aerobic physical activity in a typical week. According to Zaccagni et al., (2014), active individuals tend to be more satisfied with their body than less active individuals. Perhaps this may be the reason why so many participants were dissatisfied with their bodies as only a small fraction were meeting the mark when it came to physical activity engagement. Brown et al., (2011), stated that a healthy looking and firm body occurs with the implementation of regular physical activity into one’s daily routine. Actually, participants who had sufficient physical activity in a typical week were 1.4 times more likely to have a healthier body mass index as compared to participants who did not.

5.4.2 Dietary habits of participants

With the exemption of beverages such as fruit juice or water gained from food, the quantity of water needed each day is approximately 2.8L/day (Brown et al., 2011) (i.e. 5 to 6 local Ghanaian water sachets). Half of the participants met this recommendation by drinking at least three liters of water on a typical day. It is difficult to determine a specific amount of water to drink but to ensure adequate hydration and optimal metabolic functioning, 2.8L/day is said to be adequate.

Two complete meals were eaten by about half of the study participants, over a quarter ate three complete meals on a typical day while a small fraction consumed more than three complete meals and even fewer consumed one complete meal on a typical day. According to Papadaki et al., (2007), changes in living arrangements, financial resource constraints and convenience within limited time influences young adults in making nutrition choices; these may be reasons
why about half of the study participants ate twice a day. The observation that a handful of the participants were living away from their family homes supports the concept that a young adults’ living arrangement influences their lifestyle and hence nutrition choices. The concept of food security playing a role in young adults’ nutrition choices was supported by some participants indicating that eating twice a day was what they could afford. Ideally, three complete meals are recommended but eating two complete meals a day is alright as long as these meals are diverse and balanced to supply key nutrients to meet dietary guidelines for each day (Brown et al., 2011).

Eating habits were shown to also influence the nutrition choices made by participants in this study. Breakfast, as compared to lunch and dinner, was the least consumed meal on a typical day; some participants cited time constraints as the culprit of deciding to turn their breakfast into lunch. According to Majors, (2015), young adults generally skip breakfast or get something they can prepare in a matter of a few minutes instead of preparing food from scratch because of convenience. In the present study, it was observed that participants who did not eat breakfast on a typical day were less likely to have a healthy nutritional status than participants who did eat breakfast on a typical day; research indicates that one of the chief culprits responsible for weight gain is failing to eat breakfast, which is a common dietary behaviour among young adults (Majors, 2015). Lunch was the most purchased meal of the day; many participants indicated that this was due to convenience within limited time.

Food making abilities influenced the nutrition choices made by young adults in this study. Dinner was the most home-cooked meal with females (74.5%) cooking more than males (45.7%). According to Larson et al., (2006), food preparation among young adults was generally
low in their study and particularly low among male participants. Although both males and females may have basic cooking skills, females are more likely to make use of these skills on a regular basis (Larson et al., 2006).

The dietary habits of participants in the present study were not particularly commendable. Over half of study participants did not consume any sort of green vegetables in the week of the interview; only a minute fraction of participants ate green vegetables three or more times that week. Less than half ate vegetables once or twice that week while a quarter ate it thrice or more times in a week. Only a third of participants ate fruits thrice or more times that week. Legumes were not particularly popular either, with less than a quarter consuming legumes and legume-based products thrice or more times in the week. Dietary guidelines recommend young adults should eat at least four hundred grams of fruits and assorted vegetables each day to maintain a healthy nutritional status yet it was observed that the consumption of vegetables, fruits and legumes was very low among this sample of young adults.

Surprisingly, confectionaries were not popular with participants. Only a quarter of participants ate confectionaries thrice or more times that week. This finding contradicted Majors, (2015),’s observation that young people tend to greatly patronize confectionaries. The concept of personal food preferences came into play as many participants in the study said that they did not care for confectionaries so did not eat them often. Young adults need about one hundred and forty-two to two hundred grams of protein foods in a day; almost all study participants ate some sort of animal protein thrice or more times that week. All participants ate some form of starchy food every single day, probably enabling them to meet or exceed the two thousand calories recommendation.
Fizzy drinks were heavily patronized, with most participants drinking sweetened carbonated drinks three or more times in a week. This finding affirms Larson et al.’s., (2009), report that young adults consume large amounts of sugar-sweetened beverages. Apart from the frequent consumption of fizzy drinks leading to the development of dental caries, the large amounts of free sugars found in many fizzy beverages contributes to excess calories in the body which leads to weight gain (World Health Organization, 2015).

5.5 Anthropometry of study participants

Over half of the participants had a normal BMI. However, a male participant in this study was more likely to have a healthier BMI than a female participant. Individuals with healthy BMIs tend to engage in more physical activity than their underweight or overweight counterparts (Sirang et al., 2013). Males tend to be more physically active than females (Zaccagni et al., 2014) and this may account for the observation made in the present study as more male participants engaged in physical activity than female participants. More females were overweight than males, also, more females than males were underweight. Although the predominant actual-weight-status was normal, females exceeded males slightly in unhealthy BMIs. Participants with an inaccurate body image perception were 70% less likely to have a normal weight status; this finding affirms Sirang et al., (2013)’s observation that the perception one has of their own body influences the weight status of a person more so than their actual-weight-status.

In the case of waist-to-hip ratio (WHR), over half of participants had a normal WHR. However, significantly more female participants were overweight than male participants. Actually, male participants were five times more likely to have a healthier waist-to-hip ratio than female participants. The observations made in this study on participants’ anthropometric measurements
is consistent with the study reported by Poobalan & Aucott, (2016), found that in sub-Saharan Africa and Latin America, females had unhealthier BMIs than their male counterparts whereas in Asia and North Africa, males had unhealthier BMIs than females.

5.6 Weight management strategies of participants

The concept of self-efficacy came into play as over half of the study’s participants were actively trying to alter their weight status. Several participants indicated that they were dissatisfied with their current weight status for various reasons including their health and personal preferences for certain body types, hence they were actively trying to alter their weight status. Self-efficacy in this case, was the belief that one had the ability to affect their weight status through certain weight management behaviours. An interesting observation made was that although some females claimed that they were satisfied with their current weight status, some were consciously trying to alter their weight whereas none of the males who claimed that they were satisfied with their current weight status were trying to alter their weight. Since young females are more concerned about their physical appearance than males, they show a need to do something about themselves even if something is not particularly wrong with them (El Ansari et al., 2010; Perloff, 2014).

Although lifestyle modifications were the most appropriate weight management strategy, they were the least popular method used to manage weight in this study. Making lifestyle modifications is recommended as the most appropriate method to use when one is trying to alter their weight (Brown et al., 2011; Grief & Miranda, 2010; Laska et al., 2012; Raynor et al., 2011). According to Ceccarini et al., (2015), lifestyle modifications consist of changes in nutrition coupled with physical activity and a strong psychological support system as these
elements are key to altering and maintaining weight change once it occurs; study participants met Ceccarini et al., (2015)’s criteria as they reported using a combination of exercise and changes in ‘unhealthy’ diets to ‘healthier’ diets in order to manage their weight. Apart from ‘eating healthier’, participants in this category said that they had consciously put a stop to eating late at night and were now eating at set times that were traditionally acceptable (i.e. breakfast in the morning, lunch at noon and supper early evening).

More male participants than females were actively using physical activity to manage their weight; playing sports was a popular response that came from male participants. This observation correlates with Zaccagni et al.’s., (2014), finding that young males with the aim to change their weight status, tend to participate in physical exercise more than young females. No female in this study reported playing a sport but rather skipped, jogged or did stomach exercise. Stomach exercises were described by participants as doing sit-ups with the aim of toning stomach muscles and hence giving their stomachs a flatter appearance. A few female participants reported doing stomach exercises with a waist-trainer on. A waist-trainer is a waist cinching garment that is wrapped around the mid-section of the body to encourage a thinner waistline appearance to form with time due to constriction. Healthcare professionals advice against the use of waist-trainers because extended use can weaken the abdominal muscles and cause the deformation of certain organs (the stomach, liver and lungs). Organs are compressed when waist-trainers are worn; this makes normal breathing difficult which makes exercising with a waist-trainer on unsafe (Lauretta, 2015). A few participants used waist-trainers and they did give positive feedback on its usage. Although participants gave positive feedback on the use of waist-trainers, its continual use may have negative consequences. Thus, this weight management strategy may not be a helpful one.
Physical activity was the weight management strategy with the highest positive feedback; most of the participants who were using physical activity to manage their weight reported that their engagement in physical activities helped them achieve their weight goals. It may be accurate that physical activities helped these young adults to manage their weight since some studies have demonstrated that consistently active individuals are more likely to achieve weight maintenance and have a healthy body composition. According to Brown et al., (2011), loss of fat around the belly is significant using only exercise-induced weight loss strategies among obese individuals. Aside from physical benefits, engaging in sufficient amounts of physical activity brings about positive health benefits psychologically such as reduced incidence of depression (Andrew et al., 2016; Zaccagni et al., 2014).

Dieting as a weight management strategy got less positive feedback than lifestyle modifications; yet, dieting was used much more than making lifestyle modifications. Of the participants using lifestyle modifications as a means to manage their weight, more than half said that it was helping them achieve their weight goals while the participants who were dieting, less than half said it was effective for them. This observation could be explained by the point that people may know from previous experience that dieting alone is not wholly effective as a weight management strategy but still turn to it when trying to alter their weight because it may come across as an easy quick fix for their weight problem (Malinauskas et al., 2006). According to Zaccagni et al., (2014), dieting is more frequent among young women than men when trying to change their weight statuses and this may explain why more female participants in this study were found to be dieting than males. After all, few of the females engaged in weight management were particularly exercise inclined so dieting alone seemed inevitable. Diets can be effective when constructed to meet a specific need of an individual but the long-term application of such
procedures is not usually followed through after weight alteration has been achieved and this may lead to the return of the previous weight status (Raynor et al., 2011). According to Brown et al., (2011), the nutrition recommendation for weight loss is an eating plan low in calories but able to meet the dietary guidelines for healthy eating.

Some participants used food restriction (i.e. starvation or skipping meals) as a means to attain their weight goals. According to Malinauskas et al., (2006), one of the unhealthiest weight management strategies include not eating any food for significant periods of time and skipping meals intentionally as this slows down the body’s normal metabolic activity. Temporal weight loss occurs but with the reversion to old eating habits weight regains are inevitable and at times larger than before (this is termed weight cycling). Weight cycling is even more harmful than being persistently overweight because studies have shown that it is positively associated with higher chances of developing cardiovascular diseases (Brown et al., 2011). Some participants in this study used supplements such as blood tonics and multivitamins because they had heard that these were ‘appetite boosters’ that would help them eat larger portion sizes of food that would eventually lead to weight gain. Others drank a ‘cleanser’ (herbal tea, green tea or lime water) either in the morning or in the evening before going to bed as they had gotten information that it would help them lose weight. Many dietary supplements are unsustainable gimmicks; the cornerstone of successful weight management- whether it is to lose, gain or maintain weight- is to make a long-term lifestyle modification (Brown et al., 2011).
5.8 Limitations to the study

These findings should be interpreted with some level of caution. This was a cross-sectional study; such studies establish possible associations not causality. Although the measurement tool for the assessment of nutrition knowledge was not standardized, the researcher pilot tested it to ensure it was good enough to be used.
CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

- Although healthcare professionals were perceived as the most reliable source of nutrition information, the internet was the first and most used source.
- More than half of the participants had inaccurate perceptions about their current weight statuses and majority of participants felt that the Ghanaian society wanted them to look like normal-weight-status silhouettes.
- Engaging in physical activities, dieting and lifestyle modifications were the three major weight management strategies identified; majority of participants reported using physical activity to attain their weight goals.
- There was a high consumption of fast food and sweetened beverages and less than a quarter of participants met recommendations for time spent in weekly physical activities.
- There was not a significant relationship between sources of participants’ nutrition information and nutritional status. Sex was the only significant covariate.
- Participants with an inaccurate body image perception were 70% less likely to have a normal weight status as compared to participants who had an accurate body image perception. Other significant factors were sex and age.
6.2 Recommendations

The bulk of participants in this study got their information on nutrition from online resources. There is a need to provide reliable internet connection and enlighten the Ghanaian youth on criteria for assessing quality online health information. Results of this study indicated that young adults, regardless of their weight status, would benefit from open discussions with health professionals and educators regarding healthy and effective weight management practices to achieve or maintain a healthy body weight. It will be helpful for healthcare professionals to use online resources as a mode to offer credible information to young adults on nutrition and nutrition-related topics from a Ghanaian point of view.

Tertiary institutions and public health institutions should offer individual related counselling for young adults to cope with the significant life changes they experience and offer counselling that counteracts inaccurate body image concerns to decrease inappropriate weight management strategies. Furthermore, interventions should, depending on the relationship between body image perception and actual BMI among young adults, focus on exercise, leading a healthy lifestyle, making healthy eating choices and altering body image perception.

Further works need to be done on young adults’ nutrition and nutrition-related behaviours in order to explain the nutritional status of emerging adults. It is therefore recommended that there is:

- The establishment of longitudinal studies in Ghana to monitor the nutritional situation of young adults, as this is a critical life-stage.

- Further research using diet history, to gain a better understanding of young adults’ eating behaviours.
REFERENCES


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Gow, R. W., Trace, S. E., & Mazzeo, S. E. (2010). Preventing weight gain in first year college students: an online intervention to prevent the “freshman fifteen”. *Eating behaviors, 11*(1), 33 39.


APPENDICES

Appendix I: Individual consent form

UNIVERSITY OF GHANA

COLLEGE OF BASIC AND APPLIED SCIENCES

Ethics Committee for Basic and Applied Sciences (ECBAS)

PROTOCOL CONSENT FORM

Section A- BACKGROUND INFORMATION

<table>
<thead>
<tr>
<th>Title of Study:</th>
<th>Sources of Nutrition Information, Weight Perceptions and Weight Management Practices Among Young Adults in the Accra Metropolis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Investigator:</td>
<td>Esi Yaabah Quaidoo (Student Investigator)</td>
</tr>
<tr>
<td>Certified Protocol Number</td>
<td></td>
</tr>
</tbody>
</table>

Section B– CONSENT TO PARTICIPATE IN RESEARCH

General Information about Research:
You are invited to participate in a research study that seeks to determine how young people get information on nutrition, their opinions on weight and the things that are done to lose, gain or maintain weight. This study is interested in males and females between the ages of 18 to 25 years, who live in the Accra Metropolis at the time of the study. If you choose to participate in the study, you will be required to provide your personal information (gender, ethnicity, occupation, age, marital status and highest education qualification). You will be asked to answer questions on where you get information on nutrition from. A series of images will be presented to you, where you will identify which image fits your opinion as the question demands. Your height, weight, waist and hip measurements will also be measured. You will also be required to provide information on your eating habits, physical activity levels and the things you eat in a normal week. Please bear in mind there is no right or wrong answer; it is simply what you do and your opinion. It will take 15 to 30 minutes to complete this questionnaire. Your participation in this study will last a day (the day we meet you).

Benefits/Risk of the study:
The researcher or field assistants will touch you because of the height, weight, waist and hip measurements but we guarantee that it will not be in an inappropriate manner. If you are wearing heavy clothing, such as a jacket, you will be required to take it off whilst measurements are being taken. We will also require you to take your footwear off whilst standing on the weighing scale and
stadiometer. You may benefit from the study directly by being informed on your actual height, weight and body mass index if you do not know it.

Confidentiality
The records of this study will be kept private; you will not be named in any oral or written reports and no individual reference will be made that could be linked to your information. The information you give on the questionnaire will be kept in a locked filing cabinet, only the student investigator and her supervisors will have access to the records. In any sort of report we make public, we will not include any information that will make it possible for readers and the public to identify you.

Compensation
Participants will be given two face towels as a token of appreciation

Withdrawal from Study
Taking part in this study is completely voluntary. You may skip any questions that you do not feel comfortable answering. You, the participant, have the right to withdraw at any time without fear of penalty.

Contact for Additional Information
If you have any questions or concerns about completing the questionnaire, its procedures, risks and benefits or about being in this study, please feel free to contact Esi Yaabah Quaidoo on +2330205501330. You may also contact her supervisors, Dr. Agartha Ohemeng, on +2330244862606 or via email: agacof@yahoo.com or Dr. Margaret Amankwah-Poku, on +2330277545995 or via email: mamankwah-poku@ug.edu.gh, if you require further clarification.

- If you have any issues on your rights as a participant you can contact the address below:

  Administrator, Ethics Committee for Basic and Applied Sciences
  College of Basic and Applied Sciences
  University of Ghana
  P. O. Box LG 68
  Legon – Accra
  Tel: +233244692728
  Email: saddo@staff.ug.edu.gh / saddo@ug.edu.gh
"I have read or have had someone read all of the above, asked questions, received answers regarding participation in this study, and am willing to give consent for me, my child/ward to participate in this study. I will not have waived any of my rights by signing this consent form. Upon signing this consent form, I will receive a copy for my personal records."

______________________________
Name of Volunteer

______________________________
Signature or mark of volunteer

Date

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

______________________________
Name of witness

______________________________
Signature of witness

Date

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

______________________________
Name of Person who obtained Consent

______________________________
Signature of Person who obtained Consent

Date
Appendix II: Research Questionnaire

Code of Respondent: Date of interview:

Thank you for taking the time to fill this short questionnaire. We will keep your responses confidential so please answer these questions as honestly as possible. There is no right or wrong answer.

1. What is your gender? □ Male □ Female
2. What is your ethnicity ........................................................
3. What is your occupation? ...................................................
4. How old are you? ......................... Date of birth: .................................
5. What is your marital status .................................
6. What is your highest education qualification .................................

Acquisition of Nutrition Information:

7. Where do you get information on nutrition from? For example, if you want information on the benefits of eating yogurt? Please tick

<table>
<thead>
<tr>
<th>Source</th>
<th>0=Never</th>
<th>1= Rarely</th>
<th>2= Sometimes</th>
<th>3=Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends &amp; peers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthcare professionals (e.g. nutritionists, dietitians, doctors etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online resources (e.g. Google searches, YouTube etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional media (e.g. Radio, television, newspapers etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. How reliable do you think the information from these sources is? Please tick

<table>
<thead>
<tr>
<th>Source</th>
<th>0= Unreliable</th>
<th>1= Fairly reliable</th>
<th>2= Very reliable</th>
<th>3= Accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family members</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends &amp; peers</td>
<td></td>
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</tr>
<tr>
<td>Healthcare professionals (e.g. nutritionists, dietitians, doctors etc.)</td>
<td></td>
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<tr>
<td>Online resources (e.g. Google searches, YouTube etc.)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Traditional media (e.g. Radio, television, newspapers etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Please write the number (code) attached to your option in the brackets:**

9. Do you know what the facts panel on food packages is?
   - 0 = No  
   - 1 = Yes  
   [ ]

10. How often do you read the information provided on food packages?
    - 0 = Never  
    - 1 = Less Frequently  
    - 2 = Frequently  
    - 3 = Always  
    [ ]

11. Do you understand what you read on food packages?
    - 0 = Never  
    - 1 = Less Frequently  
    - 2 = Frequently  
    - 3 = Always  
    [ ]

12. How many full meals do you think a person must eat in a day?
    - 0 = More than 3  
    - 1 = 3 a day  
    - 2 = 2 a day  
    - 3 = 1 a day  
    - 4 = I do not know  
    [ ]

13. How many sachets of water do you think a person should drink in a day?
    - 0 = 6 and above  
    - 1 = 5-4 sachets  
    - 2 = Less than 3 sachets  
    - 3 = I do not know  
    [ ]

**Please use the numbers below to indicate how much you agree or disagree with the following statements.**

- 0 = neutral  
- 1 = strongly disagree  
- 2 = disagree  
- 3 = agree  
- 4 = strongly agree

14. Eating breakfast every day is important  
   [ ]

15. Eating fruits every day is important  
   [ ]

16. Eating fish or chicken or meat every day is important  
   [ ]

17. Drinking alcohol is bad for me  
   [ ]

18. Smoking is bad for me  
   [ ]

19. Eating vegetables every day is good for me  
   [ ]

20. Exercise is good for me  
   [ ]

21. Eating a lot of starchy foods, like yam, cassava and rice will make me fat  
   [ ]

22. Eating different foods every day gives me all the vitamins and minerals I need  
   [ ]

23. It is okay for me to skip meals  
   [ ]

**Weight Management Practices and Lifestyle:**

Please write the code, attached to your option, inside the brackets and fill in the spaces where applicable:

24. Do you have any concerns about your current body weight?
    - 0 = No  
    - 1 = Yes  
    [ ]

25. How do you feel about your size?
    ……………………………………………………………………………………………………………………………………………………………

26. Who talks the most about your weight? ………………………………………………………………………………………………………

27. I am currently trying to…..
    - 0 = Not trying to do anything about my weight  
    - 1 = Lose weight  
    - 2 = Gain weight  
    - 3 = Maintain my current weight  
    [ ]
Code of Respondent:                                                                                             Date of interview:

28. Within the past 30 days, I have …….[     ]…… in order to achieve my weight goals
   0= Dieted   1= undergone surgery   2= engaged in physical activities (exercising)
   3= made lifestyle modifications   4= used medicine   5= done nothing

29. In regard to question 28, I got information to use this method from………………………

30. This method is working for me
   0= No   1= Yes   2= I do not know   3= not applicable

31. This source of information (indicated in question 27) has affected the way I feel about my body
   0= No   1= Yes   2= I do not know   3= not applicable

32. During the past 30 days, I intentionally ate less food, fewer calories, or foods low in fat to lose weight or to keep from gaining weight
   0= No   1= Yes

33. a) Do you drink alcohol?  0= No   1= Yes
   b) If ‘yes’, in a typical week, how many times do you drink alcoholic beverages
      0= 1-2 times   1= 3-4 times   2= 5-7 times   3= more than 7 times

34. a) Do you smoke?  0= No   1= Yes
   b) If ‘yes’, in a day I smoke
      0= less than half a pack   1= half a pack   2= about a pack   3= more than one pack

35. How many days a week do you exercise at least 20 minutes, to the point that you sweat or breathe hard?
   0= Never   1= 1-2 times a week   2= 3-4 times a week   3= 5-7 times a week   4= 7 times per week

36. How many days a week do you exercise at least 30 minutes, to the point that you sweat or breathe hard?
   0= Never   1= 1-2 times a week   2= 3-4 times a week   3= 5-6 times a week   4= 7 times per week

37. How many days a week do you exercise at least 60 minutes, to the point that you sweat or breathe hard?
   0= Never   1= 1-2 times a week   2= 3-4 times a week   3= 5-6 times a week   4= 7 times per week

38. During the past 30 days, did you intentionally go without eating for 24 hours or more (also called fasting) with the motive to lose weight or to maintain weight?  0= No   1= Yes

39. During the past 30 days, did you take any diet pills, powders or liquids without a doctor's advice to lose weight, gain weight or to keep from gaining weight?  0= No   1= Yes

40. About how many sachets of water do you drink in a day?
   0= 6 and above   1= 5-4 sachets   2= Less than 3 sachets

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41. How many complete meals do you eat in a day? (do not include snacks like meat pie)
   0= 1 meal  1= 2 meals  2= 3 meals  3= More than 3 meals

42. How many days in a week do you eat: (please tick the option that applies to you)

<table>
<thead>
<tr>
<th></th>
<th>Never (0)</th>
<th>1-2 times(1)</th>
<th>3-4 times(2)</th>
<th>5-7 times (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dinner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

43. Please tick the option that applies to you:

<table>
<thead>
<tr>
<th></th>
<th>Don’t eat this (0)</th>
<th>Home-cooked (1)</th>
<th>Bought (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My breakfast is usually</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My lunch is usually</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My dinner is usually</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

44. How often do you eat out in a week?
   0= Never  1= 1-2 times a week  2= 3-4 times a week  3= 5-7 times a week

Please use one of the numbers below to indicate the option that best applies to you in the questions that follow i.e.
   0= never  1= 1-2 times a week  2= 3-4 times a week  3= 5-7 times a week

45. In the past 7 days I ate green vegetables (e.g. ‘kontomire’, dandelion)
46. In the past 7 days I ate other vegetables (e.g. cabbage, okra, carrots)
47. In the past 7 days I drank minerals (e.g. coca cola, fanta)
48. In the past 7 days I ate fruits (e.g. oranges, banana, watermelon)
49. In the past 7 days I ate animal protein (e.g. beef, fish, chicken)
50. In the past 7 days I ate starchy foods (e.g. yam, rice or cassava)
51. In the past 7 days I ate legumes (e.g. beans, soybeans)
52. In the past 7 days I drank fruit juice (e.g. pineapple juice, apple juice)
53. In the past 7 days I ate fast food (e.g. fried rice, noodles, pizza)
54. In the past 7 days I ate sweets (e.g. chocolate, toffee, lollipops)
55. In the past 7 days I ate biscuits (e.g. perk, munchee, digestives)
56. In the past 7 days I ate pastries (e.g. meat pie, doughnut, cake)
Weight Perceptions:

59. Which picture do you think best represents your body currently? Please circle.

60. Which silhouette do you think best represents the body you want to have? Please circle.
61. Which picture do you think represents the ideal body for your gender in Ghanaian society? Please circle.

62. Which picture do you think best represents the ideal body of the opposite sex? Please circle.

*For Researcher & Field assistants
Appendix III: Score Sheet for research questionnaire

(Not shown to participants; for researcher’s use)

Weight Perceptions:

Pulvers’ figure rating scale categories for silhouettes:
Feel-Weight-Status minus Actual-Weight-Status Index (FAI) for body satisfaction assessment:
Actual-Weight-Status based on measured BMI of participant:
- underweight [BMI below 18.5kg/m²] = Conventional code 1
- normal weight [BMI=18.5 kg/m² – 24.9 kg/m²] = Conventional code 2
- overweight [BMI= 25 kg/m² -29.9 kg/m²] = Conventional code 3
- obese [BMI= 30 kg/m² and above] = Conventional code 4

Perceived current body weight i.e. Feel-Weight-Status:
- Silhouettes a and b for feel status 1 i.e. very thin/thin= Conventional code 1
- Silhouettes c, d and e for feel status 2 i.e. average = Conventional code 2
- Silhouettes f and g for feel status 3i.e. slightly heavy/overweight= Conventional code 3
- Silhouettes h and i for feel status 4 i.e. obese = Conventional code 4

Therefore,
FAI= Feel-Weight-Status’ conventional code (subtracted from) Actual-Weight-Status
conventional code
Scores range from -4 to +4
Accurate body image perception = 0
Perception that one is heavier than they actually are = +1 to +4
Perception that one is thinner than they actually are = -4 to -1