

**SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA**



**ASSESSMENT OF WEIGHT LOSS PRACTICES AND ASSOCIATED
FACTORS AMONG POSTGRADUATE STUDENTS IN THE UNIVERSITY OF
GHANA**

**BY
CYNTHIA ADOMA ODURO**

(10323886)

**THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA,
LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE
AWARD OF THE MASTER OF PUBLIC HEALTH DEGREE**

JULY, 2019

DECLARATION

I, **CYNTHIA ADOMA ODURO** hereby declare that this dissertation is a result of my independent work. References to other works have been duly acknowledged. I further declare that this dissertation has not been submitted for award of any degree in this institution and other University elsewhere.

.....

CYNTHIA ADOMA ODURO

Date

(STUDENT)

.....

DR. BENEDICT WEOBONG

Date

(SUPERVISOR)

DEDICATION

To my God, my parents, husband, and children

ACKNOWLEDGEMENT

I wish to acknowledge with much pleasure, my indebtedness to the Almighty God for great favor and guidance that has enabled me to successfully complete this study. Special thanks to my supervisor, Dr. Benedict Weobong for his countless direction, encouragement, and constructive criticisms throughout this work. Also, my sincere appreciation goes to my beloved husband, Godfred Ekure Mensah and children, Karen Sika Mensah, Andrews Ninsin Mensah and Mrs. Elizabeth Oduro for their support and care during the entire master's degree program. Obviously, I also owe a debt of gratitude to all lecturers in the Department of Social and Behavioral Sciences, I am very grateful. Finally, to everyone who has contributed in one way or the other to my academic success, I say may the almighty God richly bless you all.

ABSTRACT

Introduction: Weight gain by students moving from one educational level to the other for the first time is of increasing public health concern. The perception of an individual's body weight aids in understanding and envisaging weight reduction practices among adults (Wang, Liang, & Chen, 2009). School/college environments are particularly at risk of this phenomenon because students may not have the time to pay particular attention to physical health as a result of heavy academic work-load. Davila et al. (2014) declared that unhealthy weight loss practices (e.g., fasting, vomiting, taking diet pills, and laxatives) are common among tertiary students worldwide.

Objective: The main objective of the study was to examine weight loss practices and factors associated with such practices among post-graduate students in the University of Ghana, in order to inform the design of future interventions.

Methods: A descriptive cross-sectional study involving a target sample size of 211 post-graduate students was carried out at the University of Ghana, in Accra. Multistage sampling technique was used to select post-graduate students in the various colleges at the University. Questionnaires were administered to these post-graduate students and data on factors associated with trying to lose weight and weight loss practices were collected. The analysis involved the use of chi-square tests to describe simple relationships and multivariable logistic regression for independent and dichotomous dependent variables to quantify associations.

Results: A total of 211 post-graduate students were recruited and used for analysis. The overall prevalence of trying to lose weight in the previous year was 83.4% among post-graduate students. Almost 1 in 5 practiced unhealthy weight loss. Also, 36.0% of the participants perceive themselves as underweight, 22.8%

of the participants who perceived themselves as normal, 26.0% of the participants perceive themselves as overweight, and 15.2% of the participants perceive themselves as obese. For body image distortion, 55.5% of the participants had no distortion in either direction. Factors that discriminated between these two outcomes were: Marital status (AOR = 15.6, 95% CI = 4.8, 50.7, $P < 0.05$) influenced trying to lose weight; and sex (influenced weight loss practices). Factors identified to be associated with both trying to lose weight and weight loss practices were age, marital status, work status, and body image distortion of post-graduate student. The study found a strong agreement between body image distortion and trying to lose weight (AOR=0.926, 95% CI=0.658, 5.636, P -value <0.05) or weight lose practice (AOR=0.2, 95% CI=0.1, 0.5, P -value <0.05).

Conclusion and Recommendation: The author concludes that unhealthy weight loss practices are prevalent among post-graduate students in University of Ghana. Factors such as age, marital status, work status, and body image distortion of post-graduate students may be associated with poor efforts at trying to lose weight and poor weight loss practices. The author therefore recommends that, the University authorities should organize educative programs on healthy weight loss practices for the benefit of both undergraduate and post-graduate students, the University and the Legon community. Also, the author concludes that low Socio-Economic Status (SES) has an association with poor weight loss practices; therefore, the author recommends programmes/interventions to tackle weight loss practices among students should be designed to address the special needs of students from low SES.

Table of Contents

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT.....	v
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ABBREVIATIONS.....	xii
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background to the Study.....	1
1.2 Statement of the Problem.....	4
1.3 Research Questions.....	5
1.4 Aims/ objectives	5
1.4.1 Specific Objectives	6
1.5 Justification of Study	6
1.6 Definition of Terms	7
1.7 Conceptual Framework.....	8
CHAPTER TWO	10
LITERATURE REVIEW	11
2.1 Overview of Overweight and Obesity	11
2.2 Trends in the Prevalence of Overweight and Obesity	11
2.2.1 Global Trend	11
2.2.2 Africa Trend.....	12
2.2.3 Ghana	13
2.3 Body Image.....	13
2.4 Weight Loss Practices.....	14
2.4.1 Prevalence of weight loss practices	15
2.5 Body Weight Perception.....	16
2.6 Factors that Influence Body Weight Perception	16
2.6.1 Gender and Weight perception	16
2.6.2 Age and Weight Perception	17
2.6.3 Educational level and Weight Perception	17
2.6.4 Income level and Weight Perception	18
2.7 The Relationship between Body Weight Perception and Weight Loss Practices.	19
2.8 Body Mass Index	19
2.9 Body Image Distortion.....	20

2.10 Association between Body Image Distortion and Weight Loss Practices among Students.....	22
2.11 The Relationship between Body Mass Index and Body Weight Perception	22
2.12 The Relationship between Socio-demographic Characteristics and Weight Lose Practices	24
2.13 Conclusions and Research Gaps	24
CHAPTER THREE.....	26
METHODOLOGY	26
3.0 Introduction.....	26
3.1 Study Area	26
3.2 Research Design	27
3.3 Study Population.....	27
3.4 Sample Size Determination	28
3.5 Sampling Method.....	31
3.6 Study Variables.....	31
3.7 Source of Data and Data Collection	33
3.9.1 Questionnaire	33
3.10 Data Analysis and presentation.....	33
3.10.1 Multiple Logistic Regression.....	34
3.11 Quality Control Measure	35
3.12 Ethical Consideration.....	36
3.12.1 Ethical Clearance from Ghana Health Service	36
3.12.2 Consenting Process	36
3.12.3 Privacy and Confidentiality	36
3.12.4 Possible Risk and Discomfort.....	37
3.12.5 Possible Benefits.....	37
3.12.6 Voluntary participation and Right to Withdraw	37
3.12.7 Compensation	37
3.12.8 Data Storage and Management	38
3.12.9 Dissemination of Findings	38
3.12.10 Conflict of Interest	38
3.12.11 Funding	38
CHAPTER FOUR.....	39
RESULTS	39
4.0 Introduction.....	39
4.1 Socio-demographics characteristics of study participants	39
4.2 Prevalence of Body Weight Perception	40

4.3 Prevalence of Trying to Lose Weight and Weight Loss Practices	41
4.4 Relationship between Body Image Distortion and Trying to Lose Weight.....	42
4.5 Relationship between Body Image Distortion and Weight Loss Practices	43
4.6 Relationship between Body Mass Index and Body Weight Perception	43
4.7 Relationship between Socio-demographic Characteristics and Trying to Lose Weight.....	44
4.8 Relationship between socio-demographic characteristics and weight loss practices	45
4.9 Multiple Logistic Regression Analysis of Factors Influencing Trying to Lose Weight.....	47
4.10 Multiple Logistic Regression Analysis of Factors Influencing Weight Loss Practices	49
CHAPTER FIVE	51
DISCUSSION.....	51
5.0 Introduction.....	51
5.1 Prevalence of trying to lose weight and weight loss practices	51
5.2 Association between socio-demographic characteristics and trying to lose weight or weight loss practice	53
5.3 The Relationship between Body Mass Index and Body Weight Perception	55
5.4 Relationship between Body Image Distortion and Trying to Lose Weight or Weight Loss Practices.....	56
5.5 Methodological Validity	57
CHAPTER SIX	58
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	58
6.0 Introduction.....	58
6.1 Summary of the study findings.....	58
6.2 Conclusion	60
6.3 Recommendations.....	60
6.3 Future Studies	61
REFERENCES	62
APPENDIX I: PARTICIPANTS INFORMATION SHEET.....	67
Appendix II: Informed Consent.....	71
APPENDIX III-QUESTIONNAIRE	73

LIST OF TABLES

Table 2.1: Body Weight Classifications in Adults	11
Table 3.1: The distribution of the population across the various colleges in the University of Ghana.....	28
Table 3.2: The distribution of the sample across the various colleges in the University of Ghana.....	30
Table 4.1: Socio-demographics characteristics of study participants.....	40
Table 4.2: Prevalence of Body Weight Perception.....	41
Table 4.3: Agreement between Body Image Distortion and Trying to Lose Weight	42
Table 4.4: Agreement between Body Image Distortion and Weight Loss Practices.....	43
Table 4.5: Association between Body Mass Index and Body Weight Perception	44
Table 4.6: Relationship between socio-demographic characteristics and trying to lose weight.....	45
Table 4.7: Relationship between socio-demographic characteristics and weight loss practices	46
Table 4.8: Multiple Logistic Regression Analysis of factors associated with trying to lose weight.....	48
Table 4.9: Multiple Logistic Regression Analysis of factors associated with weight loose practices.....	50

LIST OF FIGURES

Figure 1.1: Conceptual Framework to assess weight loss practices and associated factors.....	10
Figure 4.1: Prevalence of trying to lose weight among study participants	41
Figure 4.2: Prevalence of weight loss practices among study participants	42

LIST OF ABBREVIATIONS

AOR	Adjusted Odds Ratio
BID	Body Image Distortion
BMI	Body Mass Index
BWP	Body Weight Perception
FID	Figure Ideal Discrepancy
GDHS	Ghana Demographic Health Survey
GHS	Ghana Health Service
SD	Standard Deviation
SES	Socio-Economic Status
SSA	South Sahara Africa
UK	United Kingdom
USA	United State of America
WHO	World Health Organization
WHSA	Women's Health Study of Accra
WLP	Weight Loss Practices
WM	Weight Management

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The weight gained by students moving from one educational level to the other for the first time is so prevalent. Despite the fact that undesirable weight increase can happen at every age, the transition from one educational level to another (example from undergraduate to post-graduate level) has been identified as a period of increased risk of gaining weight (Malinauskas, Raedeke, Aeby, Smith, & Dallas, 2006). Researches (Chen, Fox, Haase, & Ku, 2010; Welch, Gross, Bronner, Dewberry-moore, & Paige, 2004) have shown that even infants who are eight years old are worried about the size of their body, and this anxiety increase during adolescence.

Recent estimates of the prevalence of overweight and obese are surprising in the world. Globally, over 1.4 billion adults who are 20 years and above were identified to be overweight in 2008 and out of these, more than 300 million women and 200 million men were classified as obese (WHO, 2011). This finding is disturbing bearing in mind the cost related to these medical situations. Also, researches (Rivera, Barquera, Campirano, Campos, Safdi & Tovar, 2002; Filozof, Gonzalez, Sereday, Mazza & Braguinsky, 2001) have identified that the rising trend of individuals classified as obese in the world is rampant in the developing countries. In 2014, WHO (2014) found over 1.9 billion adults aged 18 years and older to be obese. Overall, about 13% of the world's adult population (11% of men and 15% of women) were obese and 30% of adults aged 18 years and over (38% of men and 40% of women) were overweight (WHO, 2014). In 2016, more than 1.9 billion adults, 18 years and older, were overweight. Of these, over 650 million were obese. That is, 39% of adults aged 18 years and over were overweight in 2016, and 13% were obese (WHO, 2016). Most of

the world's population live in countries where overweight and obesity kills more people than underweight (WHO, 2016).

According to Malinauskas et al. (2006), females accord much significance to looks and are worried about their weight from tender age while Ryan, Morrison, & Studies (2009) observed that males cherish a muscular body shape, which they frequently relate with health. To achieve their ultimate body shape, people participate in activities that control their weight. Ryan et al. (2009) stated that weight control actions are triggered by a person's perception of body weight. Body weight perception denotes a person's evaluation of one's weight as "*overweight*" or "*normal weight*" or "*underweight*" irrespective of the real body mass index (Cheung, Ip, Lam, & Bibby, 2007). The perception of an individual's body weight aids in understanding and envisaging weight reduction practices among adults (Wang, Liang, & Chen, 2009). The inconsistency in the perception of a person's body weight is referred to as body image distortion (Liechty, 2010). Adults who wrongly evaluate their real body size show some degree of body displeasure (ter Bogt et al., 2006).

Healthy persons who identify themselves as overweight are more probable to involve in weight decreasing practices, while persons who are actually overweight but do not perceive themselves as such refuse to involve themselves in weight reduction practices (Brener et al., 2004). Individuals such as adults or teenagers accept healthy balanced diet and exercise, whereas individuals displeased with the kind of body shape they have and desire to reduce them involve in purging, smoking, fasting practices, and use of laxatives (French, Story, Downes, Resnick, & Blum, 1995; Yost, Krainovich-miller, Budin, & Norman, 2010).

Some health benefits of physical exercise for adults are decreased risk of hypertension, obesity, coronary heart disease, and depression (Tyson, Wilson, Crone, Brailsford, & Laws, 2000). Also, physical exercise provides psychological benefits specifically in women (Zaccagni et al., 2014). Nevertheless, physical exercises have a positive influence on fitness and health motivations of persons with low body displeasure, more fitness, health motivations, appearance, and weight goals have a strong association with high body dissatisfaction of women (LePage & Crowther, 2010). Castillo, Duda, Balaguer, and Tomás (2009) and Schuler et al. (2004) stated that a decrease in weight and shape satisfaction increases Body Mass Index (BMI) and the quest for a preferred bodily form which includes a variety of behaviours and doings comprising of physical exercise and dieting.

Globally, adults practicing weight loss is 26.1% in China (Cai, Han, Qi, Li, Zhang, Wang & Liu, 2011), 77.5% in Malaysia (Zainuddin et al., 2014), approximately 60% in Britain (Johnston & Lordan, 2013), 38.8% in Holland (Nicolaou, van Valkengoed, Doak, van Dam, Stronks & Seidell, 2012), 51.6% in Norway (Hjartaker, Laake & Lund, 2001), and 49.17% in US (Snook, Hansen, Duke, Finch, Hackney & Zhang, 2017). In Africa, according to Peltzer & Pengpid (2015), adults practicing weight loss is 12.7% in Nigeria, 15.3% in South Africa, 20.5% in Egypt, and 18.1% in Cote D'Ivoire. In Ghana, according to Addo et al. (2015), 55% of adults are practicing weight loss. Research into weight loss practices among post-graduate students still remains a grey area in the world, specifically in Ghana, hence the need to study the phenomenon and its associated factors among post-graduate students in the University of Ghana.

1.2 Statement of the Problem

The public health burden of obesity/over-weight including associated effects on non-communicable diseases is well established. The perception of an individual's body weight aids in understanding and envisaging weight reduction practices among adults (Wang, Liang, & Chen, 2009). School/college environments are particularly at risk of this phenomenon because students may not have the time to pay particular attention to physical health as a result of heavy academic work-load. Furthermore, students in this age group represent an important life transition period during which they individuate and often form lifelong habits.

However, in Ghana, the overall prevalence of obesity increased from 0.9% in the late 1980s to about 25.5% in 2003 and 30.5% in 2008 among adults aged 25 years and above (Berrios et al., 1997; Dake, Tawiah, & Badasu, 2011), even though it is observed that people indulge in unsafe weight loss practices (Benkeser, Biritwum, & Hill, 2012). According to Benkeser, Biritwum, and Hill (2012), 72% of Ghanaian women aged 18 years and above who resided in the Accra Metropolitan area were dissatisfied with their current body weight and 41.8% preferred a smaller body size. The study also reported that overweight and obese women were more likely to desire weight loss compared to normal weight women. Similarly, majority of women who were attending clinic at the Korle-Bu Teaching Hospital indicated that they would reduce their current body weight to achieve an overall healthier life. Several types of research shows that the main reasons for an individual involved in physical activity are appearance, weight control, and body displeasure (Senekal, Lasker, Van Velden, Laubscher, & Temple, 2016; Zaccagni, 2014).

Although the positive benefits of weight loss practices are well documented, there is limited information about post-graduate weight loss practices. This raises questions about "how post-graduate students perceive their body size and what practices they engage in order to reduce their weight? It is in this light that the research seeks to assess the weight loss practices and associated factors among post-graduate students in the University of Ghana. This study is designed to inform future interventions such as adding extra curriculum activities to the University academic calendar as well as measures to be undertaken to promote a healthy lifestyle of post-graduate students offering different degree programmes at the various departments in the University.

1.3 Research Questions

The research questions for this study were:

1. What is the estimated prevalence of weight loss practices and the different types of weight loss practices among post-graduate students in the University of Ghana?
2. What is the association between body image distortion and weight loss practices among post-graduate students in the University of Ghana?
3. What is the relationship between socio-demographic characteristics and weight loss practices among post-graduate student in the University of Ghana?
4. What is the relationship between body mass index and body weight perception among post-graduate students in the University of Ghana?

1.4 Aims/ objectives

The aim of this study was to examine weight loss practices and factors associated with such practices among post-graduate students in the University of Ghana, in order to inform the design of future interventions.

1.4.1 Specific Objectives

The specific objectives of this study are:

1. To estimate the prevalence of weight loss practices and the different types of weight loss practices among post-graduate students in the University of Ghana.
2. To determine the association between body image distortion and weight loss practices used by post-graduate students in the University of Ghana.
3. To assess the relationship between socio-demographic characteristics and weight loss practices among post-graduate student in the University of Ghana.
4. Assess the relationship between body mass index and body weight perception among post-graduate students in the University of Ghana.

1.5 Justification of Study

Body weight perception has been recognized to have an influence on weight management of individuals. Despite several researches conducted in this field to assess undergraduate students in developed countries such as USA (Malinauskas et al., 2006), Italy (Zaccagni et al., 2014), there were no studies in Ghana in specific to assess weight loss among post-graduate students. Senekal et al. (2016) examined only female University students in South Africa and Addo, Nyarko, Sackey, Akweongo, and Sarfo (2015) assessed the occurrence of obesity and overweight among staffs in financial organizations in Ghana. Also, most studies relating to the phenomenon considered teenage students or youth between the ages 18 years and 24 years (Bhurtun & Jeewon, 2013; Malinauskas et al., 2006; Senekal et al., 2016).

The question asked is: are teenage students the only people perceived to have a misperception of their weight image? Furthermore, there is no research to assess post-graduate students on how healthy eating and exercise encourage and sustain a healthy weight. Therefore, the present study examined the factors influencing trying to lose weight and weight loss practices among post-graduate students. The University setting was chosen because it is an important and strategic place to promote healthy lifestyle practices such as weight management because many students are adult and therefore have a large avoidable burden of chronic disease. In addition, well-established routes of communication exist for the dissemination of health-related information, to facilitate program delivery. Also, post-graduate students were chosen because they represent an important life transition period during which many students individuate and often form lifelong habits.

Assessing the existing situation among post-graduate students enabled the acquisition of relevant data on weight loss practices and perception of body weight among post-graduate students in the University. This assessment comprised of a variety of weight perceptions and a variety of body mass indexes computed from both measured and self-stated height and weight. This also served as a guide to the general population on the kind of healthy weight loss practices to use. Results obtained from the study informed measures to be undertaken by the University to promote a healthy lifestyle of post-graduate students offering different degree programmes at the various departments.

1.6 Definition of Terms

Body Mass Index is an index derived from self-reported height and weight. It is computed as weight over the square of height.

Body Image Distortion (BID) is the level of agreement between perceived weight status and actual weight status

Body Weight Perception (BWP) denotes the perception of Post-graduate' students with regards to their weight status based on the research question, “what is your perception with regards to your weight?” and the responses expected will be: ‘underweight’, ‘normal underweight’, ‘overweight’, ‘very overweight/obese’.

Weight loss Practices (WLP)

Three types of weight loss behaviors were assessed in this study. They are: 1) extreme methods such as self-reported usage of diet pills, laxatives, and/or vomiting in order to lose weight; 2) unhealthy methods such as dieting to lose weight and 3) the healthy methods such as exercising to lose weight.

Trying to Lose Weight (TLW)

Trying to lose weight is a self-reported assessment of an individual who tried losing weight the previous year. This was measured by a binary response (yes or no). “Yes” means tried losing weight last year and “No” means never tried losing weight last year.

1.7 Conceptual Framework

Obesity or overweight are chronic health problems which affect many Ghanaians and contribute to a number of different health issues such as heart disease and diabetes. Lifestyle changes remain the mainstay of treatment and are important for the long term maintenance of weight loss. Although prevalence of overweight and obesity is increasing, prevailing sociocultural influences lead females to desire a thin body and males a muscular body, often resulting in body distortion because many cannot achieve the cultural ideal (Buote, Wilson, Strahan, Gazzola, & Papps, 2011).

The graphical representation of body image distortion and the weight loss practices, as well as the influence of body mass index and socio-demographic characteristics on a student trying to lose weight, can be shown in Figure 1. The framework comprises of body image distortion and socio-demographic characteristics having an influence on weight loss practices and trying to lose weight.

The various weight loss practices such as healthy or appropriate weight loss practices (exercising) and unhealthy or inappropriate weight loss practices (fasting, diet pills, purging/laxatives, vomiting) have been identified to be influenced by students body image distortion (no distortion in either direction and distortion in either direction) and socio-demographic variables such as age, gender, religion, ethnicity, and marital status. As highlighted by Lee and Lee (2015) and Choi (2017), body image distortion has a significant influence on weight loss practices. According to Wang, Liang, and Chen (2009), the inconsistencies between an individual's perception of weight and actual weight status (underestimation or overestimation of weight) significantly correlates with reported body weight control practices. Furthermore, the socio-demographic characteristics of an individual have been identified to have an association with trying to lose weight (Bärebring, Winkvist & Augustin, 2018) and body image distortion (Neighbors & Sobal, 2007).

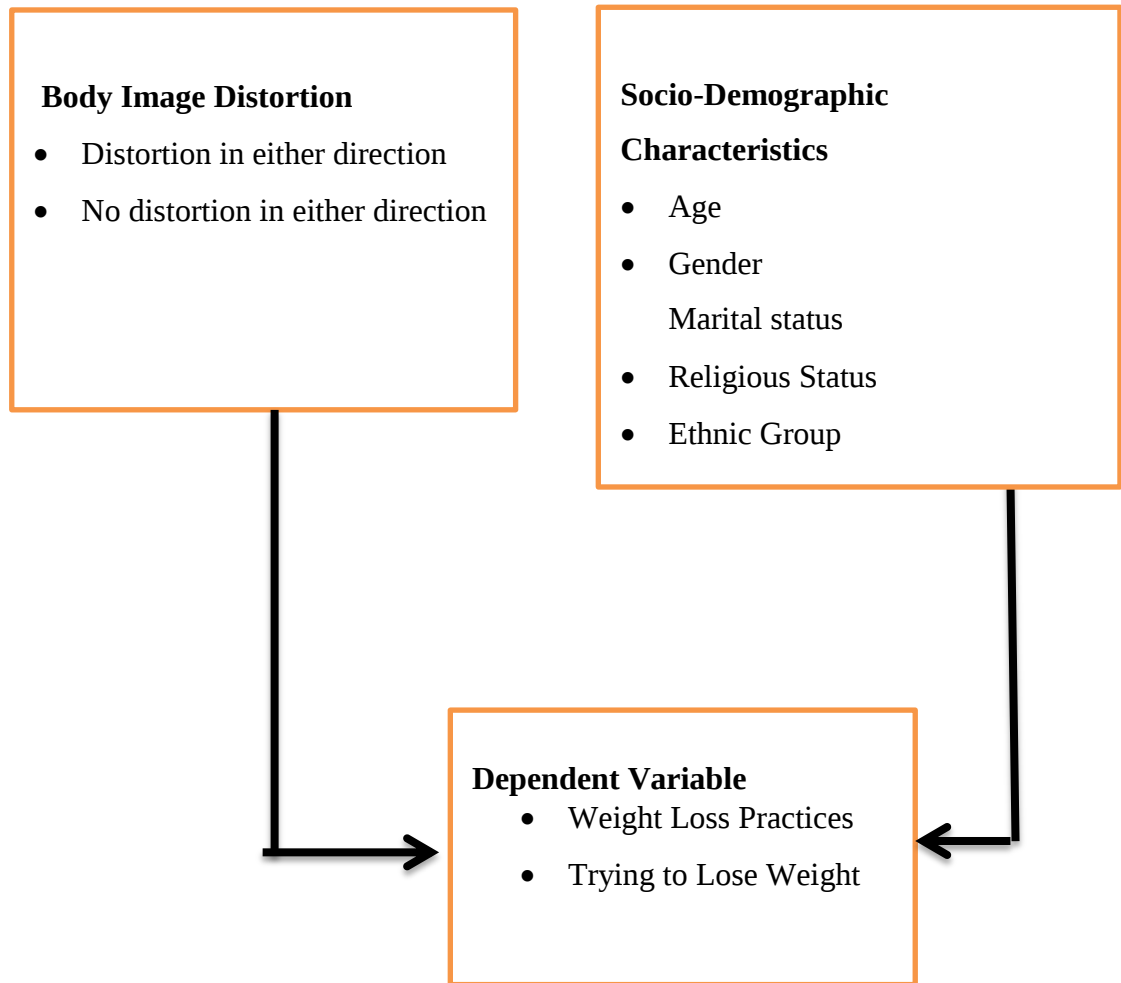


Figure 1.1: Conceptual Framework to assess weight loss practices and associated factors.

Source: Author's own work, 2019

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of Overweight and Obesity

World Health Organization(2011)guidelines using Body Mass Index (BMI) calculated from weight and height (kg/m²), were used to classify adults as normal weight (BMI = 18.5 to 24.9 kg/m²), overweight (BMI = 25.0 to 29.9 kg/m²), and obese (BMI $\geq$ 30 kg/m²). Ghana Health Service has adopted these guidelines. BMI allows for meaningful comparisons between populations and is relatively easy to ascertain from measured or self-reported data.

Table 2.1: Body Weight Classifications in Adults

Body Mass Index(kg/m²)	Classification Descriptor	Descriptor
< 18.5	Underweight	May be associated with health problems for some people
18.5 to 24.9	Normal weight	Good weight for most people
25.0 to 29.9	Overweight	Increasing risk of developing health problems
$\geq$ 30	Obese	High risk of developing health problems

Sources: World Health Organization (2000)

2.2 Trends in the Prevalence of Overweight and Obesity

2.2.1 Global Trend

Several studies reveal that obesity prevalence is still increasing even though some studies are of the view that generally overweight and obesity rates are halting, therefore, this has called for concern and occasional debates (Yanovski & Yanovski, 2011). In Norway for example, mean BMI increased from 25.1kg/m² to 26.9 kg/m² among women over a period of 22 years (Midthjell *et al.*, 2013). Similarly, over a period of 17 years (1993-2009) obesity increased among Chinese women (Xi *et al.*,

2012). Several other confirmatory findings from other studies (Heslehurst *et al.*, 2009; Marques-Vidal *et al.*, 2010; Ford *et al.*, 2011) lend support to the fact that overweight and obesity is indeed rising among women. In contrast, however, other studies have stated that there are no significant changes in obesity rates over time (Micciolo *et al.*, 2010; Flegal *et al.*, 2012).

2.2.2 Africa Trend

Most developing countries are living with the double burden of over nutrition and under nutrition (Rosen & Shapouri, 2008) whose consequences are overweight or obesity and stunting or wasting, respectively. Overweight and obesity is rapidly penetrating these countries with overweight particularly exceeding underweight among women (Mendez *et al.*, 2005; Ng *et al.*, 2011). Seven sub-Saharan African countries (Burkina Faso, Ghana, Kenya, Malawi, Niger, Senegal, and Tanzania) announced 5% rise in overweight and obesity annually from 1992 to 2005 (Ziraba *et al.*, 2009). Also, abdominal obesity was almost six times higher among female than male adults in Nigeria (Amole *et al.*, 2011). The combined prevalence of overweight and obesity was 43.3% in a national representative sample of women in Kenya (Steyn *et al.*, 2011).

The irony is that while obesity is common among those with low socioeconomic status within developed nations, countries undergoing „nutrition transition“ report high rates among both affluent and poor populations (Jones-Smith *et al.*, 2011a; Jones-Smith *et al.*, 2011b; Rosen & Shapouri, 2008). This indicates that the potential problems resulting from overweight and obesity may occur among populations with these two extreme socio-economic experiences.

2.2.3 Ghana

There is an increasing prevalence of obesity and overweight in Ghana as well and is also higher among women. Recent estimates reveal this disparity among populations in Ghana (Abubakari *et al.*, 2008; Amegah *et al.*, 2011; Mogre *et al.*, 2012). Obesity among a cross-section of 1,015 civil servants in Accra was almost four times lower in males than in females (Addo *et al.*, 2009). Although the prevalence of overweight and obesity among men is lower than among women, it also varies among women across and within the regions in Ghana (GDHS, 2008; Dake *et al.*, 2010). From the 2003 and 2007 Women's Health Study of Accra (WHSA), the prevalence of overweight versus obesity among women in Accra, Ghana, increased from (27.1% versus 20.2%) in 2003 (Amoah, 2003) to (27.4% versus 34.8%) in 2007 (Duda *et al.*, 2007). Analysis of data from the 2008 Ghana Demographic Health Survey (GDHS) in comparison with that of 2003 by Dake *et al.* (2010), revealed similar increment in the overall prevalence of overweight and obesity among women. The same report revealed that the overall prevalence of overweight and obesity among women currently stands at 30.5%. On the whole, overweight and obesity rates are rising but at varying speeds across many parts of the world.

2.3 Body Image

Grogan (2008) refers to body image as “a person's perceptions, thoughts, and feelings about his or her body”. It relies upon several factors such as psychological factors and socio-cultural effects comprising of ethnic groups, peers, and family (Groesz *et al.*, 2002; Kruger *et al.*, 2008; Gross *et al.*, 2005; Johnson-Taylor *et al.*, 2008).

2.4 Weight Loss Practices

Generally, a decrease in the satisfaction of body weight increases BMI. This results in the search for the desired physical form which comprises of an extensive variety of behaviors and activities namely physical exercise and dieting (Schuler et al., 2004; Kilpatrick et al., 2005). Teenagers both male and female were similarly prone to utilize nourishment control and embrace either healthy or unhealthy methods for weight control (Bhurtun & Jeewon, 2013). Mooney et al. (2004) discovered that most college females do place higher importance on appearance in their quest of maintaining an ideal body weight. These women do sometimes engage in healthy and unhealthy physical activity and sometimes food restriction behaviors, unlike their male counterparts. There are two types of weight loss practices, namely, healthy and unhealthy weight loss practices. Healthy weight loss practices are eating fruits and vegetables, performing physical exercises and reducing intake of fats while unhealthy weight loss practices are fasting, starving, and laxatives (French & Jeffery, 1994; Krowchuk, Kreiter, Woods, Sinal, & DuRant, 1998).

The different dieting practices assessed by Bhurtun and Jeewon (2013) to determine weight loss practices are reducing fat consumption, skipping meal, exercise, increasing the intake of fruit and vegetable, fasting, minimizing the quantity of food eaten at meal times, having a balanced diet, and minimizing the amount of snacks intake between meals. Most women engage in dieting than men (Gough, 2002). The reason is that most men do practice physical exercise as opposed to the diet to change their physical appearance and to lose weight (Grogan & Richards, 2002; Grogan et al., 2006). Lowry et al. (2002) documented that the regular physical exercises and reduced intake of fat,

increase in fruit and vegetable consumption has been a factor for most high school adolescents' weight loss.

A study by Cheung et al. (2007) shows that male adolescents are less probable to diet and involve in unhealthy weight-loss practices more often than females. Though most overweight and obese individuals are desirable in losing weight (Welch et al., 2004), unnecessary weight reduction practices might lead to harmful effects for adolescents such as nourishing inadequacies and the hindrance to growth (Neumark-Sztainer et al., 2002; Ojala et al., 2007).

Boutelle et al. (2002) also discovered how generally people desire and make every effort to reduce their body weight. Haynes, Kersbergen, Sutin, Daly, and Robinson (2018) stated that people who identify themselves as overweight and try to lose weight may not certainly interpret into proper implementation of effective weight loss practices. Trying to lose weight is mostly due to adults who observe themselves as belonging to a class of stigmatized persons (Vartanin & Porter, 2016). This makes them adopt more extreme efforts to lose weight in order to avoid stigma (Fredrickson, Kremer, Swinburn, & de Silva *et al.*, 2015). A stigmatized person can decrease the chance of monitoring his or her weight (Inzlicht, McKay, & Aronson, 2006), which could hinder the maintenance of multifaceted patterns of behaviours needed for a healthy weight loss comprising of eating healthily and preserving adequate levels of physical activity (Hunger, Major, Blodorn, & Miller, 2015).

2.4.1 Prevalence of weight loss practices

Globally, adults practicing weight loss is 26.1% in China (Cai, Han, Qi, Li, Zhang, Wang & Liu, 2011), 77.5% in Malaysia (Zainuddin et al., 2014), approximately 60% in

Britain (Johnston & Lordan, 2013), 38.8% in Holland (Nicolaou, van Valkengoed, Doak, van Dam, Stronks & Seidell, 2012), 51.6% in Norway (Hjartaker, Laake & Lund, 2001), and 49.17% in US (Snook, Hansen, Duke, Finch, Hackney & Zhang, 2017). In Africa, according to Peltzer and Pengpid (2015), adults practicing weight loss is 12.7% in Nigeria, 15.3% in South Africa, 20.5% in Egypt, and 18.1% in Cote D'Ivoire. In Ghana, according to Addo et al. (2015), 55.0% of adults are practicing weight loss.

2.5 Body Weight Perception

Body weight perception is affected by several factors such as sex, media, age, family, ethnic group, and peers (Gregory et al., 2008; Kim, 2007). Chen et al. (2010) stated that infants as young as eight years old were worried about their body weight, and this worry escalated and expanded amid adolescence. Body weight perception aids in comprehension and forecasting weight control practices among adolescents (Wang et al., 2009). Peer pressure in terms of behavior and attitudes among teenagers towards weight loss does have a negative effect on body weight perception (Wills et al., 2006).

2.6 Factors that Influence Body Weight Perception

2.6.1 Gender and Weight perception

According to Chang and Christakis (2003), men and women have different perception about their bodies. A study conducted by Dorsey, Eberhardt, and Ogden, (2009) shows that women are more conscious of their weight status compared to men. Therefore, men and women perceive their body as muscular and cosmetic, and cultural ideal respectively (Bennett & Wolin, 2006). Several studies (Jones et al., 2010; Hemiup et

al., 2005; Gutierrez-Fisac et al., 2002; Edwards et al., 2010) have identified a significant discrepancy in weight misperception by both men and women. These researchers stated that using the various BMI categories, men are more probable to underestimate their weight compared to women while women are more probable to overestimate their weight compared to men (Jones et al., 2010; Hemiup et al., 2005; Gutierrez-Fisac et al., 2002; Edwards et al., 2010; Duncan et al., 2011). Also, females were more probable not to accept their body shape, desire to have a slim body, and be more concerned about their body weight compared to males (Hemiup et al., 2005; Gutierrez-Fisac et al., 2002).

2.6.2 Age and Weight Perception

Most overweight people of ages 50 years and above normally perceive their actual weight correctly and less likely to underestimate their weight (Hemiup et al., 2005; Gutierrez-Fisac et al., 2002; Bhanji et al., 2011). On the contrary, a study reported that weight underestimation was more common in respondents with older age (≥ 65 years) (Kuchler & Variyam, 2003). Also, overweight/obese older women sometimes feel beautiful and less overweight than overweight women in the younger age groups (Anderson et al., 2002). Moreover, children from the age group 9-12 years, desire to be thinner and to have lower scores in physical appearance and attributes (Willows et al., 2013).

2.6.3 Educational level and Weight Perception

Several researches have shown that respondents in the lower educational level were more likely to underestimate their weight than those with higher educational level (Gutierrez-Fisac et al., 2002; Gilbert-Diamond et al., 2009; Anderson et al., 2002;

Dorsey et al., 2009; Gregory et al., 2008). However, a study reported that more males with higher educational level underestimate their weight than those with a lower educational level (Chang & Christakis, 2003). In addition, a higher educational level was associated with higher body dissatisfaction and a selection of slimmer body size in females (Gutierrez-Fisac et al., 2002). Moreover, overweight/obese women with lower educational level disagreed to the fact that their weight pose as a risk to their health (Paeratakul et al., 2002). It was also found that normal-weight respondents with lower educational level were more likely to overestimate their weight than normal-weight respondents with higher educational level (Gregory et al., 2008). These studies clearly show how one's level of education influences their knowledge about obesity or overweight. Also, this studies show that postgraduate students are more likely to have body image distortion as compared to undergraduate students.

2.6.4 Income level and Weight Perception

Income levels are also a major factor in the contribution of peoples' weight status.

Several types of research have shown that people with higher income level were more likely to perceive their weight status accurately than those lower class income earners (Chang & Christakis, 2003; Gregory et al., 2008; Kuchler & Variyam, 2003; Paerataku et al., 2002). Overweight or obese individuals with higher income level were also less likely to underestimate their weight (Howard et al., 2008). Furthermore, overweight/obese women with lower income level were more likely to disagree that their weight is a health risk than those with higher income level (Gregory et al., 2008).

2.7 The Relationship between Body Weight Perception and Weight Loss Practices

An appropriate perception of one's own weight is conducive to improved weight control behavior (Lynch, Liu, Wei, Spring, Kiefe & Greenland, 2009). Better knowledge on the determinants of perception of one's own weight may thus be important in weight control strategies (Wang, Liang & Chen, 2009). Several studies have identified a relationship between body weight perception and weight loss practices (Sinjoo, 2013; Lee et al., 2005; Wang et al., 2009).

Sunjoo (2013) assessed this association using logistic regression model and revealed that the level of overweight and body weight perception significantly correlates with weight loss efforts. He further found that perceiving oneself to be overweight or obese, compared to perceiving themselves to be underweight, was strongly related to weight loss efforts. Previous studies have demonstrated that perceptions of overweight or obesity increased the likelihood of trying to lose weight (Lee et al., 2005; Wang et al., 2009). Another study reported that perceptions of overweight or obesity independent of BMI in Korean middle-aged women were related to increased use of undesirable weight-control behaviors, such as skipping meals or taking laxatives (Kim et al., 2008).

2.8 Body Mass Index

BMI is mostly generated from self-reported weight and height (Bojorquez et al., 2018) which are anthropometrical measures. Body mass is mostly measured to the nearest 0.1 kilogram (kg) and standing height to the nearest 0.1 centimeter (cm) using a balance scale and a wall-mounted stadiometer, respectively with the subject barefoot and clothed removed according to standardized procedures (Lohman et al., 1988). Body mass index (BMI) was calculated as body weight divided by squared height (kg/m^2).

This is used to assess every student's weight status. The World Health Organization (WHO) minimum values were used to classify subjects as underweight, normal weight, overweight and obese (James et al., 2001) as stated in the overview of obesity and overweight.

Another approach is Gender- and age-specific Z-scores of the BMI calculated from the World Health Organization WHO (2007) reference tables. Implausible Z-scores with absolute value >5 is mostly eliminated from the analysis. BMI was categorized according to Z-score as severe thinness ($Z < -3$), thinness (≥ -3 $Z < -2$), normal (≥ -2 $Z < 1$), overweight (≥ 1 $Z < 2$), and obesity ($Z \geq 2$) (Bojorquez et al., 2018). Several studies have shown that body weight perception tends to be inaccurate when compared to BMI (Brener et al., 2004; Yost et al., 2010). A review of data on Body Mass Index explained that overweight/obesity among women in developing countries is largely seen as a sign of beauty and affluence, and could be related to the higher proportion of obese women than men in such regions (Low et al., 2009).

2.9 Body Image Distortion

Perception about weight distortion has been long in existence and a lot of studies have even been conducted (Fitzgibbon et al., 2000; Gross et al., 2005; Inoue et al., 2007). Body distortion is computed by subtracting Figure Ideal Discrepancy (FID) from Feel (Mciza et al., 2005). A negative value means one desires to grow fatter while a positive value means one desires to be slimmer. The silhouette matching technique was used as a measure to determine whether realistic weight status can be found in the subject on the basis of body size assessment (BMI). According to Zaccagni et al. (2004), the comparison between an ideal figure and feel figure showed that both sexes prefer ideals

of thinness. Dissatisfaction with one's body weight index is affected by the sociocultural environment, contributing to stresses of modern life, and it is associated with the current mortality (Kakeshita & de Sousa Almeida, 2006). Dissatisfaction in body image is influenced by customs, culture, environment and also images from social media. This self-dissatisfaction affects both men and women (Ratanasiripong & Burkey, 2011; Wharton et al., 2008).

Other research discovered that both sexes have a different ideology about their physical outlooks and in discomfort with their body form (Kruger et al., 2008; Grogan & Richards, 2002). A study conducted by Zaccagni et al. (2004) showed that body dissatisfaction (FID) increased with increasing BMI with an increase in FID being more accentuated in women than in men.

On several occasions, research works have concluded that women normally see themselves as oversize irrespective of their weight size unlike the opposite sex (Fitzgibbon et al., 2000; Gross et al., 2005; Inoue et al., 2007). For example, Emslie et al. (2005) disclosed that women working as staff in the British Bank and their universities see themselves as overweight than men. Moreover, as clearly shown by Inoue et al. (2007), aged groups or mates made a comparison between measured BMI and perceived weight size and was discovered that about 55.3% of normal weight women perceived themselves as overweight (Inoue et al., 2007).

2.10 Association between Body Image Distortion and Weight Loss Practices among Students

Several studies have identified an association between body image distortion and weight loss practices (Anton et al., 2000; Lindwall & Hassmen, 2004; Anderson et al., 2002, Lemon et al., 2009; Stock, Küçük, Miseviciene, Petkeviciene, & Krämer, 2004). A study conducted by Stock, Küçük, Miseviciene, Petkeviciene, and Krämer (2004) assessed the factors associated with misperceptions of body shape for 1,681 first-year University students from Germany and Lithuania. They used multifactorial logistic regression and found that German students were more likely to perceive themselves as being fatter than their BMI compared with their Lithuanian peers. Their results indicated that misperception of body shape was a substantial problem for these university students, particularly those from Germany. According to Anton et al. (2000), unlike the males, most young women have low self-esteem towards their physical appearance. This has become a problem since most women with a negative impression about their body weight sometimes are not able to accept who they are. They look down on themselves and thus engage in bad eating habits (Lindwall & Hassmen, 2004). A study from the United States has also demonstrated that dissatisfaction with weight is a strong predictor of trying to lose weight in women (Anderson et al., 2002; Lemon et al., 2009).

2.11 The Relationship between Body Mass Index and Body Weight Perception

Several studies have identified a relationship between body mass index and body weight perception in high income countries such as Denmark (Tom et al., 2006), high and upper income countries such as Bulgaria, Denmark, Germany, Lithuania, Poland, Spain and Turkey (Mikolajczyk et al., 2010); upper income countries such as turkey

(Canpolat, Orsel, Akdemir, & Ozbay, 2005), and sub Saharan countries such as South Africa (Cilliers, Senekal, & Kunneke, 2006). Mikolajczyk et al. (2010) found that females are more likely to perceive a lean body as ideal, which may be fuelled by images of thin women portrayed in the media. According to Robinson (2017), there is mostly discrepancy between an individual's actual weight status and the person's perceived weight status. Some individuals having a normal weight misperceive themselves as overweight. More predominant is the propensity of some people who are obese or overweight to have an underestimation of their weight and fail to regard their weight as being overweight (Johnson, Cooke, Croker, & Wardle, 2008).

A current study in United Kingdom among adults showed that about 33% and 50% of women and men respectively who are overweight refuse to regard themselves as such (Robinson & Oldham, 2016). Sunjoo (2013) stated that despite a significant relationship between BMI and weight perception, a greater percentage of individuals who are overweight or obese perceive themselves inaccurately. According to Sunjoo (2013), a greater number of women perceived themselves to weigh lesser than their actual weight. The weightier they are, the more probable they would underestimate their weight

Attempts to lose weight by individuals who perceive themselves as overweight may not necessarily translate into the adoption or appropriate implementation of effective weight control strategies. Perceived overweight was associated with unhealthy weight control strategies (Haynes, Kersbergen, Sutin, Daly & Robinson, 2018). These findings can be likened to the stigma connected to the psychological identification as overweight (Vartanian & Porter, 2016).

2.12 The Relationship between Socio-demographic Characteristics and Weight Lose Practices

Several studies have identified a relationship between socio-demographic characteristics of adults and weight loss practices (Bärebring, Winkvist, & Augustin, 2018; Wardle, Haase, & Steptoe, 2006). Bärebring, Winkvist & Augustin (2018) examined the relationship between socio-demographic characteristics and trying to lose weight in Sweden using multiple logistic regressions and identified that sex, income, and educational status have a relationship with trying to lose weight. They also found that non-overweight students who are trying to lose weight were more likely to be women and from a low-income country. This is supported by the findings of Wharton, Adams, & Hampl (2008) who identified that employment status has a relationship with trying to lose weight. In the study by Wardle, Haase & Steptoe (2006), about 50% of all female students from 22 countries were trying to lose weight, although only 5% had a $BMI \geq 25 \text{ kg/m}^2$.

2.13 Conclusions and Research Gaps

- Dearth of research on weight loss practices in developing countries, with only 8% of low and middle income countries covered (only one study in Ghana).
- Few studies in low and middle income countries conducted in the University settings, for example only two of the 8 studies of the prevalence of weight loss practices and none from Sub-Saharan Africa.
- Little to non-existent research in body image distortion and weight loss practices among students in low income countries and none in Sub-Saharan Africa.

- Knowledge gap in risk factors pertaining to weight loss practices among post-graduate students worldwide.
- Limited research in identifying the relationship between body weight perception and weight loss practices in high income countries with almost non-existence in Sub-Saharan Africa.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This shows the methods used for the research. It outlines and describes the study design, study area and the source of data for the study. It also shows the data collection instrument, the pretesting of instruments, sampling and sampling technique, sample size and data analysis.

3.1 Study Area

The study was carried out in the University of Ghana. The University of Ghana is the premier University and the largest University in Ghana founded as the University College of the Gold Coast by Ordinance on August 11, 1948 for the purpose of providing and promoting university education, learning and research. The vision of the University is to become a world class research-intensive University over the next decade. The mission of the University is to create an enabling environment that makes the university increasingly relevant to national and global development through cutting-edge research as well as high quality teaching and learning.

The university has 4 colleges namely, College of Basic and Applied Sciences, College of Education, College of Health Sciences, and College of Humanities. College of Education comprises of school of continuing and distance education, school of education and leadership, and school of communication and information studies. College of Health Sciences comprises of School of Biomedical and Allied Health, School of Medicine and Dentistry, School of Nursing and Midwifery, School of Pharmacy, School of Public Health, and Noguchi Memorial Institute for Medical Research. College of Basic and Applied Sciences comprises of School of Physical and

Mathematical Sciences, School of Biological Sciences, School of Agriculture, School of Engineering Sciences, and School of Veterinary Medicine. The university had a total number of 3463 registered post-graduate students (both weekend and regular students) for 2018/19 academic year.

3.2 Research Design

The study used a descriptive cross-sectional research design in assessing the data from 211 post-graduate students (both weekend and regular students) in the University of Ghana. This method was used to collect data on individual characteristics at the time of the study and information about the outcome of interest, as well as the relationship between individual characteristics and the outcome of interest, which is weight loss practices and trying to lose weight, and to estimate the magnitude of the problem.

3.3 Study Population

The population for this study comprised of all post-graduate students in all the colleges of University of Ghana, Legon, Accra. The total registered post-graduate students in the University of Ghana were 3463 in 2018/2019 academic year. The study participants were both male and female students pursuing either masters or doctor of philosophy programme at the various departments in the various colleges in the University. Post-graduate students were considered because the majority of the post-graduate students belong to the socio-economic status class which is measured by the working class. The distribution of the population across the various colleges in the University is presented in Table 3.1.

Table 3.1: The distribution of the population across the various colleges in the University of Ghana

College	Group	Population
Basic and Applied Sciences	Masters	329
	PhD	93
	Total	422
Education	Masters	352
	PhD	5
	Total	357
Health Sciences	Masters	357
	PhD	18
	Total	375
Humanities	Masters	2179
	PhD	130
	Total	2309
Grand Total	Masters	3217
	PhD	246
	Total	3463

Source: From the School of Graduate Studies University of Ghana Legon.

3.4 Sample Size Determination

Lwanga and Lemeshow (1991) formula for population proportions in a cross-sectional survey was used to calculate the sample size for this study. The formula estimates a sample size that gives a sufficient power to test a given hypothesis. The null hypothesis is that the proportion of healthy weight loss practice is 28.6% against an alternative hypothesis that it is not 28.6% at the 5% level of significance.

The sample size formula was calculated as;

$$n = \frac{\{Z_{1-\alpha/2}\sqrt{P_o(1-P_o)} + Z_{1-\beta}\sqrt{P_a(1-P_a)}\}^2}{(P_o - P_a)^2}$$

Where n= the minimum sample size

P_o is the test value of the proportion of healthy weight loss practice under the null hypothesis = 0.286 (Ayisi-Addo et al., 2016)

P_a is anticipated value of the population proportion of healthy weight loss practice = 0.186

α = significance level = 0.05

Power = $1 - \beta$ = 0.90

Z = z-score from the standard normal table

$$Z_{1-\alpha/2} = 1.96$$

$$Z_{1-\beta} = 1.285$$

$$n = \frac{\{1.96\sqrt{0.286(1-0.286)} + 1.285\sqrt{0.186(1-0.186)}\}^2}{(0.286 - 0.186)^2}$$

$$n = 192.0179 \approx 192 \text{ students}$$

Accounting for 10% non-response rate, the total number of participants was calculated as follows: $192 + (0.10 \times 192) = 211.2 \sim 211$. Therefore, the required total sample size for this study was 211 post-graduate students.

**Table 3.2: The distribution of the sample across the various colleges in the
University of Ghana**

College	Group	Population	Sample
Basic and Applied Sciences	Masters	329	20
	PhD	93	6
	Total	422	26
Education	Masters	352	21
	PhD	5	1
	Total	357	22
Health Sciences	Masters	357	22
	PhD	18	1
	Total	375	23
Humanities	Masters	2179	132
	PhD	130	8
	Total	2309	140
Grand Total	Masters	3217	196
	PhD	246	16
	Total	3463	211

Source: Author's own work, 2019.

3.5 Sampling Method

Multistage sampling technique was used to select the post-graduate students from the University of Ghana. The post-graduate students in the University of Ghana were first stratified into four colleges and departments. They are college of basic and applied sciences, college of education, college of health sciences, and college of humanities. Secondly, a school within the each college was selected to represent a cluster using cluster sampling. Thirdly, cluster sampling was used to select one department within each school from the four colleges. The 211 post-graduate students were distributed proportionate to size of the colleges. Fourthly, simple random sampling method was chosen to randomly sample the post-graduate students from each of the departments selected in the four colleges in the University of Ghana. The simple random sampling was performed as follows; the lottery method was used where the entire student in each department was assigned a number, then post-graduate students whose numbers was selected at random was selected to be part of the sample.

3.6 Study Variables

The co-dependent variables in this study were weight loss practices and trying to lose weight. The weight loss practices were indicated by healthy weight loss practices (exercising) and unhealthy weight loss practices (fasting, diet pills, purging/laxatives, vomiting). These were self-reported practices of losing weight. Trying to lose weight was indicated by a binary response (yes or no). Two categories of factors were examined as independent variables. These were; body image distortion factors and socio-demographic factors (Lee & Lee, 2015; Choi, 2017). A summary of the independent and co-dependent variables that was used in the study can be found in Table 3.3

Table 3.3: Summary of Study Variables

Variable Type	Variable Measurement	Scale of Measurement
Dependent Variable		
Weight Loss Practices	Healthy, Unhealthy	Binary
Trying to Lose Weight	No, Yes	Binary
Independent Variable		
	Socio-demographic factors	
Age	Years	Continuous
Sex	Male, Female	Binary
Marital Status	Single, Married, Widow/Widower, Divorced	Nominal, categorical
Nationality	Not Ghanaian, Ghanaian	Binary
Work Status	Unemployed, Employed	Binary
Ethnic Group	Fante/Nzema, Akan, Ga/Adangbe, Dagomba/Gonja	Nominal, categorical
Religion	Christianity, Islam, Traditional	Nominal, categorical
College	College of Basic and Applied Sciences, College of Education, College of Health Sciences, College of Humanities	Nominal, categorical
Program of Study	Masters, PhD	Binary
Body Mass Index	Weight in kilograms/Height in squared meters	Continuous
Body Weight Perception	Underweight, About the right weight, overweight, very overweight/Obese	Nominal, categorical
Body Image Distortion	Distortion in either direction, no distortion in either direction	Binary

Source: Researcher's own Work, 2019

3.7 Source of Data and Data Collection

The study used primary data collected from post-graduate students in the University of Ghana. The tool that was used in this study's data collection include closed-ended structured questionnaire.

3.9.1 Questionnaire

The study used a survey approach for data gathering to obtain the needed information for the study. The primary data collected from post-graduate students in the University of Ghana in the 2018/2019 academic year through the administration of questionnaires. The closed ended questionnaire was used to solicit information on the socio-demographic characteristics, body mass index, body perception, and the weight loss practices. The researcher collected the primary data with the help of one trained and experienced teaching assistant in the various department sampled.

The closed-ended structured questionnaire was made up of three (3) sections; section A, B, and section C. Section A sought to get information on participants' socio-demographic characteristics such as age, sex, marital status, religious status, work status, Level in School. Section B comprised of body mass index, body perception, and weight loss goals. Section C comprised of trying to lose weight and weight loss practices. These variables have been reported in the literature to have an association with weight loss practices.

3.10 Data Analysis and presentation

Data gathered from the study was coded and entered into a Microsoft Excel 2015 spread sheet and analyzed using STATA version 15. Basic frequency distribution

tables, percentages, and pie chart were used to describe the data by displaying the outcomes. Chi-square test and multiple logistic regression was the two statistical tools used to determine the association between the dependent variable and various independent variables. A Chi-square analysis was used to test the relationship for cross-tabulations and to establish how proportions of the various independent variables compare between the categories of the outcome variable (trying to lose weight and weight loss practices). Since bivariate analyses do not consider confounding effects, a logistic regression was conducted to identify how strong socio-demographic factors and body image distortion was associated with trying to lose weight and weight loss practices.

3.10.1 Multiple Logistic Regression

In this study, weight loss practices (unhealthy=0, healthy=1) was used as the dependent variable with unhealthy weight loss practice as the reference category in a multiple logistic regression model using the enter method. Also, trying to lose weight (No = 0, Yes = 1) was also used as the dependent variable with never tried losing wieght as the reference category in a multiple logistic regression model using the enter method. This logit provided the opportunity to see the interaction between a binary outcome (in this case, either weight loss practices or trying to lose weight) and predictors (in these case, selected socio-demographic factors and body image distortion). The socio-demographic factors; sex, age, ethnic group, marital status, work type, program of study, college of study, and body image distortion was considered as the independent variables.

In the model, all socio-demographic factors was entered in one block using one category as a reference category for each factor. For instance, regarding sex, the male

category was used as the reference category to which the likelihood of a participant describing themselves as practicing as healthy weight loss against practicing unhealthy weight loss in the other sex category (female) was be compared. The resulting regression coefficients revealed the decreased or increased chance of being in weight loss practice category considering the effect of the independent variables. Thus, the likelihood of practicing healthy or unhealthy weight loss was reported and interpreted using odds ratios (Exp β) with confidence intervals where estimates of odds greater than 1.0 was indicative of higher odds of practicing healthy weight loss than that of the reference category while odds ratios less than 1.0 indicated a lower odds of practicing healthy weight loss compared to reference category.

Also, the resulting regression coefficients revealed the decreased or increased chance of trying to lose weight category considering the effect of the independent variables. Thus, the likelihood of trying to lose weight was reported and interpreted using odds ratios (Exp β) with confidence intervals where estimates of odds greater than 1.0 was indicative of higher odds of trying to lose weight than that of the reference category while odds ratios less than 1.0 indicated a lower odds of trying to lose weight compared to reference category.

3.11 Quality Control Measure

Questionnaires were administered for both pre-testing and the actual research study. Information derived from participants was kept in a cabinet under lock and key, accessible to principal investigator only.

3.12 Ethical Consideration

3.12.1 Ethical Clearance from Ghana Health Service

Ethical clearance was sought from the Ghana Health Service (GHS) ethical review committee for approval before the commencement of this study as GHS protocol demands. Also, permission was sought from the various colleges of the University of Ghana for approval.

3.12.2 Consenting Process

Consent was sought from the various colleges of the University of Ghana. A signed written informed consent form was obtained from participants prior to their participation in the study. The consent form contained information regarding possible risk or discomfort, possible benefits, data storage and management, contact person for additional information, voluntary participation and the right to withdraw from the study at any given time without penalty attached. Participation were not be compelled against their own will to participate. Participants were assured of their right to withdraw from the study at any time they deemed it necessary to do so.

3.12.3 Privacy and Confidentiality

The information shared by participants during the study was confidential to the principal investigator of the study; in view of this participants were given unique codes to identify them. This ensured anonymity since no participant's name appeared on any questionnaire. Data was also reported in aggregates to reduce the possibility of tracing information gathered back to respondents. There was no circumstance whereby the information obtained was shared with others. This was done to ensure the confidentiality of information that was collected from participants.

3.12.4 Possible Risk and Discomfort

There was an anticipated minimal risk for the study to be conducted: this is in view of soliciting information from the post-graduate students which to an extent caused them to be a bit hysterical. However, any risk identified during the study was duly addressed. A minimal discomfort was during their contact hours and during respondents answering questions about their self-perception of weight.

3.12.5 Possible Benefits

The education directorate co-operated the findings into the activities and action plan of the various departments in the various universities to promote the health of the students. In addition, it informed both university and health workers to engage in health education programs for the benefit of both undergraduate and post-graduate students, the university and the Legon community.

3.12.6 Voluntary participation and Right to Withdraw

Participation in this study was voluntary. Participants were free to answer part or the entire questionnaire. They can choose to withdraw from the study at any time they want. They can also choose not to answer any question(s) they find uncomfortable about. Should they choose not to participate; it will not affect them or the university in any way. However, they are encouraged to participate fully in this study to help us learn.

3.12.7 Compensation

Participants sampled for the study did not receive any form of payment but were refreshed for the services rendered during the study with soft drinks and biscuits.

3.12.8 Data Storage and Management

Data collected for the study was stored electronically on pen drives, compact disc, external hard disk drive, google drive and dropbox respectively. In addition, a soft copy was sent to the library of School of Public Health, University of Ghana. The password to all account of the electronic medium is exclusive to the principal investigator. The information stored was destroyed approximately a year after the dissertation is submitted and approved by the external examiner.

3.12.9 Dissemination of Findings

Potential participants were told that the results of this research will be submitted to the School of Public Health in partial fulfillment of the requirements for the award of a Master of Public Health Degree.

3.12.10 Conflict of Interest

The principal investigator and supervisor declared no conflict of interest.

3.12.11 Funding

This study was solely funded by the principal investigator.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the findings of the study. This study used primary data collected from post-graduate students of University of Ghana, Legon, Accra to assess the determinants of trying to lose weight and weight loss practices.

4.1 Socio-demographics characteristics of study participants

A total of 211 post-graduate students fulfilled inclusion criteria and had completed the questionnaire making a response rate of 100%. Table 4.1 shows the socio-demographic characteristics of participants. The mean age of participants was 35.6 ($\pm$ 6.8) years, with the minimum of 24 and maximum of 48 years. More than one-third 88(41.7%) of the participants were above 40 years.

Out of the total participants, more than half 124 (58.8%) were married and 116 (55.0%) were unemployed. Almost three-quarters of the participants 152 (72.0%) were Christians and more than half 121 (57.4%) were Ghanaians. In relation to the colleges the participants belong to, more than two-third 140 (66.4%) reported that they were in College of Humanities and 92.4% were pursuing master's degree programs.

Overall, more than one-third of the participants 78 (37.0%) were underweight with a mean BMI of participants being 23.5 ($\pm$ 5.8) years.

Table 4.1: Socio-demographics characteristics of study participants

Characteristics	Frequency N=211	Percentage (%)
Sex		
Male	127	60.2
Female	84	39.8
Age Mean ($\pm$ SD) 35.6($\pm$ 6.8)		
≤ 30 years	52	24.6
31-40 years	71	33.7
>40 years	88	41.7
Marital Status		
Single	87	41.2
Married	124	58.8
Work Status		
Unemployed	116	55.0
Employed	95	45.0
Religion		
Christianity	121	57.4
Islam	90	42.6
Nationality		
Not Ghanaian	29	13.7
Ghanaian	182	86.3
College		
College of Basic and Applied Sciences	26	12.3
College of Education	22	10.4
College of Health Sciences	23	10.9
College of Humanities	140	66.4
Program		
Masters	195	92.4
PhD	16	7.6
BMI Mean ($\pm$ SD) 23.5 ($\pm$ 5.8)		
Underweight (<18.5 kg/m ²)	78	37.0
Normal Weight (18.5-24.9kg/m ²)	45	21.3
Overweight (25-29.9kg/m ²)	55	26.1
Obese (≥ 30 kg/m ²)	33	15.6

4.2 Prevalence of Body Weight Perception

Table 4.2 shows the self-reported body weight perception of participants. More than one-third 76 (36.0%) of the participants perceive themselves as underweight, less than one-quarter 48 (22.8%) of the participants who perceived themselves as normal, more than one-quarter 55 (26.0%) of the participants perceive themselves as overweight, and 32 (15.2%) of the participants perceive themselves as obese.

Table 4.2: Prevalence of Body Weight Perception

Characteristics	Frequency	Percentage (%)
Underweight	76	36.0
Normal	48	22.8
Overweight	55	26.0
Obese	32	15.2

4.3 Prevalence of Trying to Lose Weight and Weight Loss Practices

The prevalence of trying to lose weight last year among post-graduate students is shown in Figure 4.1. Out of 211 study participants 176 (83.4%) tried losing weight.

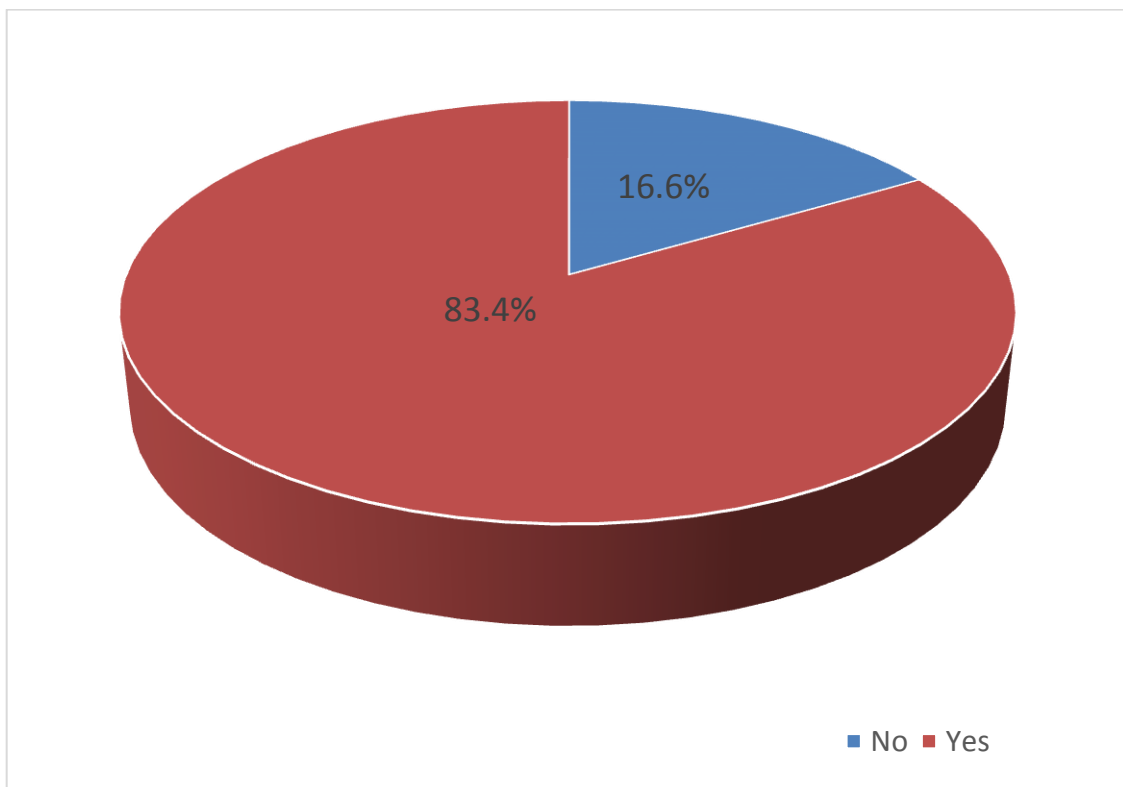
**Figure 4.1: Prevalence of trying to lose weight among study participants**

Figure 4.2 shows that out of 176 participants who tried losing weight last year, more than three-quarters 140 (79.6%) of the participants practiced healthy weight loss.

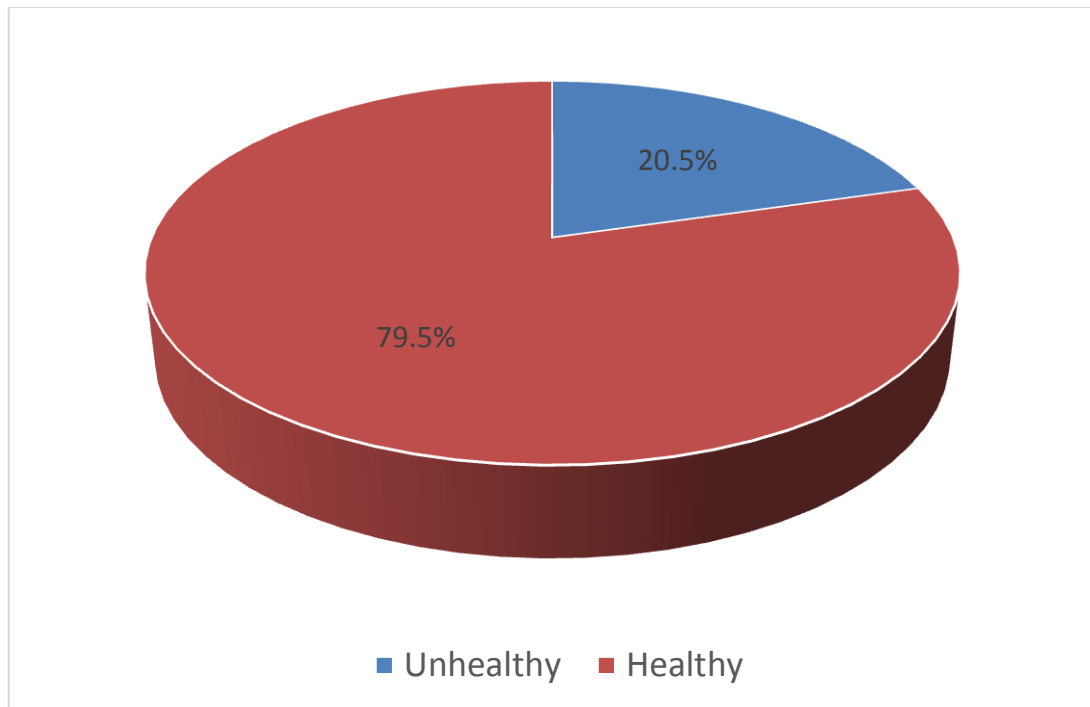


Figure 4.2: Prevalence of weight loss practices among study participants

4.4 Relationship between Body Image Distortion and Trying to Lose Weight

Table 4.3 shows the agreement between body image distortion and trying to lose weight. There is likelihood that there is an agreement between body image distortion of the participants and trying to lose weight ($Kappa=0.6842$, $p=0.0001$). Thus, 37.5% of the participants who had distortion in either direction strongly agreed to have tried losing weight last year compared with 62.5% of trying to lose weight last year by participants who had no distortion in either direction.

Table 4.3: Agreement between Body Image Distortion and Trying to Lose Weight

Characteristics	Trying to Lose Weight			Kappa	P-Value
	No N (%)	Yes N (%)	Total N (%)		
Body Image Distortion					
No Distortion in either direction	7(20.0)	110(62.5)	117(55.5)	0.6842	0.0001**
Distortion in either direction	28(80.0)	66(37.5)	94(44.5)		

** $p<0.05$

4.5 Relationship between Body Image Distortion and Weight Loss Practices

Table 4.4 shows the agreement between body image distortion and weight loss practices. There is likelihood that there is an agreement between body image distortion of the participants and weight loss practices (Kappa=0.7984, $p=0.0097$). Thus, 33.3% of the participants who had distortion in either direction strongly agreed to practice weight loss compared with 66.7% of weight loss practices by participants who had no distortion in either direction.

Table 4.4: Agreement between Body Image Distortion and Weight Loss Practices

Characteristics	Weight Lose Practices			Kappa	P-Value
	No N (%)	Yes N (%)	Total N (%)		
Body Image Distortion					
No Distortion in either direction	28(87.5)	96(66.7)	124(70.5)	0.7984	0.0097**
Distortion in either direction	4(12.5)	48(33.3)	52(29.5)		

** $p<0.05$

4.6 Relationship between Body Mass Index and Body Weight Perception

Table 4.5 shows the agreement between body weight perception and the actual body weight measured using body mass index. There is likelihood that there is a strong agreement between body weight perception and the actual body weight of participants ($p=0.000$). Thus, 6.4% of the participants who perceived to have a normal weight actually were underweight compared with 78.2% of participants who perceive to be underweight were actually underweight. Also, 51.1% of participants who perceived to have a normal weight actually had a normal weight compared to 6.7% who perceived to be underweight actually had a normal weight.

Table 4.5: Association between Body Mass Index and Body Weight Perception

Characteristics	Body Mass Index				Kappa (P-value)
	Underweight N (%)	Normal N (%)	Overweight N (%)	Obese N (%)	
Body Weight Perception					
Underweight	61(78.2)	3(6.7)	8(14.6)	4(12.1)	0.6608 (0.0000)
Normal weight	5(6.4)	23(51.1)	17(30.9)	3(9.1)	
Overweight	4(5.1)	14(31.1)	20(36.4)	17(51.5)	
Obese	8(10.3)	5(11.1)	10(18.2)	9(27.3)	

**p<0.05

4.7 Relationship between Socio-demographic Characteristics and Trying to Lose Weight

Table 4.6 shows the relationship between socio-demographic factors and trying to lose weight. There is likelihood that sex of the participants was related to trying to lose weight ($p=0.002$). Whereas 64.8% of the participants who try to lose weight were males, only 35.2% of the participants who try to lose weight were females. Also, there is likelihood that age of the participants was related to trying to lose weight ($p=0.003$). Thus, 43.2% of the participants belonging to the age group above 40 years try to lose weight compared with 27.8% of participants trying to lose weight among the age group less than 30 years.

Furthermore, there is likelihood that marital status of the participants was related to trying to lose weight ($p=0.000$). Whereas 68.2% of the participants who try to lose weight were married, only 31.8% of the participants trying to lose weight were single. Moreover, there is likelihood that work status of the participants was related to trying to lose weight ($p=0.032$). For instance, 48.3% of the participants who were employed tried losing weight compared with 51.7% of the participants trying to lose weight among those who were unemployed.

However, socio-demographic factors such as nationality, college, religion, and program had no relationship with trying to lose weight.

Table 4.6: Relationship between socio-demographic characteristics and trying to lose weight

Characteristics	Trying to Lose Weight			Chi-square	P-Value
	No N (%)	Yes N (%)	Total N (%)		
Sex					
Male	13(37.1)	114(64.8)	127(60.2)	9.3012	0.002**
Female	22(62.9)	62(35.2)	84(39.8)		
Age					
≤30 years	3(8.6)	49(27.8)	52(24.6)	11.8353	0.003**
31-40 years	20(57.1)	51(29.0)	71(33.7)		
>40 years	12(34.3)	76(43.2)	88(41.7)		
Marital Status					
Single	31(88.6)	56(31.8)	87(41.2)	38.8064	0.000**
Married	4(11.4)	120(68.2)	124(58.8)		
Work Status					
Unemployed	25(71.4)	91(51.7)	116(55.0)	4.5885	0.032**
Employed	10(28.6)	85(48.3)	95(45.0)		
Religion					
Christianity	9(25.7)	112(63.6)	121(57.4)	17.1640	0.120
Islam	26(74.3)	64(36.4)	90(42.6)		
Nationality					
Not Ghanaian	2(5.7)	27(15.3)	29(13.7)	2.2821	0.131
Ghanaian	33(94.3)	149(84.7)	182(86.3)		
College					
Basic and Applied Science	4(11.4)	22(12.5)	26(12.3)	0.2076	0.976
Education	3(8.6)	19(10.8)	22(10.4)		
Health Sciences	4(11.4)	19(10.8)	23(10.9)		
Humanities	24(68.6)	116(65.9)	140(66.4)		
Program					
Masters	31(88.6)	164(93.2)	195(92.4)	0.8855	0.347
PhD	4(11.4)	12(6.8)	16(7.6)		

**p<0.05

4.8 Relationship between socio-demographic characteristics and weight loss practices

Table 4.7 shows the relationship between socio-demographic factors and weight loss practices. There is likelihood that sex of participants was related to weight loss

practices ($p=0.010$). Whereas 60.4% of the participants who practiced healthy weight loss were males, only 39.6% of the participants who practiced healthy weight loss were females. Also, there is likelihood that age of participants was related to weight loss practices ($p=0.047$). Thus, 45.8% of participants belonging to the age group above 40 years practiced healthy weight loss compared with only 29.2% of healthy weight loss practices among the age group less than 30 years.

Table 4.7: Relationship between socio-demographic characteristics and weight loss practices

Characteristics	Weight Loss Practices			Chi-square	P-Value
	Unhealthy N (%)	Healthy N (%)	Total N (%)		
Sex					
Male	27(84.4)	87(60.4)	114(64.8)	6.5863	0.010**
Female	5(15.6)	57(39.6)	62(35.2)		
Age					
≤30 years	7(21.9)	42(29.2)	49(27.8)	6.1130	0.047**
31-40 years	15(46.9)	36(25.0)	51(29.0)		
>40 years	10(31.3)	66(45.8)	76(43.2)		
Marital Status					
Single	12(37.5)	44(30.6)	56(31.8)	0.5820	0.446
Married	20(62.5)	100(69.4)	120(68.2)		
Work Status					
Unemployed	28(87.5)	63(43.8)	91(51.7)	20.0688	0.000**
Employed	4(12.5)	81(56.2)	85(48.3)		
Religion					
Christianity	24(75.0)	88(61.1)	112(63.6)	2.1825	0.140
Islam	8(25.0)	56(38.9)	64(36.4)		
Nationality					
Not Ghanaian	5(15.6)	22(5.3)	27(15.3)	0.0024	0.961
Ghanaian	27(84.4)	122(84.7)	149(84.7)		
College					
Basic and Applied Science	6(18.8)	16(11.1)	22(12.5)	3.4595	0.326
Education	4(12.5)	15(10.4)	19(10.8)		
Health Sciences	1(3.1)	18(12.5)	19(10.8)		
Humanities	21(65.6)	95(66.0)	116(65.9)		
Program					
Masters	30(93.8)	134(93.1)	164(93.2)	0.0199	0.888
PhD	2(6.2)	10(6.9)	12(6.8)		

** $p<0.05$

Finally, there is likelihood that work status of participants was related to weight loss practices ($p=0.000$). For instance, 56.2% of the participants who were employed practiced healthy weight loss compared with 43.8% of healthy weight loss practices among participants who were unemployed. However, socio-demographic factors such as religion, marital status, nationality, college, and program had no significant relationship with weight loss practices.

4.9 Multiple Logistic Regression Analysis of Factors Influencing Trying to Lose Weight

A multiple logistic regression model was used to test the strength and direction of the association between the outcome variable (trying to lose weight) and independent variables (socio-demographic factors and body image distortion). The model was also used to control for confounders and all the socio-demographic factors that were significant at $p<0.05$ during the chi-square test were included. Also, the body image distortion was significant at $p<0.05$ during the Kappa test and was included.

Table 4.8 shows the multiple logistic regression analysis of the socio-demographic factors and body image distortion having an association with trying to lose weight among post-graduate students of University of Ghana, Legon, Accra. The Wald Chi-squared value is 74.74 with a P-value of 0.000. This shows the overall significance of the logistic regression model that was used to explain the factors that influence trying to lose weight. Hence the multiple logistic regression model is appropriate. The multiple logistic regression analysis shows that sex, age, marital status, and working status of participant were significantly associated with trying to lose weight.

Accordingly, participants who belonged to the age group 31-40 years had 0.101 (AOR = 0.101, 95% CI = 0.023, 0.443, $P < 0.05$) lower odds of trying to lose weight than participants who belonged to the age group less than 30 years. Participants who were married had 15.6 (AOR = 15.6, 95% CI = 4.8, 50.7, $P < 0.05$) higher odds of trying to lose weight than participants who were single. The odds of trying to lose weight was 3.2 (AOR=3.2, 95% CI=1.2, 8.5, P -value<0.05) higher among those who were employed compared to those who were unemployed.

Finally, the odds of practicing healthy weight loss was 0.2 (AOR=0.2, 95% CI=0.1, 0.5, P -value<0.05) lower among those who had body image distortion in either direction compared to those who had no body image distortion in either direction.

Table 4.8: Multiple Logistic Regression Analysis of factors associated with trying to lose weight

	Crude Odds Ratio			Adjusted Odds Ratio		
	OR	P-Value	95% CI	OR	P-Value	95% CI
Sex						
Male	1			1		
Female	0.3	0.003	0.2, 0.7	0.7	0.493	0.3, 1.9
Age						
≤30 years	1			1		
31-40 years	0.2	0.004	0.0, 0.6	0.1	0.002**	0.0, 0.4
>40 years	0.4	0.158	0.1, 1.4	0.2	0.052	0.5, 1.0
Marital Status						
Single	1			1		
Married	16.6	0.000	5.6, 19.3	15.6	0.000**	4.8, 50.7
Work Status						
Unemployed	1			1		
Employed	2.3	0.036	1.1, 5.1	3.2	0.021**	1.2, 8.5
Body Image Distortion						
No Distortion in either direction	1			1		
Distortion in either direction	0.2	0.000	0.1, 0.4	0.2	0.001**	0.1, 0.5

**p<0.05

4.10 Multiple Logistic Regression Analysis of Factors Influencing Weight Loss Practices

A multiple logistic regression model was used to test the strength and direction of the relationship between the outcome variable (weight loss practices) and independent variables (socio-demographic factors and body image distortion). The model was also used to control for confounders and all the socio-demographic factors that were significant at $p < 0.05$ during the chi-square test were included. Also, the body image distortion was significant at $p < 0.05$ during the Kappa test and was included.

Table 4.9 shows the multiple logistic regression analysis of the socio-demographic factors and body image distortion influencing weight loss practices among post-graduate students of University of Ghana, Legon, Accra. The Wald Chi-squared value is 38.62 with a P-value of 0.000. This shows the overall significance of the logistic regression model that was used to explain the factors that influence weight loss practices. Hence the Multiple logistic regression model is appropriate. The multiple analysis shows that sex, age, working status, and body image distortion of participant was significantly associated with healthy weight loss practices.

Accordingly, participants who belonged to the age group above 31-40 years had 0.322 (AOR = 0.322, 95% CI = 0.103, 1.003, $P < 0.05$) lower odds of practicing healthy weight loss than participants who belonged to the age group less than 30 years. Also, participants who were females had 3.186 (AOR = 3.186, 95% CI = 1.011, 10.04, $P < 0.05$) higher odds of practicing healthy weight loss than participants who were males.

Furthermore, the odds of practicing healthy weight loss was 10.11 (AOR=10.11, 95% CI=3.202, 31.902, P-value<0.05) higher among those who were employed compared to those who were unemployed.

Finally, the odds of practicing healthy weight loss was 0.926 (AOR=0.926, 95% CI=0.658, 5.636, P-value<0.05) lower among those who had body image distortion in either direction compared to those who had no body image distortion in either direction.

Table 4.9: Multiple Logistic Regression Analysis of factors associated with weight loose practices

	Crude Odds Ratio			Adjusted Odds Ratio		
	OR	P-Value	95% CI	OR	P-Value	95% CI
Sex						
Male	1			1		
Female	3.5	0.014	1.3, 9.7	3.2	0.048**	1.0, 10.0
Age						
≤30 years	1			1		
31-40 years	0.4	0.073	0.1, 1.1	0.3	0.001**	0.1, 1.0
>40 years	1.1	0.858	0.4, 3.1	1.3	0.693	0.4, 3.9
Work Status						
Unemployed	1			1		
Employed	9.0	0.000	3.0, 27.0	10.1	0.000**	3.2, 31.9
Body Image Distortion						
No Distortion in either direction	1			1		
Distortion in either direction	3.1	0.019	1.2, 8.0	0.9	0.031**	0.7, 5.6

**p<0.05

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This chapter discusses the findings of the study in relation to current literature. It discusses the prevalence of trying to lose weight and weight loss practices. It also discusses the socio-demographic characteristics and body image distortion that influence trying to lose weight or weight loss practices. It then focuses on the association between socio-demographic characteristics, body image distortion, and trying to lose weight or weight loss practices. Finally, it discusses other factors that influence trying to lose weight or weight loss practices.

5.1 Prevalence of trying to lose weight and weight loss practices

Obese or overweight increase the chance of acquiring cardiovascular disease such as type 2 diabetes which further leads to heart failure (Akil & Ahmad, 2011), therefore, a weight loss practice is an important consideration for public health benefit (Cai et al., 2014). A healthy weight loss practice is a critical strategy for reducing overweight or obese through physical activities such as exercising (Kumanyika, Parker, & Sim, 2010). In this study, the prevalence of trying to lose weight in previous year was 83.4% among post-graduate students. This prevalence is slightly higher than the prevalence in a study in Ghana by Addo et al. (2015) who found that 55% of adults tried to lose weight. Also, the prevalence is far higher in 2015 in other African countries such as 12.7% in Nigeria, 15.3% in South Africa, 20.5% in Egypt, and 18.1% in Cote D'Ivoire (Peltzer & Pengpid, 2015). Furthermore, globally, this prevalence is far higher than the prevalence of 26.1% in China (Cai, Han, Qi, Li, Zhang, Wang & Liu, 2011), 38.8% in Holland (Nicolaou, van Valkengoed, Doak, van Dam, Stronks & Seidell, 2012), 49.17% in US

(Snook, Hansen, Duke, Finch, Hackney & Zhang, 2017), and 51.6% in Norway (Hjartaker, Laake & Lund, 2001). It is slightly higher than the prevalence of 77.5% in Malaysia (Zainuddin et al., 2014) and approximately 60% in Britain (Johnston & Lordan, 2013).

This high prevalence of trying to lose weight is due to increase in awareness of the health implications of being obese at the tertiary education. The findings in the study showed that more than three-fourth (81.8%) of post-graduate students had practiced healthy weight loss such as exercise. Post-graduate students engaged in exercising to reduce weight because it is a cost effective method of losing and maintaining weight (Ostovan et al., 2013), lowers blood pressure and cholesterol which prevents heart attack (Wharton, Adams, & Hampl, 2008). Exercise also minimizes the risk of developing certain kinds of cancer such as colon and breast cancer (Jakicic & Otto, 2005), reduces rates of anxiety and depression (Johnsson, Hassmen, & Jouper, 2011), and increase number of calories burn each day (Okay et al., 2009).

Trying to lose weight is mostly due to adults who observe themselves as belonging to a class of stigmatized persons (Vartanin & Porter, 2016). This makes them adopt more extreme efforts to lose weight in order to avoid stigma (Fredrickson, Kremer, Swinburn, & de Silva *et al.*, 2015). A stigmatized person can decrease the chance of monitoring his or her weight (Inzlicht, McKay, & Aronson, 2006), which could hinder the maintenance of multifaceted patterns of behaviours needed for a healthy weight loss comprising of eating healthily and preserving adequate levels of physical activity (Hunger, Major, Blodorn, & Miller, 2015).

5.2 Association between socio-demographic characteristics and trying to lose weight or weight loss practice

The socio-demographic characteristics identified in this study are not significantly different from other studies. This study found that age, work status, and marital status have an association with trying to lose weight. Post-graduate students within the age group 31-40 years were less likely to try losing weight (29.0%) compared with post-graduate students within the age group less than 30 years (27.8%). This study finds that age has an inverse relationship with trying to lose weight.

Furthermore, from the study, more than one-thirds of post-graduate students who are employed tried losing weight last year (48.3%) compared with more than half of postgraduate students who are unemployed (51.7%). This is consistent with study by Wharton, Adams, & Hampl (2008) who identified that employment status has an association with trying to lose weight. The study found that post-graduate students who are employed have higher odds of trying to lose weight. Employment being a variable measuring socio-economic status, the study identifies that low socio-economic status is associated with not trying to lose weight. This is consistent with a study by Griffith (2001) who found that higher SES men and women were more likely to try to lose weight. However, this finding is contrary to a study by Odea & Caputi (2014) who found that low SES has an association with tried losing weight. According to Odea & Caputi (2014), low SES people were more likely to be overweight and to try to lose weight.

Finally, from the study, most of the post-graduate students who tried losing weights were married (68.2%) compared with those who were single (31.8%). This study found

that age, work status, and sex have an association with weight loss practices. Post-graduate students who were females were less likely to practice weight loss (39.6%) compared with post-graduate students who were males (60.4%). This is consistent with a study by Bärebring et al. (2018) who found that sex has an association with weight loss practices. According to Grogan et al. (2006), the reason most men do practice physical exercise was to change their physical appearance and to lose weight (Grogan & Richards, 2002). Though most overweight and obese individuals are desirable in losing weight (Welch et al., 2004), unnecessary weight reduction practices might lead to harmful effects for adolescents such as nourishing inadequacies and the hindrance to growth (Neumark-Sztainer et al., 2002; Ojala et al., 2007).

Furthermore, from the study, post-graduate students within the age group 31-40 years were less likely to practice weight loss (25.0%) compared with post-graduate students within the age group less than 30 years (29.2%). This study found an inverse association between age and weight loss practices.

Finally, more than one-thirds of post-graduate students who are employed practiced weight loss (56.2%) compared with more than half of postgraduate students who are unemployed (43.8%). The study found that postgraduate students who are employed have higher odds of practicing health weight loss. Employment being a variable measuring socio-economic status, the study identifies that low socio-economic status is associated with poor weight loss practice. This is contrary to a study by Odea & Caputi (2014) who found that low SES has an association with tried losing weight. According to Odea & Caputi (2014), low SES people were more likely to be overweight and to try to lose weight.

5.3 The Relationship between Body Mass Index and Body Weight Perception

This study found an agreement between body weight perception and the actual body weight measured using body mass index. From the study, there is likelihood that there is a strong agreement between body weight perception and the actual body weight of participants. Thus, 6.4% of the participants who perceived to have a normal weight actually were underweight compared with 78.2% of participants who perceive to be underweight were actually underweight. Also, 51.1% of participants who perceived to have a normal weight actually had a normal weight compared to 6.7% who perceived to be underweight actually had a normal weight. This is consistent with studies in Denmark by Tom et al. (2006) who found a strong agreement between body mass index and body weight perception. Also, studies in Bulgaria, Denmark, Germany, Lithuania, Poland, Spain and Turkey by Mikolajczyk et al. (2010), in turkey by Canpolat, Orsel, Akdemir, and Ozbay (2005), and in sub Saharan countries such as South Africa Cilliers, Senekal, and Kunneke (2006) found that there is a relationship between body mass index and body weight perception.

According to Robinson (2017), there is mostly discrepancy between an individual's actual weight status and the person's perceived weight status. Some individuals having a normal weight misperceive themselves as overweight. More predominant is the propensity of some people who are obese or overweight to have an underestimation of their weight and fail to regard their weight as being overweight (Johnson, Cooke, Croker, & Wardle, 2008). A current study in United Kingdom among adults showed that about 33% and 50% of women and men respectively who are overweight refuse to regard themselves as such (Robinson & Oldham, 2016). Sunjoo (2013) stated that despite a significant relationship between BMI and weight perception, a greater

percentage of individuals who are overweight or obese perceive themselves inaccurately. According to Sunjoo (2013), a greater number of women perceived themselves to weigh lesser than their actual weight. The weightier they are, the more probable they would underestimate their weight

Attempts to lose weight by individuals who perceive themselves as overweight may not necessarily translate into the adoption or appropriate implementation of effective weight control strategies. Perceived overweight was associated with unhealthy weight control strategies (Haynes, Kersbergen, Sutin, Daly & Robinson, 2018). These findings can be likened to the stigma connected to the psychological identification as overweight (Vartanian & Porter, 2016).

5.4 Relationship between Body Image Distortion and Trying to Lose Weight or Weight Loss Practices

This study found a strong agreement between body image distortion and trying to lose weight. Thus, 37.5% of the participants who had distortion in either direction strongly agreed to have tried losing weight last year compared with 62.5% of trying to lose weight last year by participants who had no distortion in either direction.

Thus, this study found a strong agreement between body image distortion and weight loss practices. Thus, 33.3% of the participants who had distortion in either direction strongly agreed to practice weight loss compared with 66.7% of weight loss practices by participants who had no distortion in either direction. This study is consistent with findings by Anton et al. (2000), Lindwall & Hassmen (2004), Anderson et al. (20020, Lemon et al. (2009), and Stock, Küçük, Miseviciene, Petkeviciene, & Krämer (2004) who identified an association between body image distortion and weight loss practices

According to Stock, Küçük, Miseviciene, Petkeviciene, & Krämer (2004), German students were more likely to perceive themselves as being fatter than their BMI compared with their Lithuanian peers. Their results indicated that misperception of body shape was a substantial problem for these university students, particularly those from Germany. According to Anton et al. (2000), people especially women have low self-esteem towards their physical appearance. This has become a problem since most people especially women with a negative impression about their body weight sometimes are not able to accept who they are. They look down on themselves and thus engage in bad eating habits (Lindwall & Hassmen, 2004). A study from the United States has also demonstrated that dissatisfaction with weight is a strong predictor of trying to lose weight (Anderson et al., 2002; Lemon et al., 2009).

5.5 Methodological Validity

This study has several merits. To the best of my knowledge, it is the first to investigate weight loss practices and its associated factors (body image distortion and socio-demographic factors) among postgraduate students worldwide and Ghana to be particular.

The participants were recruited from the study area and were 211 in all. There are high participation rate and the effect of selection and information bias was less. Information bias was not possible because the principal investigator obtained data from self-reported participants. However, there were no limitations to the study.

CHAPTER SIX

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

6.0 Introduction

This chapter presents the summary, conclusions, recommendations, limitations to the study, and future research.

6.1 Summary of the study findings

This study sought to assess the significant factors that influence trying to lose weight and weight loss practices among post-graduate students at University of Ghana, Legon. To achieve this objective, a university based quantitative cross-sectional study was conducted and a cluster sampling technique was employed to select the participants. A structured questionnaire was administered to post-graduate students. Descriptive and analytical statistics were employed to analyze the data.

Generally, this study finds that the prevalence of trying to lose weight in previous year was 83.4% among post-graduate students. Also, more than three-fourth (81.8%) of post-graduate students had practiced healthy weight loss such as exercise. Post-graduate students within the age group 31-40 years were less likely to try losing weight (29.0%) compared with post-graduate students within the age group less than 30 years (27.8%). Also, from the study, more than one-thirds of post-graduate students who are employed tried losing weight last year (48.3%) compared with more than half of post-graduate students who are unemployed (51.7%). Furthermore, from the study, most of the post-graduate students who tried losing weights were married (68.2%) compared with those who were single (31.8%). Post-graduate students who were females were less likely to

practice weight loss (39.6%) compared with post-graduate students who were males (60.4%).

In relation to age of post-graduate students, post-graduate students within the age group 31-40 years were less likely to practice weight loss (25.0%) compared with post-graduate students within the age group less than 30 years (29.2%). More than one-thirds of post-graduate students who are employed practiced weight loss (56.2%) compared with more than half of post-graduate students who are unemployed (43.8%).

This study found a strong agreement between body weight perception and the actual body weight measured using body mass index. From this study, 6.4% of the participants who perceived to have a normal weight actually were underweight compared with 78.2% of participants who perceive to be underweight were actually underweight.

This study found a strong agreement between body image distortion and trying to lose weight. Thus, 37.5% of the participants who had distortion in either direction strongly agreed to have tried losing weight last year compared with 62.5% of trying to lose weight last year by participants who had no distortion in either direction. A strong agreement between body image distortion and weight loss practices was identified in this study. Thus, 33.3% of the participants who had distortion in either direction strongly agreed to practice weight loss compared with 66.7% of weight loss practices by participants who had no distortion in either direction.

6.2 Conclusion

The study concludes that unhealthy weight loss practices are prevalent among post-graduate students in University of Ghana. Also, the author concludes that there is a strong agreement between body image distortion and either trying to lose weight or weight of practices. Finally, the author concludes that factors such as age, marital status, and work status are associated with poor efforts at trying to lose weight and poor weight loss practices.

6.3 Recommendations

University of Ghana

- The study concludes that body image distortion has an association with trying to lose weight and weight loss practices. The study therefore recommends that, the university authorities should engage in health education programs for the benefit of both undergraduate and post-graduate students, the university and the Legon community.
- Measures to be undertaken by the university to promote a healthy lifestyle of post-graduate students offering different degree programmes at the various departments.
- This study concludes that female post-graduate students are less likely to practice weight loss compared to males. Therefore, the study recommends that female post-graduate students should be encouraged to practice healthy weight loss.
- An increase in publicity and knowledge of university students on healthy weight loss practices should be encouraged.
- This study concludes that low SES has an association with poor weight loss practices. This study recommends that SES men and women should be encouraged to practice healthy weight loss.

Ghana Education Service

- A policy should be formulated through collaboration between ministry of health and Ghana education service to increase knowledge and awareness of healthy weight loss practices at the tertiary level. Activities and action plan on healthy weight loss practices should be formulated at the various departments in the various universities to promote the health of the students.

6.3 Future Studies

The study recommends that future studies employ rigorous designs such as cohort/case-control studies to be better able to measure causal associations between socio-demographic characteristics, body image distortion and weight loss practices of post-graduate students.

REFERENCES

- Addo, P. N. O., Nyarko, K. M., Sackey, S. O., Akweongo, P., & Sarfo, B. (2015). Prevalence of obesity and overweight and associated factors among financial institution workers in Accra Metropolis, Ghana: A cross-sectional study. *BMC Research Notes*, 8(1), 1–8.
- Bärebring, L., Winkvist, A., & Augustin, H. (2018). Sociodemographic factors associated with reported attempts at weight loss and specific dietary regimens in Sweden: The SWEDIET-2017 study. *PloS one*, 13(5), e0197099.
- Berrios, X., Koponen, T., Huiguang, T., Khaltayev, N., Puska, P., & Nissinen, A. (1997). Distribution and prevalence of major risk factors of noncommunicable diseases in selected countries: The WHO Inter-Health Programme. *Bulletin of the World Health Organization*, 75(2), 99–108.
- Bhurlun, D. D., & Jeewon, R. (2013). Body Weight Perception and Weight Control Practices among Teenagers. *ISRN Nutrition*, 2013, 1–6.
- Brener, N. D., Eaton, D. K., Lowry, R., Mcmanus, T., Nancy, D., & Eaton, D. K. (2004). The Association between Weight Perception and BMI among High School Students, 12(11).
- Buote, V. M., Wilson, A. E., Strahan, E. J., Gazzola, S. B., & Papps, F. (2011). Setting the bar: Divergent sociocultural norms for women's and men's ideal appearance in real-world contexts. *Body Image*, 8(4), 322-334.
- Carraça, E. V, Silva, M. N., Markland, D., Vieira, P. N., Minderico, C. S., Sardinha, L. B., & Teixeira, P. J. (2011). Body image change and improved eating self-regulation in a weight management intervention in women. *International Journal of Behavioral Nutrition and Physical Activity*, 8(75), 1–11.
- Castillo, I., Duda, J. L., Balaguer, I., & Tomás, I. (2009). The cross-domain generality

- of achievement motivation across sport and the classroom: The case of Spanish adolescents. *Adolescence*, 44(175), 569–580.
- Chen, L., Fox, K. R., Haase, A. M., & Ku, P. (2010). Correlates of body dissatisfaction among Taiwanese adolescents, 19(1), 172–179.
- Cheung, P. C. H., Ip, P. L. S., Lam, S. T., & Bibby, H. (2007). A study on body weight perception and weight control behaviors among adolescents in Hong Kong. *Hong Kong Medical Journal*, 13(1), 16–21.
- Dake, F. A. A., Tawiah, E. O., & Badasu, D. M. (2011). Sociodemographic correlates of obesity among Ghanaian women. *Public Health Nutrition*, 14(7), 1285–1291.
- Duncan, D. T., Wolin, K. Y., Scharoun-Lee, M., Ding, E. L., Warner, E. T., & Bennett, G. G. (2011). Does perception equal reality? Weight misperception in relation to weight-related attitudes and behaviors among overweight and obese US adults. *International Journal of Behavioral Nutrition and Physical Activity*, 8, 1–9.
- Focht, B., & Hausenblas, H. A. (2010). Perceived Evaluative Threat and State Anxiety During Exercise in Women with Social Physique Anxiety Perceived Evaluative Threat and State Anxiety During Exercise, (April 2014).
- French, S. A., & Jeffery, R. W. (1994). Consequences of dieting to lose weight: effects on physical and mental health. *Health Psychology*, 13(3), 195-211.
- French, S., Story, M., Downes, B., Resnick, M. D., & Blum, R. W. (1995). Frequent Dieting among Adolescents : Psychosocial and Health Behavior Correlates.
- Gregory, C. O., Blanck, H. M., Gillespie, C., Maynard, L. M., & Serdula, M. K. (2008). Health Perceptions and Demographic Characteristics Associated With Underassessment of Body Weight, 16(5), 979–986.
- Groesz, L. M., Levine, M. P., & Murnen, S. K. (2001). The Effect of Experimental Presentation of Thin Media Images on Body Satisfaction : A Meta-Analytic

Review.

- Gross, S. M., Gary, T. L., Browne, D. C., & Laveist, T. A. (2005). Gender Differences in Body Image and Health Perceptions among Graduating Seniors from a Historically Black College, 97(12).
- Gutgesell, M. E., Moreau, K. L., & Thompson, D. L. (2003). in Female Collegiate Athletes, 38(1), 62–66.
- Johnson-taylor, W. L., Fisher, R. A., Hubbard, V. S., Starke-reed, P., & Eggers, P. S. (2008). The change in weight perception of weight status among the overweight : comparison of NHANES III (1988 – 1994) and 1999 – 2004, 6, 1999–2000.
- Kim, K. H. (2007). Religion, weight perception, and weight control behavior, 8(February 2006), 121–131.
- Krowchuk, D. P., Kreiter, S. R., Woods, C. R., Sinal, S. H., & DuRant, R. H. (1998). Problem dieting behaviors among young adolescents. *Archives of pediatrics & adolescent medicine*, 152(9), 884-888.
- Kruger, J., Lee, C., Ainsworth, B. E., & Macera, C. A. (2008). Body Size Satisfaction and Physical Activity Levels Among Men and Women, 16(8), 1976–1979.
- LePage, M. L., & Crowther, J. H. (2010). The effects of exercise on body satisfaction and affect. *Body Image*, 7(2), 124–130.
- Liechty, J. M. (2010). Body image distortion and three types of weight loss behaviors among nonoverweight girls in the United States. *Journal of Adolescent Health*, 47(2), 176–182.
- Malinauskas, B. M., Raedeke, T. D., Aeby, V. G., Smith, J. L., & Dallas, M. B. (2006). Dieting practices, weight perceptions, and body composition: A comparison of normal weight, overweight, and obese college females. *Nutrition Journal*, 5, 1–8.
- Martins, C., Morgan, L., & Truby, H. (2008). REVIEW A review of the effects of

exercise on appetite regulation : an obesity perspective, 1337–1347.

Miles, M. B., & Huberman, M. a. (1994). Qualitative data analysis: An expanded sourcebook. *Evaluation and Program Planning*.

Neumark-Sztainer, D., Patterson, J., Mellin, A., Ackard, D. M., Utter, J., Story, M., & Sockalosky, J. (2002). Weight control practices and disordered eating behaviors among adolescent females and males with type 1 diabetes: Associations with sociodemographics, weight concerns, familial factors, and metabolic outcomes. *Diabetes Care*, 25(8), 1289–1296.

Ortega, F. B., Ruiz, J. R., & Sjostrom, M. (2007). Physical activity, overweight and central adiposity in Swedish children and adolescents: the European Youth Heart Study. *International Journal of Behavioral Nutrition and Physical Activity*, 4, 61–71.

Ryan, T. A., Morrison, T. G., & Studies, C. (2009). Factors Perceived to Influence Young Irish Men ' s Body Image Investment : A Qualitative Investigation, 8(3), 213–234.

Schuler, P. B., Broxon-Hutcherson, A., Philipp, S. F., Ryan, S., Isosaari, R. M., & Robinson, D. (2004). Body-Shape Perceptions in Older Adults and Motivations for Exercise. *Perceptual and Motor Skills*, 98(3_suppl), 1251–1260.

Senekal, M., Lasker, G. L., Van Velden, L., Laubscher, R., & Temple, N. J. (2016). Weight-loss strategies of South African female university students and comparison of weight management-related characteristics between dieters and non-dieters. *BMC Public Health*, 16(1), 1–12.

ter Bogt, T. F. M., van Dorsselaer, S. A. F. M., Monshouwer, K., Verdurmen, J. E. E., Engels, R. C. M. E., & Vollebergh, W. A. M. (2006). Body Mass Index and Body Weight Perception as Risk Factors for Internalizing and Externalizing Problem

- Behavior Among Adolescents. *Journal of Adolescent Health*, 39(1), 27–34.
- Tyson, P., Wilson, K., Crone, D., Brailsford, R., & Laws, K. (n.d.). Physical Activity and Mental Health in a Student Population. *Physical Activity and Mental Health in a Student Population*, 1–19.
- Wang, Y., Liang, H., & Chen, X. (2009). Measured body mass index, body weight perception, dissatisfaction and control practices in urban, low-income African American adolescents. *BMC Public Health*, 9, 1–12.
- Wardle, J., Griffith, J., Johnson, F., & Rapoport, L. (2000). Intentional weight control and food choice habits in a national representative sample of adults in the UK. *International Journal of Obesity*, 24(5), 534–540.
- Welch, C., Gross, S. M., Bronner, Y., Dewberry-moore, N., & Paige, D. M. (2004). Discrepancies in Body Image Perception among Fourth-Grade Public School Children from Urban, Suburban, and Rural Maryland, 1080–1085.
- Wharton, C. M., Adams, T., & Hampl, J. S. (2008). Weight loss practices and body weight perceptions among US College students. *Journal of American College Health*, 56(5), 579–584.
- Yost, J., Krainovich-miller, B., Budin, W., & Norman, R. (2010). Assessing weight perception accuracy to promote weight loss among U. S. female adolescents : A secondary analysis, 1–11.
- Zaccagni, L. (2014). Body image and weight perceptions in relation to actual measurements by means of a new index and level of physical activity ... Body image and weight perceptions in relation to actual measurements by means of a new index and level of physical activity in. *Journal of Translational Medicine*, 12(42), 1–8.

APPENDIX I: PARTICIPANTS INFORMATION SHEET

General information

Project Title: Assessment of weight loss practices and associated factors among post-graduate students in the University Of Ghana

I am **CYNTHIA ADOMA ODURO**, a student of the Department of Social and Behavioural Sciences in the School of Public Health, University of Ghana, Legon, pursuing a Master of Public Health Degree Programme. I am here with my research assistants to carry out a survey to assess the weight loss practices and associated factors among post-graduate students in the University of Ghana. This is purely for academic purposes and forms part of the requirement for the award of Master of Public Health Degree. The researcher has no conflict of interest in this study.

Background and purpose of research:

The research is about assessment of weight loss practices and associated factors among post-graduate students in the University of Ghana.

Nature of research

The study will involve answering questions from a questionnaire to assess weight loss practices and associate factors among post-graduate students university of Ghana with 211 students, and it will take place at one of the Lecture room of the various Schools. The information you provide will add to knowledge and propose some interventions needed.

Participants Involvement

• **Duration/What is involved:** A minimum of 10 minute and a maximum of 20 minutes would be used by each participant in answering all the questionnaires given which comes in three (3) sections. Section A. deals with Socio-demographic characteristics, Section B. deals with Body Mass Index, Body Perception, and Weight

Loss Goals. Section C. deal with weight Loss Practices. Each participant is expected to answer questions from a questionnaire to assess weight loss practices and associate factors among post-graduate students university of Ghana

- **Potential Risk and Discomfort**

There will be an anticipated minimal risk for the study to be conducted: this is in view of soliciting information from the post-graduate students which to an extent will cause them to be a bit hysterical. However, any risk identified during the study will be duly addressed. However, a minimal discomfort will be during their contact hours and during respondents answering questions about their self-perception of weight.

- **Benefits**

The education directorate will in co-operate the findings into the activities and action plan of the various departments in the various universities to promote the health of the students. In addition, it will inform both university and health workers to engage in health education programs for the benefit of both undergraduate and post-graduate students, the university and the Legon community.

- **Costs:** There would be no costs incurred, as participant would not be transported.

- **Compensation:** No form of payment will be given to you but you will be refreshed for the services rendered during the study with soft drinks and biscuits.

- **Confidentiality**

No name will be recorded. Your name and identity are not needed in the study. However, the information you are going to provide will be coded and will be treated strictly confidential. You are assured of total confidentiality to the information you will give. Apart from the researcher and supervisor of this research, no one else will have access to information provided whether in part or whole. Data collected will be stored

under lock and key then destroyed after a minimum of three years as per research protocol.

- **Voluntary participation/ Withdrawal**

Participation in this study is voluntary. You are free to answer part or the entire questionnaire. You can choose to withdraw from the study at any time you want. You can also choose not to answer any question(s) you find uncomfortable about. Should you choose not to participate; it will not affect you or your clinic in any way. However, you are encouraged to participate fully in this study to help us learn.

- **Outcome and feedback:** The information you provide will add to knowledge and propose some interventions needed.

- **Appropriate alternative procedures and treatment:** There would be no alternative procedures and treatment.

- **Feedback to participant:** Findings would be available at the school of public health University of Ghana.

- **Funding information:** Ms Cynthia Adoma Oduro who is also the same person would do funding sponsoring the research study.

- **Sharing of participant information/Data:** the principal investigator would own the data but copy would be made available at the library school of public health university of Ghana for further research work to be carried out.

- **Storage of samples**

The information you will provide will be stored electronically on pen drives, compact disc, external hard disk drive, google drive and dropbox respectively. In addition, a soft copy will be sent to the library of School of Public Health, University of Ghana. The password to all account of the electronic medium is private to the principal investigator.

The information stored will be destroyed approximately a year after the dissertation is submitted and approved by the external examiner.

• **Provision of Information and consent for participants**

Participant will get to know that they will be given copies of the information sheet and consent forms after it has been signed or thumb printed.

Before Taking Consent

Do you have any questions you wish to ask about the study? Yes/No

If yes, please indicate the questions below

.....
.....
.....
.....

If you need further clarification concerning this study and/or the conduct of the researcher and research assistants, please do not hesitate to contact the following;

1. Ms. Cynthia Adoma Oduro

Tel: 0244657098/0264

Email address: adomaakua@yhoo.com

2. Mrs. Hannah Frimpong

The Administrator of the Ghana Health Service Ethics Review Committee Accra

Tel: 0507041223/0243235225

Appendix II: Informed Consent

Topic: Assessment of weight loss practices and associated factors among post-graduate students in the University Of Ghana

PARTICIPANTS' STATEMENT

I acknowledge that I have read or have had the purpose and contents of the Participants' Information Sheet read and satisfactorily explained to me in a language I understand. I fully understand the contents and any potential implications as well as my right to withdraw from the research even after I have signed this form. I voluntarily agree to be part of this research.

Name of Participant..... ID Code

Participants' Signature /.....

Date:.....

INVESTIGATOR STATEMENT AND SIGNATURE

I, the undersigned, have explained this consent to the respondent in English and the participant has been given ample time to read to understand the purpose of the study, procedures to be followed as well as the risks and benefits of the study. All questions and clarifications raised by the participant have been addressed. The participant has fully agreed to participate in the study.

Researcher's name.....

Signature

Date.....

APPENDIX III-QUESTIONNAIRE**TOPIC: ASSESSMENT OF WEIGHT LOSS PRACTICES AND ASSOCIATED FACTORS AMONG POST-GRADUATE STUDENTS IN THE UNIVERSITY OF GHANA.**

Instructions: Please provide answers to every question as honestly as possible. Kindly try not to leave any question unanswered.

	Variables	Responses	CODE
SECTION A Socio-Demographic Characteristics			
1	Age	years	
2	Sex	Male.....	0
		Female	1
3	Marital Status	Single.....	0
		Married.....	1
		Widow/Widower.....	2
		Divorced.....	3
		Others.....	4
4	Work Status	Employed.....	0
		Unemployed.....	1
5	Religion	Christianity.....	0
		Muslim.....	1
		Spiritualist/Traditional	2
		Others	3
6	Nationality	Not Ghanaian	0
		Ghanaian.....	1

7	College	College of Basic and Applied Sciences.....	0
		College of Education.....	1
		College of Health Sciences.....	2
		College of Humanities.....	3
8	Program	Masters.....	0
		PhD.....	1
SECTION B BODY MASS INDEX, BODY PERCEPTION, WEIGHT LOSS GOALS			
7	What is your height?	m ²	
8	What is your weight?	kg	
9	How do you perceive yourself?	Underweight	0
		Normal weight.....	1
		overweight.....	2
		Very overweight/Obese.....	3
10	Do you feel bad about yourself because of your body weight?	No.....	0
		Yes.....	1
11	What is your weight loss goal?	Lose Weight.....	0
		Stay the Same Weight.....	1
		Gain Weight.....	2

12	Did you try losing weight last year?	No.....	0
		Yes.....	1
SECTION C WEIGHT LOSS PRACTICES			
13	Have you practiced any weight loss activity this year?	No.....	0
		Yes.....	1
14	Do you exercise to reduce weight?	No.....	0
		Yes.....	1
15	Do you Fast to reduce weight?	No.....	0
		Yes.....	1
16	Do you take diet pills to reduce weight?	No.....	0
		Yes.....	1
17	Do you take laxatives to reduce weight?	No.....	0
		Yes.....	1
18	Do you vomit to reduce weight?	No.....	0
		Yes.....	1
19	Which of the following practices is the best to use for	Exercising	0

	weight loss?		
		Fasting	1
		Diet Pills.....	1
		Laxatives.....	1
		Vomiting.....	1