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Association Between Fast Food Consumption and Obesity and High Blood Pressure Among Office Workers

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Abstract

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MS, Walden University, 2008

MS, New Jersey Institute of Technology, 2003

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Dissertation Submitted in Partial Fulfillment

Of the Requirements for the Degree of

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Abstract

Fast food consumption among office workers is a common phenomenon. Frequent consumption of fast food is linked to cardiovascular risk factors. The pervasiveness of these risk factors has debilitated the office workers' health and contributed to low performance and absenteeism. However, there remains a significant gap in the current literature regarding the health impacts of frequent fast food consumption behavior of office workers. Consuming large portions of fast food has been associated with obesity. The purpose of this correlation study was to investigate the relationship between fast food consumption and obesity and hypertension among office workers. The theoretical foundations for this study are based on socio ecological model which is concerned with interactions between the individual and the different elements of the environment. Of 145 randomly selected office workers, 55 completed surveys about their food behavior and 36 of them had body mass index and blood pressure measured. Spearman rank-ordered correlations revealed significant correlations of moderate strength between fast food portion size and obesity ($r_s = .37$) and between frequent fast food consumption and hypertension ($r_s = .40$). These results constitute an important contribution to the existing literature and can be used by the health professionals and management to design workplace health intervention which focuses on the office workers and the social environment. Implications for positive social change include reducing the prevalence of obesity and hypertension.

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Dedication

I dedicate my dissertation for my blessed family for supporting me through all years. I especially want to thank my wife, Tsige, who encouraged and motivated me to reach my dream.

Acknowledgments

I would like to express gratitude to my chairperson Dr. Ming Ji and my committee members Dr. Mary Lou Gutierrez, and Dr. Ji Shen. A special thanks for Mr. Ronald Cash, Director of Human and Health Services/Health Officer of the City of Atlantic City who advised, supported me and authorized this research, Mrs. Sherri Rucker-Grave who supported and encouraged me to study the prevalence of obesity and hypertension. Special thanks for those who assisted me in the editing of my paper and my wonderful wife who read and critiqued my work and all who deserve my acknowledgement in this work.

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Chapter 1: Introduction to the Study

Introduction

Over the past 3 decades, Americans have worked more hours. According to the U.S Department of Labor, Bureau of Statistics (2000) report, in 1969, married couples age 25-64 worked 56 hours per week. In 2000, this trend increased to 67 hours per week among married couples. More mothers in the workforce who are employed year round worked more hours. Lack of time for food preparation at home contributed to away-from-home food consumption (Jabs and Devine 2006). Frequent consumption of families and workers at fast food restaurants increased the expansion of fast food places.

Bowman et al. (2004) compared fast food eating patterns and dietary intakes among adults to examine the relationship between fast food consumption and weight gain. DeMaria (2003) found that eating out larger portion size of foods and beverages frequently by women contributed to increase in energy intake. Overweight or obese people are likely to develop Prehypertension or High Blood Pressure ((The *National Heart, Lung, and Blood Institute* (*NHLBI)* 2010)). Thomas et al. (2005) found that the presence of hypertension among overweight and obese people may increase the cardiovascular risk.

I focused on the prevalence of overweight/obesity and high blood pressure among office workers. These trends might be associated with frequent consumption of large portion size fast food during lunch break (Lancet, 2005). The National Cholesterol Education Program (NCEP, 2002) study indicated that hypertension and abdominal obesity are strongly linked to cardiovascular disease. Hypertension is a blood pressure of greater or equal to 140/90 mm of Hg (AHA, 2012). Approximately 33.5% of the U.S. adult populations have hypertension (AHA,

2012), and about one third of the population is in the prehypertension range (CDC, 2012). Prehypertension is defined as a systolic blood pressure from 120 to 139 mm Hg or a diastolic blood pressure from 80 to 89 mm Hg (Plantinga et al., 2009). The prevalence of hypertension in the United States of America is higher in females than in males (Frazier et al., 2005).

The body mass index (BMI) used to determine an individual's weight problems for adults. It calculates body mass by dividing weight by height squared and then multiplying by a conversion factor (CDC, 2011). For the purposes of this study, the BMI indicates the degree to which an individual is overweight or obese. A person considered overweight when his BMI is 25 t0 29.9 and considered obese when his BMI is 30 or more. In the United States, the overall prevalence of obesity is high, exceeding 30% in most age and gender groups. Flegal, Carroll, Ogden, and Johnson (2002) indicated that the prevalence of obesity was higher among women (35.5%) compared to men (32.2%). The National Health and Nutrition Examination Surveys (NHANES) III (1988-1994) and NHANES 1999-2000, and data from the 2002 National Health Interview Survey (NHIS) research compared the obesity crisis faced by the American Workforce to find solutions (as cited in Caban et al., 2005). Pfizer (2004) indicated that the prevalence of overweight and obesity among American workers has increased by 56% between1980 – 1990 and by 66% in 2004. Visscher et al., (2004) discovered that obesity and overweight have a strong and deleterious impact on health status, including morbidity, disability, and quality of life.

Background

In the Unites States, fast food eating is common; one in four people consume a meal at a fast food restaurant at least once a week (Bowman S and Vinyard B, 2004) The frequent consumption of an unhealthy diet might contributes to the development of chronic diseases premature mortality (*Cecchini et al., 2010)*. Deep-fried fast foods such as French fries, fried

chicken, bakery products margarines, crackers, packaged snacks contain trans fatty acids (Mozaffarian et al., 2006). Fast food also has high sodium content. Trans fats have been linked to atherosclerotic heart disease (Dalanias & Ioannou, 2008). Researchers have found an association between fast food consumption and overweight (Bowman & Vinyard, 2004; Fuzhong et al., 2009). Office workers frequently consume fast food during short lunch breaks at nearby fast food restaurants, which might contribute to the rising trend of hypertension and obesity (Jeffery *et al*., 1998). Dietary salt or sodium chloride has significant relationship with the level of blood pressure (Pimenta et al., 2009). In this observational study, consuming high dietary salt is associated with resistant hypertension.

Preprocessed food contains high salt, which increases the risk of high blood pressure. High blood pressure is a reading of 140/90mmHg or more for persons between the ages of 18 and 74 (Chobanian et al. 2003). Hajjar and Kotchen (2003) concluded that increased body weight, race, age, and gender are contributing factors to the prevalence of hypertension. In the US, 28% of the populations do not know that they have hypertension, and more than 30% live with prehypertension.

Kim and Lee (2009) assessed fast food eating habits using fast food questionnaires that measured the participants' preferences regarding quantity of salt in the food. The result indicated that the participants favored saltier soup, pizza, hamburgers, and pork cutlets. Salt intake in the United States has increased over the past 2 decades, and Americans now consume150 to 170 mmol of sodium chloride per day (Burt et al., 1995). High salt intake also may contribute to the increasing intake of high-calorie soft drinks (American Heart Association [AHA], 2008).

Hypertension

In 2009, the Employees Wellness screening result indicated that one in three municipal

workers is hypertensive. Elevated systolic blood pressure is associated with atherosclerosis (*Merck Manual*, 2008). The AHA, (2006) indicated that one in three adults in the United States has high blood pressure.

Hypertension, obesity and overweight, increasing age, gender, heredity/race, tobacco smoking, high blood cholesterol, diabetes mellitus, stress and low fruit and vegetable intake are risk factors for coronary heart disease. The National Health and Nutrition Examination Survey (NHANES; 2005-2006) data found that 29% of US adult populations above 18 years old were hypertensive. Men until 45 years of age have higher blood pressure than women. But between ages 45-65 both have similar hypertension. The prevalence of hypertension has increased among Black adults from 35.8%-41.4% and among Whites from 24.3%-28.1% from 1988-1994 through 2002. The overall mortality rate from high blood pressure in 2006 per 100,000 populations was 15.6% for white males, 51.1% for Black males, 14.3% for white females and 37.7% for Black women. The United States spent approximately $63.5 billion in 2006 to treat high blood pressure (AHA, 2006).

In the United States, approximately 750,000 people become victims of stroke annually due to blockages of arteries from deposits of cholesterol. Larger cholesterol plaque could cause more severe the blockage (Atherosclerosis) of carotid arteries (Sobieszczyk & Beckman, 2006). Atherosclerosis is most often diagnosed in individuals between the ages of 40 and 70 (Boudi, 2009), and the prevalence of hypertension in 2005 was 73.6 million in both sexes (Yamasaki et al., 2003). Approximately 30% of Americans aged 50 or older show some evidence of carotid artery disease (AHA 2006).

Obesity

As of 2007, 23.9% of adults in the United States were obese (Mortality and Morbidity

Weekly Report [MMWR], 2008). A survey study of U.S. workers by Pfizer (2004) reported that men and women had experienced significant weight gain. According to a cross-sectional survey study, 65% of the U.S. populations have a BMI of >25.5 and approximately 31% is obese (Flegal et al., 2002). In the United States, an estimated 100 million adults overweight or obese, representing approximately 31% of men and 35% of women ages 19 and over, respectively. African Americans, Hispanic Americans, and Pima Indians are especially likely to be obese (Stefan et al., 2004).

In the United States, the prevalence of obesity is on the rise among adults. The 2006-2008 Behavioral Risk Factor Surveillance System Survey results indicated that the prevalence of obesity was 45% among Blacks, 36.8% among Hispanics, and 30.6% among Whites (Centers for Disease Control and Prevention [CDC], 2009). Currently, there is an epidemic of obesity among U.S. office workers (CDC, 2005).

Obesity is related to a host of health problems, including Type 2 diabetes (Pereira et al, 2005); cancer (Brag, 2002; Calle, Rodriguez, Walker-Thurmod, & Thun, 2003); and cardiovascular disease (Paeratakul, Lovejoy, Ryan, & Bray, 2002). Obesity is known to contribute to atherosclerotic heart disease (Siphai et al, 2006). According to Finkelstein (2004), obesity caused 300,000 deaths in the United States in 2003. Obesity also is expensive. In 2003, the US medical expenditure was $350 per adult (Finkelstein, 2004).

Fast Food Consumption

With increasingly hectic work schedules, Americans have less time to prepare healthy meals. The fast-food industry continues to expand nationally (Rosenheck, 2008). Fast foods in restaurants are prepared uniformly and served quickly. Frequent fast food consumption is associated with poor nutrition (e.g., a diet high in fat and low in vegetables; Jeffery, Baxter,

McGuire, & Linde, 2006; Satia, Galanko, & Siega-Riz, 2004); little physical activity (Jeffery et al., 2006); and excess weight (Bowman & Vinyard, 2004; Jeffery et al, 2006; Liebman et al., 2003). Bowman and Vinyard found a significant association between frequent fast food consumption and excess weight among adults. Frequent fast food consumption increases the risk of obesity (Keskitalo et al., 2008; Pereira et al., 2005; Rosenheck, 2008) and hypertension (Gu et al., 2007).

Satia et al. (2004) conducted a population-based cross-sectional survey on the fast food consumption frequency among a sample of Backs in North Carolina. The frequency of eating at fast food restaurants was positively associated with total fat and fat-related dietary behaviors ($p <$ .0001) and inversely associated with vegetable intake ($p < .05$) and good health, proper diet choice, and meal preparations (all $p < .05$). No significant difference was observed in the frequency of eating at fast food restaurants by gender, education, smoking habit, ability to purchase healthy foods, or knowledge of the Food Guide Pyramid.

Needed Changes in Lifestyle

Adopting protective lifestyle behaviors such as being physically active, being a nonsmoker and a non-to-moderate alcohol consumer, and eating adequate fruits and vegetables possibly may increase life expectancy (Harrington et al., 2009). Americans need to alter their lifestyles and diets in order to reduce the rate of obesity (Ford and Dzewaltowski, 2008) and hypertension (Pi-Sunyer, 2009). A high-fat diet is associated with obesity (Jeffery et al., 2006). Controlling caloric intake; exercising regularly; and maintaining a diet rich in high-fiber foods such as whole grains, fruits, and vegetables reduce the risk of heart disease (National Heart Lung Blood Institute, (2009). Schmidt et al., (2005) recommended reducing consumption of fast food.

To some extent, people often eat whatever food is on their plate without giving much

thought to its healthfulness (Bargh, 1994; Cohen & Farley, 2008). For example, people tend to eat more when a restaurant serves them large portions (Diliberiti, Bordi, Conklin, Roe, & Rolls, 2004; Ebbeling et al., 2007; Rolls, Roe, Meengs, & Wall, 2004). Portions served by fast-food restaurants have increased over the last 25 years (Diliberti et al, 2004). To reduce overeating, Cohen and Farley suggested smaller food portions, limited access to ready-to-eat foods, and reduced access to snacks in the workplace.

Americans also need to exercise more. In 2000, approximately 26.2% of American adults exercised regularly (MMWR, 2003). A sedentary lifestyle increases the risk of obesity (Hu, 2003). Sorensen et al., (2002) found that health promotion at the workplace is effective in helping workers to develop healthier habits. I focused on the eating habits and health status of a sample of municipal office workers in Atlantic City, NJ.

Statement of the Problem

Obesity and hypertension are significant risk factors for atherosclerotic heart disease and other pathologies (NHLBI, 2010). Many municipal workers have these risk factors. The research problem addressed in this study is the relationship between fast food consumption and high blood pressure and obesity among a sample of municipal office workers in Atlantic City, NJ.

The relationship between fast food consumption and hypertension has been well documented (Bowman & Vinyard, 2004; Pereira et al., 2005; Rosenheck, 2008). Many office workers have unhealthy eating habits that include eating high-calorie foods (Young & Nestle, 2002). Obesity is a problem not only for the individuals who are obese but also for their employers because the resulting illness increases absenteeism, increases the cost of providing employees with health insurance, and reduces worker productivity (Pfizer, 2004). In New Jersey, 56% of residents have a BMI of 25-29.9 or overweight to the point of placing their health at risk

(New Jersey Department of Human and Senior Services (NJDSS, 2006). In 2003 the state spent $2.3 billion for medical treatment of obesity-related diseases (NJDHSS, 2006). I focused on the impact of fast food consumption on municipal employees. The study's findings will add to the scientific literature on the relationship between fast food consumption and hypertension among office workers.

Nature of the Study

The study was a quantitative and cross-sectional providing a snapshot of the frequency and characteristic of a disease in a population. This descriptive research established the association between variables (fast food frequency and portion size, and BMI and blood pressure) using a survey questionnaire (Diet History Questionnaire), anthropometric and blood pressure measurements). Fifty five randomly selected participants from a target population of the City of Atlantic City municipal office workers completed the survey questionnaire and 36 participated in anthropometric measurement and screening session.

I focused on the following research questions and hypotheses:

1. Is there a significant positive correlation between large portion size fast food consumption and body mass?

H_{01}: There is no significant correlation between large portion size fast food consumption and body mass.

H_{a1}: There is a significant positive correlation between large portion size fast food consumption and body mass

2. Is there a significant positive correlation between frequent fast food consumption and blood pressure?

H_{02}: There is no significant correlation between frequent fast food consumption and

blood pressure.

H_{a2}: There is a significant positive correlation between frequent fast food consumption and blood pressure.

Purpose of the Study

The purpose of this study was to examine the association between fast food consumption and cardiovascular risk factors of obesity and high blood pressure among municipal workers in Atlantic City, NJ. Fast food is inexpensive and convenient. It also tends to be high in fat (Satia et al., 2004), including Trans fats (Hanson, Romans, Costello, Evenson, & Simon, 2003). As of 2007, approximately 8.7 million people lived in New Jersey, of whom 6.6 million are adults, of which 38% the adults are overweight or have a BMI of 25-29.9 and 24% considered obese (CDC, 2009b).

The independent variables (IVs) will be fast food consumption frequency and portion size, with fast food defined as foods which are prepackaged, easily accessible from vending machines, simply prepared and served quickly, usually high in calories, fat, saturated fat, salt, and sugar and is inexpensive. Fast-food consumption will be measured in terms of two dimensions: frequency and portion size. The dependent variables (DVs) will be hypertension and obesity. Chobanian et al (2003) defined hypertension a**s** Systolic BP $\geq$ 140 mm Hg or diastolic BP $\geq$ 90 mm Hg or currently taking medication to lower high BP. Obesity is defined as an adult BMI of 30 or more (CDC, 2009b).

Theoretical Framework

The study was based on the Social Ecological Model (SEM). SEM was developed out of the work of Bronfenbrenner (1977), McLeroy (1988), and Stokols (1996). The SEM was used by

Pepin et al., (2004) to study the obesity epidemic by Jacqueline et al., (2001) to investigate the factors that influence physical activity and by Robinson (2008) to examine fruit eating behavior among African Americans.

According to Bronfenbrenner (1979), the SEM seeks to explain individual knowledge, development and competencies and the social change overtime, which is the cumulative effect of individual choices.

As applied in my study, this theory holds that I would expect my independent variables (fast food portion size and food consumption frequency) would explain or influence the dependent variables (obesity and hypertension) because there is a relationship that exists between the individual and the environment. Office workers are responsible for instituting and maintaining the lifestyles changes to reduce the risk of cardiovascular diseases and to improve their health. The employees' behavior is also determined to a large extent by the environment. The SEM recommends that a combination of the efforts of individual, interpersonal, organizational, community and public policy will lead to healthy behaviors.

Bronfenbrennet's (1977) SEM theory is founded on the interaction between the people and the environment and their influence on one another (Hawley, 1950). SEM is a comprehensive public heath approach that addresses the individual risk factors and norms, beliefs, socio economic systems that create the conditions for a sedentary lifestyle to occur.

People will significantly be affected by interactions with a number of ecosystems. SEM is an important Systems Theory that occurs in different spheres of influence including Microsystems, Mesosystems, Ecosystems, and Macrosystems (Gregson, 2001; and Bronfenbrenner, 1979)). According to Gregson (2001), Microsystems consists of interpersonal attributes that can be learned beliefs, knowledge and personality. The Mesosystems are the

institutional factors such as the norms forming component a group or organization which comprises of psychological and cognitive factors including rules, policies and acceptable business etiquette (Gregson, 2001).

The Exosystems are the standards and social networks of a community (Gregson, 2001). These systems affect the individual even if the individual is not an active participant (Bronfenbrenner, 1979). The Macrosystems are cultural effects including ideological and emotional due to the magnitude of the impact (Bronfenbrenner, 1979).

According to Stokols (1996), Social ecological theory can help to develop guidelines for health promotions intervention programs and provides behavioral and environmental change strategies by offering a theoretical framework for perceptive the dynamic interaction of a human being and its environment.

Pepin et al. (2004) in a cross-sectional study examined the environmental factors that impact weight management in midlife women. Participants were women between 35 to 65 years old and recruited in the work site in Phoenix metropolitan region and completed a survey questionnaire. The study result indicated that 29% of the participants had a body mass index (BMI) of 25 to 29.9, and 30% of them have 30 and above. 65% of women (n=25) performed moderate recreation physical activities and 28% of them exercise for 20 minutes for three or more days per week. Jacqueline et al., (2001) used an ecological model to examine factors influencing physical activity among African American midlife old women (40-60 years old). In this descriptive study, University researchers in collaboration with the City Health Department recruited African American women above 40 years to participate in focus groups. The researchers (Jacqueline et al., 2001) suggested establishing a coalition among individuals, institutions, community groups and policy makers' to increase the physical activity in an urban

community.

Robinson (2008) reviewed different studies about low income African American fruit and vegetable eating behavior. The purpose of the review was to investigate African Americans fruit and vegetable intake habits from a socio ecological perspective. The justification was to propose guidance to combine socio ecological concept into health promotion program to improve the dietary intake behaviors of low income African Americans.
The research reviewed 12 studies of which seven of the research papers recommended focusing on the interpersonal influence, whereas four studies recommended integrating environmental and individual targets. The studies result indicated that individual factors have contributed significantly to the dietary behaviors of African Americans.

The SEM theory provides guidance how to plan health promotion intervention on the relationship between environmental and behavioral determinants of health (Fast food eating behaviors and obesity and hypertension). The health promotion must address the environmental sub-systems and web of the social system to achieve substantial changes in health behavior.

Definitions of Terms

Fast food: Foods which are prepackaged, easily accessible from vending machines simply prepared and served quickly at fast food restaurants, usually high in calories, fat, saturated fat, salt, and sugar and inexpensive (French SA, 2003).

Morbidly obese: An adult body mass of 40 or more (Obesity Action Coalition, 2010).

Obese: An adult BMI of 30 or more (CDC, 2009b).

Overweight: An adult BMI between 25 and 29.9 (CDC, 2009b).

Assumptions, Limitations, and Delimitations

Limitations

Only those employees that returned the consent form participated in the study. The study was conducted in a city municipal government in New Jersey using Diet History Questionnaire and anthropometric measurements to measure achievement in this study. Generalizations to other environments and populations and to other research materials may be limited.

Delimitations

I chose to look only at the City of Atlantic City municipal employees to participate in this study. The study was conducted in Atlantic City, NJ, including all ethnic groups, genders and ages between 25 to 65 years old. Statistical Package for the Social Sciences (SPSS) or Predictive Analytics Software (PASW) version 18 was used to analyze data. This cross-sectional study limits the findings to correlation versus causation.

Assumptions

It is assumed that participants answered the Diet History Questionnaire honestly to their best ability. Data collection instruments are assumed to be valid and reliable based upon their previous use.

The results may not be generalizable to children or elderly individuals; other types of employees; or workers with other demographics, such as those who do not work in offices, those in nonurban areas, or those in areas of the United States. The scope of this research was concentrated on the impacts of frequent fast food consumption on employee's health. I examined the role of portion size and frequency of fast foods. The study is the limited to municipal office workers in one New Jersey city. This sample selection was considered for convenience.

Significance of the Study

The significance of the study was to address why office workers are predisposed to have sedentary lifestyles. Varo et al (2003) defined sedentary life style as Westernized civilization characterized by sitting at office or home most of the day. Sitting or spending most work hours in an office is a risk factor of obesity and other disorders (Myron, 2003). Researchers (Nelson et al., 1994; Rockhill et al., 1999) found that workers who spend less than 2000 calories per week without exercise may have higher risk of heart disease than active employees. These habits lead to cardiovascular risk factors of obesity and hypertension. This study is intended to help fill this gap in the literature. The importance and implications of the study for researchers, practitioners, and policy makers is as follows,

For Researchers, Early detection of health threats through wellness screening will awake office employees to examine their eating behaviors. The Majority of the office workers have no knowledge what type of food to buy, to eat, what quantity to consume and limit them to a small plate size meal. The study results will help practitioners to design an intervention program to promote employees health screening and educate healthy food choice, nutrition, calorie count and quantity of food to consume. For policy makers, the study recommendations will help the management to participate in the intervention process and design a policy which will support employees' participation in wellness screening and activities, improving access to healthier food, smoking cessation, stress management, and physical activities.

This knowledge-practice gap has been attributed to poor awareness of employee's present level of illness as normal that impede the implementation of lifestyle change intervention. The wellness-screening program educated office employees about the level their blood pressure, cholesterol and sugar level but not addresses healthy diet choices to reduce the food that contains

high caloric, high salt and sugar has the potential to promote an awareness intervention.

There are a number of researches on fast food consumption effects among US workers, (He & McGregor, 2007; Caban et al., 2005; See et al., 2007). When Atlantic City municipal employees underwent wellness screening in spring 2010, 65% of the employees were found to have BMI of 25 to 29 or obese and 15 out of 20 or 75% of the screened were hypertensive. To determine any constriction of blood flow, blood pressure was measured in the arm. During the wellness screening, many workers complained of discomfort or pain in their back, arms, shoulders, neck, and/or jaw.

In addition to contributing to the literature on overweight/obesity and hypertension, this study will assist in the development of a wellness program in cooperation with the New Jersey Obesity Prevention Task Force. The positive social change implications include promoting awareness of healthy eating habits and regular exercise among Atlantic City municipal employees. The benefits to the employer include reducing employee absenteeism, turnover, and productivity. The program will include dietary assessment & counseling and feedback on participants' behavior.

Summary

Office jobs are sedentary and tend to provide easy access to fast food. Both a sedentary lifestyle and the frequent consumption of fast food (Jacobs, 2006) contribute to obesity. Obesity is associated with pathologies such as cardiovascular disease (Poirier et al., 2006). Fast-food consumption also is associated with hypertension (Ferrara et al., 2008).

I examined the relationship between fast-food consumption and obesity and high blood pressure among a sample of Atlantic City municipal workers. Findings will be used in the development of educational interventions focused on the work environment, healthy eating, and exercise.

Chapter 2 presents the relevant literature, chapter 3 describes the methodology of the study including the design and data analysis, chapter 4 presents the key findings in a coherent order; and chapter 5 integrates the interpretation of the research results, the social change implications, the need of future research in this area and summary of the research project.

Chapter 2: Literature Review

Introduction

Fast food consumption in the United States is on the rise (Isganaitis & Lustig, 2005). A positive association between fast food consumption and obesity as well as hypertension has been well documented (Ferrara et al., 2008; Poirier et al. 2008).

I investigated the relationship between fast-food consumption and obesity and hypertension, which are factors for cardiovascular disease (Pi-Sunyer, 2009).The focus of the literature review to succinctly summarize the findings from the prior research and reach a conclusion how accurate and complete that knowledge is (Knopf, 2006).

It will help to clarify the relationship between the proposed research and previous work on the topic. This chapter addresses the independent variable, food frequency and portion size, the dependent variable hypertension and obesity, and the covariates for obesity and hypertension, including, ethnicity and gender. The chapter includes a discussion of the association between fast food consumption and the risk factors of cardiovascular disease (obesity and high blood pressure), why office workers consume fast foods during lunch breaks, the most important studies that capture the major themes and methods used, and areas needing further research.

Organization of the Literature Review

To assess the association between fast food consumption and hypertension among office workers of the Atlantic City municipal government, the researcher consulted multiple databases with specific terms, including Journal of American Medical Association, Academic Search Premier, and CINAHL Plus with Full Text, Sage, and ProQuest, through the Walden University Library. CDC peer-reviewed publications and the MMWR were researched. PubMed (National Library of Medicine, Bethesda, Maryland), an online free search engine for accessing the MEDLINE database of citations, abstracts and some full-text articles, was consulted. English-

language literature from 1988 to 2010 was surveyed. Search strategies were developed from the research questions by breaking the questions down into facets and identifying synonyms, spelling variants and subject headings associated with each facet. The key terms of *fast-food*, obesity, overweight, body mass index, and *high blood pressure* were used to search studies. More than 500 titles were examined. Studies including fast food or poor diet, obesity or overweight, and hypertension or high blood pressure among office workers were included in the initial screening. More than 150 journal articles were included in this review of the literature.

Conceptual Framework, Methods, and Hypotheses

Conceptual Framework

The conceptual framework is based on individual (and family) characteristics and the physical environment that influence dietary decisions. Foods and goods choices are based on individual/family characteristics and socioeconomic status (SES). The physical environment such as food stores, and restaurants, as well as the built environment, such as density of fast food outlets and the social environment on individuals affect the diet (Diaz-Roux, 2009)

Methods

Bowman et al. (2004) found the association between fast food and obesity; Diliberiti et al. (2004) found the entrée size increases in energy intake; Appel et al. (1997) diet might reduce high blood pressure. Bes-Rastrollo et al., (2008) found the association of dietary energy with weight gain; Koh-Banerjee et al. (2004) showed an increase in fiber consumption reduces in waist circumference. In Survey studies, Satia et al. (2004) demonstrated that eating at fast food restaurant is associated with higher fat intake and lower in vegetable consumption and Keskitao et al. (2008) showed the association of eating with genetics and environment.

In qualitative studies Jeffery et al. (2004) found no relationship between the proximity of

fast food restaurants and obesity and Fields et al. (2006) showed hypertension trends was associated with increased obesity and aging.

In longitudinal studies, Pereira et al. (2004) found that frequent fast food consumption was associated with weight gain and insulin resistance and Larson et al. (2008) found snack frequency was associated with frequency of fast food intake.

In an experimental studies and trials, Siphai et al. (2006) showed that obesity is significantly associated with faster progression of coronary atherosclerosis. He et al.(2004) found that salt intake reduction is correlated to reduce stroke, heart attacks and heart failure. In a cross sectional study, Liebman et al. (2003) found that the association of obesity with soft drinks.

The 2010 Wellness screening at the City Hall health fair indicated that 75% of office workers have high blood pressure. Office workers with higher BMI and unhealthy lifestyles were diagnosed with hypertension. High blood pressure is a major risk factor for heart attack (Mayo, 2012).

The prevalence of hypertension will likely increase among new employees, also. This finding will lead to the development and implementation of an intervention program to change behaviors of the Atlantic City office workers. There is also an authoritative opinion and support from the Director of Health and Human Services, that there is need for this research.

Hypotheses

I focused on the following research questions and hypotheses:

1. Is there a significant positive correlation between large portion size fast food consumption and body mass?

H_{01}: There is no significant correlation between large portion size fast food consumption and body mass.

H_{a1}: There is a significant positive correlation between large portion size fast food consumption and body mass.

2. Is there a significant positive correlation between frequent fast food consumption and blood pressure?

H_{02}: There is no significant correlation between frequent fast food consumption and blood pressure.

H_{a2}: There is a significant positive correlation between frequent fast food consumption and blood pressure.

Independent and Dependent Variables

Independent Variables

Fast food consumption has increased in portion size and frequency in the US. According to Paeratakul et al. (2003), the 1994-1996 and 1998 Continuing Survey of Food Intakes by Individuals (CSFII), two nonconsecutive 24-hour dietary recalls survey indicated that the age groups between 10-39 years have high fast food consumption than that of older individuals. The Coronary Artery Risk Development in Adults (CARDIA) study showed that people who eat fast food frequently) once or twice a week will gain weight (Pereira et al. 2005). Consuming large portion sizes frequently will lead to obesity, a precursor of hypertension (Diliberti et al., 2004).

Fast food frequency Pereira et al. (2005) documented that Americans eat 0.27 fast food meals per day, which will contribute to the prevalence of obesity. Fast food consumption also associated with excessive intake of sugar, sodium, saturated and trans fats and with low intake of vegetables, minerals and vitamins (Paeratakul et al. 2003).

In a cross-sectional study, Butt et al. (2007) determined the frequency and implications of

fast food consumptions among hemodialysis patients. The researchers obtained data for 194 randomly selected patients from 44 hemodialysis facilities in northeast Ohio. They found that 42% of the participants consume at least one fast food meal in 4 days; that indicated an increase of higher kilocalorie/kg intake/day of carbohydrates, fats and sodium.

Work site cafeteria meals and fast food have higher salt content (Rasmussen et al. 2010). The researchers collected the same portion size of lunch meal from 15 work sites from 12 randomly selected employees at each cafeteria in 2 consecutive days, and 250 fast food samples from 52 retail places representing city and towns. The results indicated that the salt content in lunchtime meal in work site canteens ranges from 2.0 to 5.8gm/meal and 9.3 to 14.3 gm/meal in fast food.

People who are eating fast food get high sodium that may contribute to the development of high blood pressure. In New York City, Johnson et al. (2010) collected data in 2007 during lunch time from 12:00pm to 2:00pm for 2 hours on weekdays for 2 months in New York City. Adults who bought fast food from 11 fast food chains were surveyed briefly and provided $2 metro card in exchange of their fast food purchase receipt. Over 6500 sample size was collected and each meal contains an average of 1751 mg of sodium. The worst fast food was fried chicken. Fifty five percent of the meal contains more than 2300 mg of salt that exceeds the 2500 mg daily limit. Johnson et al. recommended food manufacturers to reduce the salt content in their products.

Human bodies need some sodium, it helps to maintain the right balance of fluid in the body, transmit nerve impulses, and influxes the contraction and relaxation of muscles (NHLBI, 2010). The recommended amount is to be less than 2400 milligrams of salt a day; but more Americans consume more than the recommended amount/day. Health professionals are advising

to eat less salt and sodium up to 1500 mg/day improves to reduce the blood pressure (Mayo, 2010).

Fast food portion size. The quantity of fast food consumption has increased in the past 30 years (Pereira, 2005). Large portion size food contributed to the prevalence of obesity. Young and Nestle (2002) sampled market place foods and compared with federal standards. Past portions obtained from manufactures and publications. The result indicated that portion size have increased in 1970, 1980 exceeding the federal standards and have continued to increase corresponding with body weight. Results also suggested an educational intervention for the public to reduce the portion to be consumed. Rolls et al. (2004) and Kral et al. (2003) showed that a large portion size foods leads to higher energy intakes. Larger portions sizes are associated with higher intakes (McConahy, Smiciklas-Wright, Mitchell, & Picciano, 2004). Berger et al. (2007) studied college students' perceptions of portion size of real foods. In a quasi-experimental study, 51 participants chose larger portion size of carbohydrate foods from 10 of the 15 food/beverages. The result indicated that there is a strong association between BMI and large portion size for high energy density foods.

Dependent Variables

Hypertension. Fast foods are low in nutrition and fiber contents (Jeffery et al., 2006; Satia et al. 2004). The 2001-2002 NHANES data indicated that hypertension is the main public health concern afflicting one third of the American populace (as cited in Thaker et al. 2005). Contributors to hypertension include age, weight, and ethnicity.

In the US, about 74 million adults diagnosed with high blood pressure (AHA, 2010b). The prevalence of hypertension among African Americans is 31.8%, 21.0% among Hispanics, 23.3% non-Hispanics Whites, 32%, 21.0% among Asians, 25.3% among American Indians or Alaska

natives, 19.7% among Native Hawaiians and other Pacific Islanders (AHA, 2010b). The prevalence of cardiovascular disease is 5.7%% among Hispanics 5.6% among Blacks, 6.5 % among Whites, 2.9% among Asians, and 6.6% among American Indians or Alaska Natives. Hispanics, Blacks, and other minorities with hypertension also have higher comorbidity from diabetes.

The 2006 national High Blood Pressure Statistics indicated that 56561 people die of hypertension. In 2006, the mortality rate per 100,000 populations from high blood pressure was 15.6 for white males, 51.1 for black males, 14.3 for white females and 37.7 for Black women (AHA, 2010c).

Obesity. Obesity has become a public health concern in the U.S and worldwide. In 1999-2000 31% of the U.S. adult population has a BMI greater than 30 (NHANES, 2000). Consuming larger portion size fast food with a large size soft drink may contribute to excess energy intake. Guthrie, Linm, and Frazao (2002) found that food away from consumption has increased from 18% to 32% between 1977-78 and 1994-96. Preprocessed meals and snacks contain more calories, and were higher in total fat and in saturated fat. Fast foods contain less fiber, micronutrients, calcium, and iron and were more sodium and cholesterol dense. Everyday, 7% of Americans eat fast foods (USDA, 1997).

History of Fast Food

According to Schlosser (2001), fast food restaurants are considered a product of modern technology. Fast food restaurants existed during the Roman Empire, and in various cultures of the Middle and East Asian countries, as well as in French-speaking West African countries (Wikipedia, 2012). According John J. (1999) the first coin-operated fast food cafeteria in the United States was opened in 1912 in New York City. Later, Horn and Hardart opened Automat,

which is a coin, or bill operated food vending machine in Philadelphia, which grew and expanded throughout the country in the 1920s and 1930s. In 1921, White Castle opened in Topeka, Kansas.

Fast food provides the largest portion of calories, and the US population spent nearly half of the money on food prepared away from home. Young men get more calories (17%) from fast food than adults, who get 12% from fast food. Adults also consume 10% of their calories from restaurants, and 11% from cafeterias, bars, or from home and vending machines. Homemade foods are higher in fiber compared to away-from-home foods. A high-fat content (38%) and salt have serious health implications, such as overweight and hypertension (Guthrie, Lin & Frazao, 2002).

Reason People Eat Fast Food

People like to eat in fast food restaurants for various reasons, including the taste of the food, quick service, price, availability, and willingness to serve all clients over the age of 2 years (Rydell, 2008). Adults eat 30% of their meals away from home (Ma et al., 2003). Eating behaviors and food choices are influenced by nationality, culture, community, family, and individual choice of food (Siwik & Senf, 2006). According to 1977-1978 and 1995 Continuing Survey of Food Intakes by Individuals (CSFII) data, the proportion of foods consumed from restaurants and fast food outlets increased in that time period from 16% to 27% (Lin, Frazão, & Guthrie, 1999). In addition, proximity affects fast food consumption. People who live or work in close proximity to fast food restaurants have a greater possibility of becoming customers of fast food restaurants. Studies (Bowman & Vinyard, 2004) on fast food consumption have suggested that one in four Americans consumes fast food at least once a week.

Morland and Everson (2009) compared selected food environments among poor and

wealthy neighborhoods. The food environment includes food stores, restaurants, schools, and worksites. BMI was determined for 11,231 people living in five states: Mississippi, North Carolina, Maryland, Washington, and Minnesota. Obesity was less common where there was at least one supermarket, but it was more common where there were small corner grocery and convenience stores (Morland and Everson, 2009) the number of supermarkets impacted the prevalence of overweight and obese populations.

The proximity of fast food restaurants to residential locations plays an important role in the prevalence of obesity among African-American and low-income populations. Block Scribner and DeSalvo (2004) used Geographical Information System (GIS) software to map and calculate fast-food restaurant density in New Orleans in 2001. They assessed the association between obesity and low-income neighborhoods. The study tracked 155 fast-food restaurants, and the proximity and numbers of fast food restaurants, White and Black neighborhoods were compared. They concluded that the link between proximity and availability of fast food restaurants might have contributed to the increase of obesity in this low-income minority community.

Eating Patterns and Health Effects

Eating is an automatic behavior. Scientists (Cohen & Farley, 2008) conducted experiments related to the food consumption behavior of adult office workers to test this theory. The results revealed that the presence of food at their work desks tempted the office workers to eat more and concentrate less. The high intake of salty fast foods will contribute to high blood pressure. Fast foods are preserved by adding high salt content. Wansink (2004) studied the reasons people eat more than they realize. Wansink suggested that when people eat food, they do not notice of the size of a package, the shape of a glass, the label on the menu, the proximity of the food, and other information about the amount and variety of food.

Impact of Fast Food Consumption on Health

The report of the National Alliance for Nutrition and Activity (NANA; 2007) on obesity and other diet- and inactivity-related diseases showed that two thirds of premature deaths in the United States are related to poor nutrition, a lack of physical activity, or tobacco use. Obesity has risen as a public health threat over the last 20 years. In 2004, the National Health and Nutrition Examination Survey (Ogden et al.2006)) data analysis found that overweight was related with significant increase of mortality due to diabetes or kidney disease. Diet and physical inactivity are the leading causes of premature death, rising from 310,000 to 580,000 annually (McGinnis & Foege, 1993).

Approximately 65% of diabetes cases are associated with unhealthy diet and sedentary lifestyles (Hu et al. 2001; McGinnis & Foege, 1993). Diet and inactivity-related disease affected 129 million Americans (NANA, 2005).

Fast Food Consumption by Office Workers

A study comparing the nutrient composition and the health effects of fast and slow food indicated that lifestyle and dietary habits contribute to the development of hypertension (Ferrara et al., 2008). Eating fast food saves time; but, it contributes to a higher intake of calories, saturated fats, carbohydrates, and salt, all of which can deteriorate the metabolic system and expose the body to cardiovascular risk (Robert Woods Johnson Foundation, 2008). Salt intake, body weight, and age are some of the risk factors of hypertension. According to He et al. (2000), lifestyle modifications might be effective in preventing hypertension.

Fast food is cheap, low in micronutrients, and high in calories; it also tastes good. Fast food is broadly advertised and considered a source of great economic vitality in the United States (Schlosser, 2001). Fast food is available at fast food restaurants close to residences and

worksites. People buy fast food without paying much attention to its nutritional value (Schlosser, 2001). The health impacts of frequent fast food consumption may contribute to chronic health risk factors such as weight gain, obesity, and hypertension, all of which are precursors of cardiovascular-related diseases (Jeffery et al., 1998; and Hubert et al., 1983). Obese and unhealthy lifestyles also may contribute to high blood pressure (NHLBI, 2009).

According to Mattes and Donnelly (1991), 77% of the sodium consumed by Americans comes from processed and restaurant foods. He and Macgregor (2004) noted that salt is a major risk factor in increasing blood pressure, strokes, ventricular hypertrophy, and renal disease. Salt also contributes to obesity and cancer. The researchers suggested that promoting salt-reduction awareness through public health avenues would improve the populations overall health condition.

Hypertension is one of the risk factors for cardiovascular disease. In the United States, 35% of the general populations do not know that they have hypertension. The uncontrolled risk factors contributing to high blood pressure include heredity, race, and increasing age; controlled factors include sedentary lifestyle, salt consumption, obesity, and stress (AHA, 2010). High blood pressure will lead to workplace absenteeism. The monthly employees' health fair and screening results indicated that more than 75% of office workers had developed high blood pressure. High-risk the Atlantic City municipal office workers will receive consultation or referral to their primary physicians for follow-up and treatment. Aging is an uncontrolled risk factor for hypertension, and the incidence of hypertension is higher among older females than older males (Kannel, 2002). The 1999-2000 NHANES data indicated that 35 million women and 30 million men had hypertension; non-Hispanic White persons had the highest rates (as cited in Fields et al, 2004).

The rates of age-adjusted hypertension mortality in New Jersey increased from 4.5/100,000 in 1999 to 5.3/100,000 in 2005. Twenty-four percent of adults were diagnosed with hypertension; Blacks have the highest prevalence of high blood pressure (NJDHSS, 2006).

SES is another factor in the health disparity between African Americans and Whites (Kingston & Smith, 1997). A study in Detroit revealed that the prevalence of obesity and diabetes among Blacks was higher and that fresh fruit and vegetable intake was lower than recommended by the United States Department of Agriculture. The rate of hypertension has a higher disparity among Blacks (Hertz et al., 2004). Blacks develop hypertension earlier (AHA, 2005) and have a higher morbidity and mortality rate than Whites (AHA, 2005) because of their nutritional status. Black males and females consume less nutritious food than Whites (Champagne et al., 2004). Appel et al. (1997) found that that the consumption of fruits and vegetables, as well as low-fat dairy and low-sodium foods, will reduce high blood pressure, regardless of race. The rate of hypertension is high among Atlantic City municipal government office workers.

Li, Harmer, and Cardinal (2009) investigated the eating-out behavior among adults ages 65 and older and the influence of neighborhood fast-food restaurant proximity on the behavioral, psychosocial, and SES characteristics of the residents. In this cross-sectional and multilevel design, the research participants were assessed on frequency of visits, restaurant preferences, and level of physical activity, access to a healthy diet, income, ethnicity, and obesity.

The relationship between fast food and race indicated that more Blacks eat high fat and low vegetable diets. Satia et al. (2004) suggested that during an intervention to change the eating behavior among Blacks, it is necessary to consider demographic and behavioral characteristics, the diet-disease relationship, and barriers to healthy eating habits. The 1994-1996 and 1998

CSFII national survey of the civilian population indicated that individuals between 10 and 39 eat a higher amount of fast food. Males reported more frequent fast food consumption than did females (as cited in Paeratakul et al. 2003). In this cross-sectional study, people 60 years and older reported the lowest intake of fast food.

Hypertension or high blood pressure is a serious and common health condition. Known as the silent killer, it may show no symptoms and may complicate many other health problems. It is a risk factor for cardiovascular diseases such as strokes, kidney disease, and heart failure. In the USA, one in three adults has hypertension. Common risk factors include older age, race/ethnicity, overweight/obesity, gender, unhealthy lifestyle, and a family history.

Vickers (2004) wrote about the importance of lunch, and Faraquhr (2000) recalled the days when lunch meant taking a break from work. The all-time-all-work culture diminished the lunch hour and encouraged workers to eat lunch at their work desk. This eating behavior also played a significant role in people becoming overweight and obese.

Steelcase, Inc. (as cited in Career World, 2006) surveyed 700 office workers nationwide. The findings showed a 14% reduction in lunchtime duration since 1996. Work environments change; the pressure of work and the desire to go home early may contribute to the tendency to eat lunch at the work desk. The lunchtime is not necessarily for lunch but for social activities, reading, or personal phone calls.

Role of Portion Size and Frequency of Fast Food Consumption

Eating patterns are motivated by convenience, cost, and the size of the portion of food on the plate (Young & Nestle, 2002). Most people do not know what the right portion size may be for them, nor are they aware of the nutrient value of their food (American Institute of Cancer Research, 2003). Portion size is a controllable environmental factor that should be addressed to

prevent obesity. The quantity of high fat foods and ingredients has increased in the past 30 years. Factors that influence decisions about portion size (Condrasky Ledikwe, Flood, & Rolls, 2007) include appearance, value, and customer expectations. Several researchers have positively associated the frequent consumption of food prepared outside the home with high caloric and high-fat intakes, and increasing body weight (Clemens, Slawson, & Klesges, 1999; French, Hamack, & Jeffery, 2000; McCrory et al. 1999). Vermeer, Steenhuis and Seidell's (2010) qualitative assessment of consumers' attitudes toward portion size showed that reducing the package serving size would help to control food intake. Consumers also have asserted that portion sizes have increased in recent decades. Vermeer et al (2010) found that most successful interventions must have address the importance and health impacts of portion size, pricing strategies, serving size, and labeling.

In the United States, the frequency of fast food consumption and the number of fast food outlets have increased. Paeratakul et al. (2005) survey study examined the cross-sectional association between fast food consumption and diet quality. Their study sample comprised 20,126 adults and children, 80% of who completed the interview in 1994-1996. Paeratakul et al. added another sample of 6,413 children under the age of 9 to the survey in 1998. The dietary intake data were from non-Hispanic Whites (n = 12,188); non-Hispanic Blacks (n = 2,227); Hispanics (n = 2,182), and other ethnicities, including Asians, Pacific Islanders, American Indians and Alaskan Natives (n = 773). Income, education, and household size were classified. The survey respondents were systematically interviewed using multiple pass methodology. The two nonconsecutive 24-hour recalls were carried out over 3 to 10 days on different days of the week. The study compared fast food intake between two groups (those who did eat vs. those who did not eat fast food). The proportion of bread, cereal, fruit, and vegetable consumption among

the children and adolescents was significantly lower when compared to the consumption of fast or processed foods. As long as people eat fast food because of the convenience and their busy lifestyles, fast food consumption will increase in the United States.

Consuming large portion sizes of fast food in a single meal often exceed one's daily caloric requirements. Consuming fast food two or three times a week is associated with weight gain. Fast food, high salt content, fatty acid in fast food, and high sugar in soft drinks and soda may also increase the risk of diabetes and hypertension (Pereira et al. 2005).

Fast Food and Hypertension

The addition of salt in fast foods and processed foods prolongs the shelf life and enhances the flavor of food. Health experts are advising people to use less salt in order to reduce the incidence of hypertension. The AHA (2010) recommends that people choose and prepare foods with little or no salt, or to eat less than a total of 1,500 milligrams of sodium per day.

Hypertension is related to high salt intake. A higher rate of blood pressure, from 140 to 159 mm/Hg systolic pressure, or 90 to 99 mm/Hg diastolic pressure, may contribute to cardiovascular disease (AHA, 2010). Almost all food naturally contains sodium chloride. Table salt, or sodium chloride, has more than 14,000 uses (Salt Institute, 2009) in the home and in industry. Salt was used for simple things around the home before the development of modern chemicals and cleaners. Grandmothers used salt for simple tasks such as preserving foods and enhancing flavor; industries used it in food processing, water purification, and making soap.

Biochemically, sodium chloride and potassium control the balance of water and electrolytes in cellular fluid. Excess sodium in the human body will cause water retention, which may contribute to high blood pressure. People who do not add salt to their diet do not have hypertension (Hayton, 1988). People who eat more than 5.8 grams of salt daily may develop

hypertension. Excess salt intake is associated with increasing age, ethnicity background, obesity, hereditary susceptibility, and renal insufficiency. The exact causes of hypertension are not known. However, factors such as being overweight or obese, sedentary lifestyle, physical inactivity, high salt intake, aging, and genetics are associated with hypertension (AHA, 2010). A lower sodium intake helps to maintain blood pressure and cut antihypertensive medications (Hooper, Bartlett, Davey & Ebrahim, 2004).

Busacker et al. (1995) invention revealed that the addition f edible basic alkali salt, tetrasodium pyrophosphate in frozen potato strips improves the crispiness of French fries after finish frying. French fries at McDonalds' has the lowest (160gm of sodium) amount of salt compared with Sonic (270gm), Wendy's (280gm), Burger King's (530gm) and Kentucky Fried Chicken potato wedges (740gm). The National Academy of Sciences, along with other organizations, recommends a daily sodium intake for a healthy adult of between 1,500 and 2,400 milligrams (mg). Reducing sodium intake has a beneficial effect on blood pressure. In the United States, the main sources of sodium chloride are processed or prepared foods, including canned foods, condiments containing sodium, and naturally occurring sodium in foods such as meat, milk, poultry, and vegetables. For example, one teaspoon of table salt has 2325 mg of sodium, and one cup of low-fat milk has approximately 107 mg of sodium (Mayo Clinic, 2009).

Wang and Beydoun (2007) reviewed articles published between 1990 and 2006 to study the current situation and to assess obesity differences related to gender, age, SES, ethnic group, and geographic regions in the United States. Data sources for this study include The National Health and Nutrition Examination Survey (NHANES) continuous survey (1971-1974, 1976-1980, and 1988-1994) on weight and height, the Behavioral Risk Factor Surveillance System (BRFSS) ongoing risk behaviors telephone survey, Youth Risk Behavior Surveillance System for

risk behaviors and self-reported weight and height. The National Longitudinal Survey of Adolescent Health, a school-based study measuring weight and height of adults. The results indicated that 66.3% of women and 32.42 % of men were overweight or obese, and 4.8% have greater or equal to 40kg/m² BMI, and were extremely obese. According to the NHANES data, the increase in the prevalence of overweight and obese populations has been similar among ethnic groups in both sexes over the past 3 decades. The National Longitudinal Survey of Adolescent Health study analyzed whether excess calories and poor physical activity reflected large racial disparities related to obesity and weight gain. The social environmental impacts carry more weight than individual characteristics such as SES. Eating patterns play a significant role in increasing the obesity risk factors.

Fast Food and Obesity

Fast-food consumption is associated with a higher BMI (Bowman, 2004). Obesity significantly increases the risk of cardiovascular disease (Calle et al., 2003; Fantuzzi & Mazzone, 2007; Raphael et al. 2007). In a 2007-2008 survey, (Flegal KM, Carroll MD, Ogden CL, Curtin LR, 2010) a sample of 8,082 men and women over the age of 20 were interviewed. Weight and height were measured using standard techniques and equipment. BMI was calculated as weight in kilograms divided by height in meters squared, rounded to the nearest one tenth. For adults aged 20 years or older, overweight was defined as a BMI of 25.0 to 29.9, and obesity was defined as a BMI of 30.0 or higher. The study found that the prevalence obesity among women have higher (35.5%) than men (32.2%). Obesity may be categorized as Grade 1 (BMI 30-< 35), Grade 2 (BMI 35-< 40), and Grade 3 (BMI > 40; WHO, 1995).

According to Flegal et al. (2010) the prevalence of obesity did not continue at a similar level from 1999 to 2008 for women. The prevalence of obesity showed variation in

race/ethnicity, over ages between 20 to 70, and 8.9% points for women and 7.9% points for men. The data from 2007 and 2008 were insufficient to determine the real cause of obesity, making it difficult to predict the trend.

Obesity is a risk factor for cardiovascular disease, cancer, hypertension, and arthritis (Malnck & Knobler, 2006). It is also associated with excess mortality from cardiovascular disease, diabetes, and certain cancers (Felgal et al. 2007; Orpana et al. 2009), and hypertension appears to be increasing (Cutlier et al. 2008). From 1988 to 2006, the prevalence of obesity increased among non-Hispanic Blacks (Cowie, 2009). Improving the food and physical environment may help to reduce the prevalence of obesity for the entire population.

The Coronary Artery Development in Young Adults (CARDIA) study surveyed 3,031 White and Black Americans ages 18 to 30 in an effort to determine the relationship between fast-food consumption and changes over a period of 15 years in (a) body weight and (b) insulin resistance (Pereira et al. 2005). The participants filled out a questionnaire, were interviewed, and had their BMIs calculated. Frequency of fast food meals correlated with weight gain and insulin resistance. White women consumed the fewest fast food meals per week. Over the 15-year period, the change in frequency of fast food meals was highly significant among Whites (p = .0001) and Blacks (p = .1004). On average, the participants who ate fast food more than twice a week gained 4.5 kg over that 15-year period.

Self-Administered Diet History Questionnaire

The fast food questionnaire (FFQ), which was used to administer in the current study, is modified from the original Diet History Questionnaire (DHQ). The Risk Factor Monitoring and Methods Branch (RFMMB) scientists develop the Diet History Questionnaire. This food

frequency questionnaire has 124 food types including portion size and supplement questions that needs one hour to complete.

Mares-Perlman et al (1993) in a population based study compared dietary assessment using the Diet history questionnaire among middle-aged and older adults in South-central Wisconsin. In this study randomly selected participants were recruited for the Beaver Dam Eye Study Nutrition Project to evaluate nutritional risk factors for age related eye disease. The Diet History Questionnaire was administered by mail and by interviewers at the participant's home twice at a three-month interval. Higher correlation was observed with DHQ interviewer-administered rather mailed (Sobell et al. 1989).

The modified Fast Food Questionnaire (FFQ) mailed to participants consists of 27 fast food items and would take approximately 10-15 minutes to complete. The questionnaire was used to determine office workers fast food consumption frequency and portion size for the past 12 months.

Literature Review of Methods

Bes-Rastroll (2008) conducted a prospective study in Spain of 50,026 women from 1991 to 1999. Every 2 years, the participants completed a self-administered questionnaire about their diet. The questionnaire had 133 food items. Other questionnaires assessed non-dietary variables such as medical history and demographics. The participants' weights and metabolic rates were noted at the study's onset and during follow-up. Consumption of fast food was found to correlate with weight gain.

Jeffery et al. (2006) investigated the association between the proximity of fast food restaurants to individual homes and workplaces to determine the frequency of restaurant visits and weight gain. This qualitative telephone survey, which was conducted in Minnesota, had a

sample of 1,033 adults over the age of 18. The participants were asked their demographic characteristics, weight, height, and eating habits at fast food restaurants. A company specializing in analyzing GIS used participants' home and work addresses to calculate ease of access to restaurants. The descriptive statistics analysis indicated that two thirds of the participants were women and 40% of them had a college education. The majority were married and worked outside the home. The mean age of participants was 46 years old, a BMI of 26, a family size of 2.6, an average of half an hour of daily physical exercise, and 11.2 hours of TV viewing approximately 3.6 days per week. The GIS analysis indicated that there were more fast food restaurants within 2 miles of work addresses than home addresses. The researchers concluded that distance between fast food restaurants and residences or workplaces contributed to the frequency of fast food restaurant visits per week.

Hertz et al. (2004) documented the association of disease burden influence and work limitation on the American workforce. The prevalence and rates of cardiovascular risk factors were analyzed using clinical measurements from the NHANES III 1999-2000 and the 2002 NHANES interview survey. The findings indicated that obese workers had the highest prevalence of hypertension, dyslipidemia, Type 2 diabetes, and metabolic syndrome.

Fast Food Consumption by Ethnic Group, Gender, and Age

The relationship between fast food and race has indicated that African Americans eat more foods high in fat and low quantities of vegetables (Satia et al. 2004). The researchers suggested that during an intervention to change the eating behaviors of African Americans, it is necessary to consider demographic and behavioral characteristics to address the diet-disease relationship and barriers to healthy eating habits. All ethnic groups in the United States consume fast food. Communities with low SES, and low education, and who live in close proximity to fast

food restaurants, experience higher rates of fast food consumption.

SES is a factor in the health disparity between African Americans and Whites (Kingston & Smith, 1997). This study, conducted in Detroit, Michigan, revealed that the prevalence of obesity and diabetes among Blacks was higher and fresh fruit and vegetable intake was lower than recommended by the USDA. The rate of hypertension has a higher disparity among Blacks (Hertz et al., 2005). Blacks develop hypertension earlier (AHA 2005) and have a higher morbidity and mortality than Whites (AHA) resulting from their nutritional status. Blacks men and women consume less nutritious food than Whites (Champagne et al., 2004).

Maddock (2004) explored the relationship of the nutrition environment to obesity. This cross-sectional analysis included all 50 states except Alaska. Secondary data were used in the 2002 Behavioral Risk Factor and Surveillance Survey (BRFSS), the 2000 U.S. Census, and the 2002 U.S. Yellow Pages. Poor nutrition has contributed to the prevalence of obesity in recent decades. Maddock (2004) examined the relationship between obesity and fast food restaurants at the state level. Fifty states, excluding Alaska, participated in this cross-sectional study. Means of measurement included proximity and number of fast food restaurants, population density, ethnic groups, age, sex, physical inactivity, fruit and vegetable consumption, and percentages of obesity. Major data sources for the study were BRFSS, the US Census, and the Yellow pages. The analyses indicate the association between the number of residents per fast food restaurants and the state-level obesity prevalence.

The prevalence of hypertension may decrease with physical exercise and an increased intake of fruits and vegetables. Li e al. (2009) explored the relationship between the built environment and health behaviors on high blood pressure. In this longitudinal study, 1,145 participants aged 50 to 75 years old were recruited from 120 neighborhoods in Portland, OR.

Systolic and diastolic blood pressures were assessed to form the baseline for 1-year follow-up (2006-2007 to 2007-2008). Neighborhood workability and density of fast food restaurants were the IVs, and physical activity and fruits and vegetable consumption were the DVs in this study. The result showed significant results in systolic and diastolic pressure ($p < .001$) over a 1-year period. The influence of fast food restaurants on high blood pressure declined among the residents of highly walkable neighborhoods who also exercised and consumed fruits and vegetables.

Summary

Office workers often consume fast foods (Prentice & Jebb, 2003). Most fast foods are high in fat and sodium, which contribute to obesity, a significant risk factor for heart disease (Bowman, 2004; Pereira et al. 2005; Raphael, 2007). Fast-food consumption also contributes to hypertension (Pacioni et al. 2008).

Eating food is an automatic behavior (Deborah, 2008) and people consume fast food because it is quick, tasty, and cheap. American workers' lunchtime food choices are motivated by convenience, taste, cost and health and the majority of workers prefer to eat in fast-food restaurants, on-site cafeterias, and full-service restaurants (Blanck, 2007). Office workers' lunch habits are associated with the proximity of fast food restaurants (Jeffery, 2006). Fast foods are loaded with high calories, fat, sugar, and salt (Isganaitis & Lustig, 2005). Trans-fatty acids, in particular, contribute to obesity (Pereira, 2005) and high salt consumption may contribute to high blood pressure, which is a precursor to cardiovascular disease. Obesity is also associated with the workability of American workers (Hertz, 2004). Reducing salt intake, losing weight, and making lifestyle modifications are effective approaches for the prevention of high blood pressure and diabetes (He, 2000).

Chapter 3 describes the research method and design, explains the sample population, the instrument and materials used and provides explanations of the data collection and statistical analysis procedures.

Chapter 3: Research Method

Introduction

In this chapter, the research design is described; research questions and hypotheses are presented. Then, the population, the sampling frame, procedure for mail survey is described, and data analysis tools and procedures to be used to test the hypotheses are explained. Measures were taken for the protection of the participant's rights were described him.

The intent of this study was to examine the association between fast food consumption and obesity and hypertension among office workers.

Research Design and Approach

This correlational study used a statistically significant sample of population to determine the prevalence of an outcome of interest, for the population, generally for the purpose of public health planning. This design is inexpensive and needs a little time to conduct. It is also useful to for public health planning, to assess outcomes, risk factors and generation of hypotheses.

I used the Diet History Questionnaire to measure frequency and portions size of fast food consumption, anthropometric instruments to measure weight and height, and sphygmomanometer to measure blood pressure to obtain data. I did not attempt to change participants' behaviors or conditions; I collected and analyzed the data. This descriptive study is in the form of a survey to investigate the association between risk factors (IVs - frequency & portion size) and the outcome of the interest (DVs - hypertension & obesity).

Data collection and analysis answered the following research questions:

1. Is there a significant positive correlation between frequent fast-food consumption and blood pressure?
2. Is there a significant positive correlation between of large portion size fast-food consumption and body mass?

Population and Sample

The target population was approximately 900 municipal office workers of the City Atlantic City, New Jersey. This includes individuals of both genders, of different ethnic and racial groups. This target population was chosen for its accessibility, diversity, and members have regular access to fast food restaurants, can give informed consent, and have the ability to understand and complete the questionnaire.

For this research, the population of interest was all office workers of the City of Atlantic City municipal government. The sampling frame was designed to be the listing of all municipal office employees' names working for the City of Atlantic City municipal government. Authorization was granted from the Director of Health and Human Services to the researcher to have an access to the list of all municipal office employees' names.

Sample employees' names were selected directly from the list of all municipal employees' names, by giving each employee on the list the appropriate chance of selection in the sample. The sampling frame provided a complete and up-to-date list of employee's names, without omissions or duplications. Employee's names missing from the frame would have no chance of selection in the sample.

The sample was selected using a random technique, which was highly representative. Each member of the study population had an equal chance of being selected. Random sampling increases the ability to generalize from the sample to the target population (Creswell, 2003).

Alpha level for this study will be set at $p = .05$. However, due to the exploratory nature of this study, findings significant at the $p = .10$ level will be noted to suggest avenues for future research. Data were initially tabulated using standard summary statistics (means, standard deviations, frequencies and percentages). As a general data analysis approach, bivariate

comparisons were performed using Pearson product-moment correlations and *t* tests for independent means or one-way ANOVA tests. Multiple regression prediction equations were created to test the hypotheses.

The determination of an adequate sample size for the correlation and regression models was calculated using a power analysis using "G* Power 3.1.3" software. An a priori power analysis to compute sample size assuming medium or moderate correlation coefficient effect size approximately w = 0.30 and alpha (α) = 0.05 and with a power (1 - β) of 0.80 indicated that a sample size of 88 participants was required. Increasing the sample size to 145 will increase power to .95. The study sample demographic characteristics included gender, race and or ethnicity, including Whites, Blacks, Hispanics, Asian, Native Americans, and others.

Instrumentation and Materials

Instrumentation and Materials

Materials required for the study included the Diet History Questionnaires, for survey; a sphygmomanometer for measuring systolic and diastolic blood pressure, stadiometer to measure stature; and balance beam to measure weight.

Diet History Questionnaire

The Diet History Questionnaire (DHQ) is a food frequency questionnaire developed by the National Cancer Institute researchers. It is designed to minimize measurement error based on cognitive research findings. The DHQ food items list was compiled using the data from the Continuing Survey of Food Intakes by Individuals (CSFII 1994-96) to provide reasonable nutrient estimates. The DHQ has 144 food items including portion size and dietary supplement questions (NCI, 2010).

The Diet History Questionnaire software allows removing food questions and modifying

the questionnaire. In this research only 27 food items were used to evaluate Fast Food consumed by the participants and the modified questionnaire was named as Fast Food Questionnaire (FFQ).

The FFQ was designed proficiently and utilized to collect information about the city employees' fast food eating habits during the past 12 months. The questionnaire was coded to protect confidentiality. Survey questions were clear, concise, and consistent. Instructions were explicit. Participants were informed that who is conducting the study. Adequate time was offered to complete the survey and was expected accurate and thoughtful response.

Dietary assessments conducted by McNutt (2003) and Thompson and Byers (1994) indicated that the food frequency questionnaire asks participants to report their habitual frequency of consumption of individual food from the list of foods for 12 months per week and per month. Portion sizes specified as a normal portions or choices.

The 2007 NCI Diet History Questionnaire Coding Manual format definition explained frequency and size formats as follows.

Food Frequency as "How often did you eat/ or drink…." and

Food Portion size as "When you ate <food> how much did usually eat?"

The serving size formats also include quantity of food in grams for each food. In the food database foods in gram amounts are noted for portion sizes as small, medium, and large. The FFQ, which takes 10 to 12 minutes to complete, asks how often each of 27 foods is consumed and in what portion size. The questionnaire asks participants sex, age, and ethnicity.

The Frequency Format of a typical question asks a participant "How often did you drink beverages other than coffee/tea?" The answer was; 0 = *Never*, 1 = *1 time per month or less*, 2 = *2 – 3 times*, 3 = *1 – 2 times per month*, 4 = *3 – 4 times per week*, 5 = *5 – 6 times per week*, 6 = *1 time per day*, 7 = *4 – 5 times per day*, 8 = *6 or more times per day*, 9 = *1 time per day*, 10 = *2 or*

more per day,. = Missing, and *= Error.

The Portion Size Format of question asks a participant

"Each time you ate ground beef in mixtures, how much did you usually eat?" The answer was; *1 = Less than 3 ounces or less than ½ cup (Small), 2 = 3 to 8 ounces (Medium), 3 = More than 8 ounces or more than 1 cup (Large).*

Measurements of Weight, Height, and Blood Pressure

The study measured human body measurement (weight and stature). With calibrated equipment high quality body measurement data was collected using standardized examination procedures.

Balance beam scales are used to measure human body weight. BMI was calculated as weight in kg divided by height in meters squared (WHO, 1998). The scale was placed on firm flat hard surface. Participants removed shoes, and heavy clothing. The participant should stand with both feet in the center of the scale. Weight will be read and recorded to the nearest decimal fraction.

Stadiometer is a vertical ruler with a sliding horizontal rod, which is adjusted to rest on top of the head. A portable Stadiometer (HM200P) will be used for measuring stature. It measures in inches and in centimeters up to 78 inches and/or 200 centimeters of height. Participants remove shoes. Stand with feet flat against the wall.

One the main aims of the study was to provide information useful for studying the relationship between fast food consumption and weight gain or obesity. The assessment of the relationships of food frequency and portion size with BMI requires a series of anthropometric measurements in order to compute the BMI.

According to CDC (2012), BMI was calculated as: BMI equals to weight in pounds

divided by height in inches times height in inches or BMI = (Weight (lbs) / Height (in) x Height (in) x 703.

Sphygmomanometer is a devise used by doctors and nurses to test blood pressure. Sphygmomanometer measures the arterial pressure using the height of a column of mercury to read the circulating pressure in mm of mercury (mmHg).

Reliability and Validity

The Diet History Questionnaire is the new improved cognitively based Food Frequency Questionnaire (FFQ). Subar et al., (2001) compared the DHQ, Block's FFQ, and Willet's FFQ on absolute nutrient intake. The study results indicated that the Willet's instrument tends to overestimate nutrient intake for women and highly underestimate for men compared to DHQ and Blocks FFQ. The lack of portion size in the Willet FFQ indicated the differences in absolute intake between the three FFQs. The Eating at America's Table Study (EATS) has validated that the DHQ is good or better compared with Willet and Block FFQs to use for data collection by researchers (Subar et al. 2001).

Hamilton, McDonald, and Chenier (1992) compared handgrip strengths between sphygmomanometer and Jamar dynamometer among hand-injured patients. The purpose was to determine the reliability of repeated measurement of each instrument. Sphygmomanometer was validated in comparison with the value of Jamar dynamometer measurement. Handgrip strength measurement conducted by both instruments on 29 right-handed female college students using a standard procedure. A Spearman Rho correlation coefficient test result indicated that the measurement reliability was high for each instrument at .85 for the sphygmomanometer and .82 for the Jamar dynamometer. Construct validity testing between both instruments produced a .75 correlation. Both instruments showed good instrument reliability.

Processes to Complete Instruments by Participants

Computer generated random numbers (codes numbers) for 145 selected participants were written on the Fast Food Questionnaires (FFQ) and on the Informed Consent (IC) to protect participant's confidentiality. Sample participants' names were randomly selected from the general employees list. First, an Informed Consent Forms sent to selected participants (Appendix A & B). Then after the Informed Consent signed and returned by the participants, Fast Food Questionnaires were distributed to participants (Appendix C).

Participants' weight, height were measured to calculate the BMI, and blood pressure level was screened and recorded. A licensed professional for accuracy calibrated the balanced beam scale. It was located in a private location. Participants removed shoes heavy outer clothing and emptied their pockets. Weight readings were recorded to the nearest 1/10-kilogram or ¼ pound increments. Stadiometer base stable was checked for accuracy. Participants removed shoes; hat, hair ornaments, and stood straight with heels, buttocks upper back and head contacted with the stadiometer and height read to the nearest 1/8 of an inch or 0.1 centimeter.

As a part of this study, a registered nurse measured blood pressure. The Nurse signed a Confidentiality Agreement (Appendix D). The nurse followed CDC's proper and standardized procedures of measurement to obtain study participant's blood pressure measurement in a uniform manner. According to the American Heart Association (2012) recommendations, participants were rested for 5 minutes in a sitting position. During the survey only systolic and diastolic blood pressure measure were recorded. The Sample Person (SP) was quietly seated for a minute period before the blood pressure measured. An inflatable cuff and a sphygmomanometer used to measure the systolic pressure. The second and the third systolic reading average were recorded (CDC, 1995).

Data Collection

Data were collected after I obtained IRB approval (Appendix E) of the proposed study from Walden University's Human Research Ethics Committee. In addition, the researcher obtained permission to reprint and use the DHQ. A written request (Appendix F) was submitted to the Director of Health and Human Services, seeking permission to collect data from the city's municipal office workers.

After obtaining permission (Appendix G) from the Director of Health and Human Services the researcher sent all sample participants of the municipal office workers (a) a letter describing the research, inviting them to participate, explaining what their participation would entail, and assuring them of confidentiality, (b) a self-addressed stamped envelope (SASE), and (c) an informed-consent form for them to sign. About a week later, the FFQ was distributed with payrolls through the Payroll Department to employees who return the consent form. To preserve confidentiality, participants were given by code number.

Description of Data Collection Processes

Data were collected with Fast Food Questionnaire survey and anthropometric measuring scales and equipment. I used survey analysis to measure the participant's opinion in their eating habits using a questionnaire. SPSS version 19 was used to enter code and store the survey and anthropometric data in the computer. Informed consent was distributed to randomly selected sample participants. When samples responded the consent form to the researcher, immediately FFQ survey package was distributed with pay checks through the Payroll Department.

Height and weight were measured and recorded by the researcher in separate room with a balance scale and stadiometer. Before measuring weight and height Participants took their shoes off and removed heavy stuffs from their pockets.

Blood pressure was checked with sphygmomanometer and recorded. Participants took rest for five minute before the reading. Then, cuff was wrapped around the arm, inflated to compress the blood vessel. Deflated slowly, read, and recorded the result.

Participants have signed Authorization to Use or Disclose Personal Health Information (PHI) (Appendix H) for research before being screened. I matched this code number list with the selected research participant code written on the FFQ. I measured and recorded height and weight of participants and licensed professionals checked and record blood pressure. All the raw data including fast food consumption survey, blood pressure, and anthropometric records were entered in a computer and locked in a cabinet.

Data Analysis

The purpose of the data analysis was to determine whether a significant relationship existed between frequent fast food consumption, obesity and hypertension. Because I examined variables, frequent fast-food consumption, portion size, body mass, and blood pressure were measured in intervals and sorted by gender and ethnicity; a logistic regression test was an appropriate test for statistical analysis. Logistic regression model estimated the association of demographic, behavioral, and risk factor variables with the dichotomous outcome, such as the occurrence or absence of hypertension (Kelly et al. 2007).

Nature of Scale for Each Variable

FFQ is an instrument to measure for preprocessed foods frequency (per day, week, month, and year), and portion size (rated as small, medium, or large); and anthropometric instruments used to measure weight, height and waist circumference.

FFQ asked participants about usual eating habits or frequency over the year. Six different food frequency formats grouped from 1-6 times per year to >3 times a day. Participants were

asked the portion size as small, medium or large. This close-ended questionnaire includes proportion and duration formats (NCI, 2010). Sphygmomanometer was used to measure the blood pressure at the level of the arm. Height was measured with the SECA height gauge stadiometer and weight was measured with the balance beam scale; both were used to calculate the BMI. Waist circumference was measured with a tape measure; a larger waistline (man > 40 inches and nonpregnant woman >35 inches) indicates whether that individual is at a high risk of developing obesity related health problems. Individuals measured and found to have excessive abdominal fat need to lose weight (DHSS, 2005).

The first research hypothesis deals with the relationship between frequent consuming salty fast food and hypertension and the second hypothesis deals with the association of large portion size fast food consumption with overweight and obesity. The G* Power 3 calculation for a logistic regression with two predicators and an effect size $w = 0.5$, alpha (α) of 0.05 and power 0.80 and Df =1 provides the total sample size of 88 participants.

The data analysis explains the following factors. Increasing in sample size from 88 to 145 will increase the statistical power from 0.80 to 0.95. One hundred forty five randomly selected participants out of a total of 900 office employees was enough to meet the requirement calculated by G* Power 3. The analysis is listed with the hypothesis.

First Hypothesis

Ho: There will not be a statistically significant positive correlation between frequent fast-food consumption and high blood pressure.

Ha. There will be a statistically significant positive correlation between frequent fast-food consumption and high blood pressure.

Consuming fast food frequently that contains excessive salt, trans fat and sugar will be

measured with FFQ to determine the association of frequent consumption of unhealthy diet over time with high blood pressure among office workers. To determine a statistically significant correlation between consuming salty processed and restaurant foods frequency and the prevalence of hypertension, participant's blood pressure will be measured and recorded to identify high-risk municipality workers. The frequency of fast food consumption per individual will be calculated using SPSS version 19.0.

Second Hypothesis

Ho: There will not be a statistically significant positive correlation between large portion size fast-food consumption and body mass.

Ha. There will be a statistically significant positive correlation between large portion size fast-food consumption and body mass.

Consuming large portion size fast food was measured in grams using FFQ to assess the association between the quantity of fast food (small, medium, large) served and weight and obesity. Weight and height were recorded to calculate the BMI. To determine a statistically significant correlation between fast food consumption and being obese and hypertensive, participant's weight & height and blood pressure were measured, recorded and calculated to identify the BMI and hypertension rates.

The research has one sample; two independent variables (food frequency and portion size and two dependent variables (hypertension and obesity) measured on all randomly selected study participants.

The Research Hypothesis was tested with Pearson product-moment correlation for blood pressure and obesity scores. The correlational will not influence the variables but look for relations (correlations) between fast food frequency & blood pressure level and portion size &

obesity. The purpose of correlation is to measure the strength of the relationship between the research variables that are on an interval scales.

The descriptive analysis has described research hypothesis features of the data and simple summaries about the sample and the measures. The analysis included the means, standard deviations, and score ranges. Statistical Package for the Social Sciences (SPSS) 19.0 was used as the statistical software to analyze the data (Creswell, 2003).

Protection of Participants

Confidentiality

Throughout this study, I protected the privacy of participants whose identities remained confidential. All randomly selected participants were provided computer generated code number. Those numbers were written on the Informed Consent, the FFQ, and the Personal Health Information sheets for the purposes of matching. Data were coded to a master list kept in a separate file. The study's raw data will not be stored in removable devices such as CDs. Until being discarded after at least 5 years, the raw data will be stored—in encrypted form—in my laptop computer at his home and kept in a secured location. Only I will have access to the raw data. I will verify backups at least monthly. Antivirus and anti spy software will continually protect my computer system from unauthorized access.

Voluntary Participation

Participants signed Informed Consent and Authorization for Personal Health Information (PHI) forms before participating in the study. These forms informed them of the researcher's name and contact information; the study's purpose, procedures, and potential risks and benefits; their right to ask questions and obtain a copy of the results; the fact that their privacy and confidentiality will be respected; and the voluntary nature of their participation.

Dissemination of Findings

The research findings will be distributed to different stakeholders, including to the local media press releases, policy makers, study newsletters, community agency, local events, seminars of conferences, and to study participants.

Chapter 4 provides the description of the sample tests the hypotheses and or examines the research questions and presents the key findings in a coherent order.

Chapter 4: Results

Introduction

The result section presents the findings of the study. The chapter is organized into three sections: a description of the sample, testing the hypotheses and or examining the research questions.

The purpose of this study was to: (a) assess the relationship between frequent consumption of salty fast food and high blood pressure, and (b) explore the relationship between fast food portion size and obesity. A total of 55 office workers participated in this study with 36 of them providing BMI and blood pressure data.

Participants

One hundred forty five informed consent and FFQ were distributed to randomly selected participants. Out of 145 questionnaires, 55 participants completed and returned the survey. Approximately 36 Questionnaires were returned unopened and 54 questionnaires were not returned. The distribution of demographic characteristics is shown on Table1.

Statistical Data Analysis

The objective of the data analysis in this research was to organize and discover relationships among the data and test the significance of the results. Raw data for food frequency, portion size, systolic and diastolic blood pressure, and BMI were entered in Excel, then copied and pasted to SPSS version 19 for Windows. Sample demographic variables (Ethnicity and Gender) were characterized with descriptive statistics. α-level of 0.05 indicated statistical significance. The study used correlation and regression analysis techniques to test the hypothesis, to see if two variables are associated and to estimate the value of one variable is related to the particular value of the other variable.

Table 1 presents the demographic characteristics of 55 participants. Out of fifty-five participants 23.6% (*n* = 13) were Whites 69.1% (*n* = 38) were Blacks and 7.3% (*n* = 4) were Hispanics. Approximately 78.2% were female and 21.8% were male. Blacks were the largest percent of participants (69.1%).

Table 1

Demographic Characteristics (N=55)

Variable	Category	*n*	%
Gender			
	Male	12	21.8
	Female	43	78.2
Ethnicity/Race			
	Whites	13	23.6
	Blacks	38	69.1
	Hispanic/Latino	4	7.3

Table 2 presents weight categories of 36 participants. Approximately 55.8% (*n* =19) women are overweighed (25-29.9) and obese (>30), whereas approximately 17% (*n* = 6) men are obese.

Table 2

Body Mass Index of Participants (N= 36)

Demographic Characteristics		Weight Categories									
		Underweight		Normal		Overweight		Obese		Total	
Ethnicity	Gender	<18.5		18.5-24.9		25-29.9		>30			
		n	*(%)*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*
Whites											
	Men					1	(2.8)			1	(2.8)
	Women			3	(8.3)	1	(2.8)	3	(8.3)	7	(19.4)
Blacks											
	Men			1	(2.8)			6	(17)	7	(19.4)
	Women			5	(13.9)	6	(16.7)	9	(28)	20	(55.6)
Hispanic											
	Men										
	Women							1	(2.8)	1	(2.8)
Total				9	(25)	8	(22.2)	19	(52.8)	36	(100)

Table 3 presents the blood pressure level of participants. Out of 36 participants 16.7% (*n* = 6) were in the Normal Blood Pressure level (120mm/Hg), 58.3% (*n* = 21) were in the prehypertension level (120-139 mm/Hg), 19.4% (*n* = 7) were in Stage 1 High Blood pressure level (140-159 mm/Hg); and 5.6% (*n* = 2) were in Stage 2 High Blood Pressure level (>160 mm/Hg).

Table 3

Blood Pressure of Participants *(N=36)*

Demographic Characteristics		Blood Pressure Categories									
		Normal		Pre-hypertension		HBP Stage 1		HBP Stage 2		Total	
Ethnicity	Gender	<120 *mm/Hg*		120-139 *mm/Hg*		140-159 *mm/Hg*		>160 *mm/Hg*			
		n	*(%)*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*
Whites											
	Men			1	(2.8)					1	(2.8)
	Women	3	(8.3)	3	(8.3)	2	(5.6)			8	(22.2)
Blacks											
	Men	2	(5.6)	2	(5.6)	2	(5.6)	1	(2.8)	7	(19.4)
	Women	1	(2.8)	14	(38.9)	3	(8.3)	1	(2.8)	19	(52.8)
Hispanic											
	Men										
	Women			1	(2.8)					1	(2.8)
Total		6	(16.7)	21	(58.3)	7	(19.4)	2	(5.6)	36	(100)

Note: *HBP High Blood Pressure*

Table 4 presents the level of blood pressure of participants by gender and age.

Approximately 27.8% (n=10) of female and 13.9% of male are in the age between 51-60 years.

Female *(n= 6) and* male *(n = 2*) in this age group are in the prehypertension level.

Table 4

Blood Pressure of Participants by Gender and Age (N=36)

Demographic Characteristics		Blood Pressure Categories									
		Normal		Pre-hyper tension		HBP Stage 1		HBP Stage 2		Total	
Gender	Age	<120 *mm/Hg*		120-139 *mm/Hg*		140-159 *mm/Hg*		>160 *mm/Hg*			
		n	*(%)*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*
Female											
	30-40			1						1	2.7%
	41-50	1		3						4	11.1%
	51-60	3		6		1				10	27.8%
	61-70			6		3				9	25%
	71-80			2		1				3	8.3%
Male											
	30-40										
	41-50										
	51-60	2		2				1		5	13.9%
	61-70	1				1				2	5.6%
	71-80			1		1				2	5.6%
Total		7		21		7		1		36	100%

Note: *HBP High Blood Pressure*

Table 5 displays the psychometric characteristics for the two summated scale scores. The Cronbach's Alpha reliability coefficients were α = .88 for the average portion size score and α = .92 for frequency of fast food consumption score. This suggested that both scales had adequate levels of internal reliability (Cronbach, 1951).

Table 5

Psychometric Characteristics for Summated Scale Scores (N= 55)

Score	Number of Items	M	*SD*	Low	High	Alpha
Average Portion Size	27	1.66	0.42	0.74	2.59	.88
Frequency of Fast Food Consumption	26	2.57	1.12	0.92	5.38	.92

Research Hypothesis

Research Hypothesis 1 predicted that, "Frequent consumption of fast food will have a positive relationship with high blood pressure." To test this, Table 6 displays the Spearman rank-order correlation for the high blood pressure score with the frequency of consumption variable. The correlation was significant (r_s = .40, p = .02) which provided support for Research Hypothesis 1.

Research Hypothesis 2 predicted that, "Fast food portion size will have a positive relationship with obesity." To test this, Table 6 displays the Spearman rank-ordered correlation for the body mass index score with the fast food portion size score. Body mass index was positively correlated with average portion size (r_s = .37, p = .03). This finding provided support

for Research Hypothesis 2.

Table 6

Spearman Ranked Ordered Correlations for Portion Size and Food Consumption with Body Mass Index and Blood Pressure Scales (N = 36).

Variable		Body Mass Index	Blood Pressure
Average Portion Size	Correlation	.37 **	.35 **
	Sig. α (2-tailed)	.03	.04
Frequency of Fast Food Consumption	Correlation	.20	.40 **
	Sig. α (2-tailed)	-	.02

Correlation is significant at p<.05level (2-tailed))

Of the 27 correlations it can be seen 3 fast foods have positive relationship with hypertension; and 5 fast foods have positive relationships with obesity and were found to be statistically significant at p<. 05 (Table 7).

Table 7

Spearman Ranked ordered Correlation for frequently consumed foods and average portion size of food with Blood pressure and Obesity (N = 36).

Variables		Blood Pressure	Body Mass Index
Fried potatoes	Correlation	.44**	
	Sig. α (2 tailed)	.007	
Cold Cuts	Correlation	.38**	.38**
	Sig. α (2 tailed)	.020	.02
Beef burgers	Correlation	.38**	.38**
	Sig. α (2 tailed)	.022	.02
Soft drink	Correlation		.42**
	Sig. α (2 tailed)		.01
Ground beef	Correlation		.41**
	Sig. α (2 tailed)		.01
Sausage	Correlation		.40**
	Sig. α (2 tailed)		.02

**p<.05

Summary

Outcomes from the survey and the anthropometric screenings indicated that there was a positive correlation between fast food consumption and obesity and blood pressure (Table 7). Frequent consumption of fried potatoes, cold cuts, and beef burgers are positively correlated with blood pressure and consuming average portion of beef burgers, ground beef, sausage, and drinking soda indicated positive correlations with obesity (Table 7). Chapter 5 incorporates various issues including the interpretation of the results, discussion of the social change implications, recommendation for action and future research in this area and summary of the research project.

Chapter 5: Discussion, Conclusion, and Recommendations

Introduction

This quantitative research was conducted to examine the relationship between fast food consumption and obesity and hypertension. The study focus was specifically on office workers fast food eating habits and health condition. The results demonstrated that frequent fast food consumption was correlated with hypertension, and average portion size food was correlated with obesity. One of the risk factors for hypertension is too much sodium chloride in the diet (Mayo, 2010).

Interpretations of Findings

The study evaluated office workers fast food consumption frequency and portion size with the FFQ. Sample participants were asked; (a) "How often did you eat baked, boiled or mashed potatoes?" Answers were selected as (*a) Never, (b) 1-6 times per year, (c) 7-11 times per year, (d)1 time per month, (e) 2-3 times per month, (f) 1 time per week, (g) 2 times per week, (h) 3-4 times per week, (i) 5-6 times per week, (j) 1 time per day, and (k) 2 or more times per day* (NCI, 2007). In the analyses the responses were coded from 0 being never eaten to 10 two or more times per day. To determine the portion size consumption participants' were asked as "Each time you ate potato chips, tortilla chips, or corn chips, (including low-fat, fat free or low-salt). Answers were selected as *(a) Less 1 one cup (small), (b) 1 to 2 cups (medium); and (c) More than two cups (large).* The response was 1 to 2 cups or medium size.

In the US food portion sizes are increasing at home, meals in restaurants, and in groceries exceeding the FDA serving standards. According to the CDC (2006), portion size is defined as an amount of food served in one occasion, and serving size is defined as a standardized unit of measuring food-for example, a cup or an ounce-used in a dietary guidance.

The top five frequently consumed foods are turkey cold cuts (calorie 660, salt 300 mg,

Subway), baked, broiled, roasted and fried chicken (calorie 270, salt 760 mg, Burger King), chicken in salads, (calories 430, salt 920, McDonald's), pizza regular (calories 298, salt 683 mg), and baked, boiled or mashed potatoes (calories 740, salt 2350 mg, KFC). The top five average portion size consumed foods are baked, broiled, or fried chicken (calorie 270), chicken in salads, sandwiches (calorie 430), chips (calorie 155), turkey cold cuts (calorie 660), and fried potatoes(calorie 500, McDonalds); (The Fast Food Explorer, 2011).

Results from the regression analysis indicated that there is a strong relationship between fast food consumption and obesity and hypertension ($p<.05$). For example if a person eats one serving foot long cold combo sandwich at subway, the cold cut will have approximately 820 calories and 3600 mg of sodium (The Fast food Explorer database, 2011). Based on a Daily Value of 2000 caloric intake per day recommended by FDA, this serving contains more than 1/3 of the total caloric intake in one day (Bowman & Vinyard, 2004). The excess dietary salt can exacerbate hypertension disease (Elliot et al., 1996; Stamler, 1997; Sacks et al., 2001, Whelton et al., 1998).

Office workers consumed an average portions size of fast food 2 or 3 times a week. Analysis of six studies; five prospective cohorts (Duffey, 2007; French, 2000; Li, 2009; Niemeier, 2006; Pereira, 2005) and one systematic review (Rosenheck, 2008) reported that fast food consumption has positive relationship with body weight of adults. The researchers suggested that frequent fast food consumption increases the risk of obesity.

Data from the anthropometric measurement and sphygmomanometer screenings indicated that from 36 particpants11% ($n = 7$) were Overweight, and 55% ($n = 20$) of sample persons had a BMI ≥ 30 or Obese (Table 2). One of the risk factors for hypertension is too much sodium chloride in the diet (Mayo, 2010). Fast food that loaded with high sodium content and high

calories contributed to obesity and hypertension. People get 6.2% from table salt, 5.1% from cooking, 11.6% from unprocessed natural food and 77% comes from processed food (Mattes & Donnelly, 1991). Blood pressure screening result revealed that 16.7% (*n*= 6) of the participants have normal blood pressure level, 58.3 % (*n*=21) have a pre-hypertension level, 19.4% (*n* = 7) have high blood pressure stage 1, and 5.6 % (n = 2) have high blood pressure Stage 2 (Table 3). Age, race, family history, sedentary lifestyles and being inactive also contribute to high blood pressure. A study on the factors associated with the effect of age and obesity on hypertension indicated that the systolic and diastolic blood pressure before and after the age of 60 is associated with the increase in the occurrence of hypertension and obesity (Anderson, 1999).

Implications for Social Change

Consuming medium portion size of fast food 2 to 3 times per week is associated with obesity and hypertension (Table 6). Better understanding health behavior change with modification of food choice, routine checkups, and screening could help to reduce the incidences of chronic diseases.

Office workers eating habits requires qualitative change not only changing the quantity they consumed. Researchers need to examine the association between portion size and weight control that will help to train people to recognize the right serving size. According to Ferrara et al. (2007), dietary modifications might affect blood pressure level. Their findings indicated that participants who ate legume, cooked vegetables and fish and low saturated fat and salt content better controlled their blood pressure without increasing antihypertensive pills.

The relationship of fast food consumption and obesity and hypertension has implication for practice. Researchers have to focus on determinants of fast food consumption and the long-

term health effects. Designing intervention program to educate the public and policy makers to bring about behavioral change is important.

People need to be trained to recognize the appropriate serving size to reduce consumption. Food and eating environment to reduce fast food consumption be the center of attention for future research.

The study results implications will help design health promotion intervention. Health screening and health education are vital to reduce disease burden among office workers. Health screening is a major part of preventive health care. Early detection before symptoms appear allows for successful treatment. Educate workers about calorie counting, healthy food choice and consuming appropriate serving size of food. Healthy eating awareness information will be imperative to employees and management with video, posters, and flyers.

Office workers fast food consumption is associated with obesity and hypertension. The result pointed out to assess the health of the workers. The City Administration needs to design a policy to reduce these incidences.

The findings of this study have important indications and public health implications. First, public health is aiming at reducing the risk factors for high blood pressure and obesity among workers through participatory intervention, awareness and education. Efforts to promote healthy food choice and eating habits reduce adverse health consequences such as hypertension, and diabetes from consuming salty fast foods. This will require an integrated approach between the public health, health care providers the City Administration and the workers participation. Additionally, this will help community-wide educational campaigns to encourage the city residents to engage in health enhancing behaviors, including healthy food choice, physical activity, and routine health screening.

The study may bridge the gap between unhealthy eating behavior with socioecological intervention through education, counseling and follow-up targeting individual behavior change and practice. As the public workforce is aging and exposed to unhealthy eating habits, the risk factors of cardiovascular disease is on the rise. Unhealthy diet and eating habits, age, and social and economic issues are some of the risk factors for obesity. Office workers who are not paying more attention to their health conditions, contributed to poor work performance. Office workers who often are eating fast food in a week might gain weight due to a sedentary lifestyle in the office. Social influence can modify a person's thoughts, attitude and behavior in response to the action or feeling s of others.

The study adds to the large collection of evidence to the body of the research that the higher content sodium in the fast food is contributing to the prevalence of prehypertension. The medium portion size of energy-dense fast food intake also is contributing to obesity incidence. A comparison study that investigates the quality and quantity of homemade and fast food indicated that food prepared away from home contains more calories, total fat, saturated and more sodium and was cholesterol dense (Guthrie et al 2002).

Recommendations for Action

Fast food consumption is associated with obesity epidemic and the prevalence of hypertension that affects the Atlantic City office workers. Environmental factors such as the availability, convenience, and low cost of fast food and quick lunch break contributed to fast food consumption.

Recommended Action Plan

Workplace Health Promotion programs should integrate the following activities (CDC, 2011):

Assessment: Health risks, disease burden, behavior

Planning/Workplace Governance: Committee forming/developing goals

Implementation: health promotion strategies

Evaluation: the effectiveness of an organized health promotion

Designing Workplace Health Promotion will help to educate the management, the public health professionals working with employers to improve the health of the employees by conducting wellness screening or health promotions.

Planning and implementing socio-ecological models of health promotion in an organization is beneficial to improve office workers' health behavior (Stokols, 1996).
The socio ecological model provides a comprehensive framework for understanding and modifying the range of social and environmental factors that have an effect on fast food consumption behavior. The model also identifies levels of influence on health and eating behavior: individual, interpersonal, organizational community and public policy (McLeroy et al 1998), which can influence office workers' health behavior.
Office workers' health behavior change is facilitated by:

a. Concerned office workers who join healthy meals (interpersonal level)
b. Healthy meals and food choices in restaurants, worksite cafeterias (organizational level)
c. Neighborhoods that are safe for walking (community level)
d. Government regulations to ban the use of trans fat in fast food restaurants (policy level)

In 2008, the New York City Board of Health banned trans fat from the fast food chains. New Jersey has certain restrictions on any food products containing trans fats to be served and sold at

public and non-public schools (S1218-22006-2007). In October 2006, New Jersey proscribes the use of trans fat in food prepared or served in restaurants to reduce the prevalence of coronary heart diseases and other diseases (S2265-2006-2007).

Dissemination of the Study Results

It is essential to disseminate the key results of this study to the employer for making a decision and designing health promotion intervention to improve the health conditions of employees. The dissemination plan needs were designed during the early stages of the research. The study also considers what the goals and objectives of the study are, and who will be the audience and how to reach the audience and who will be responsible and how it will be disseminated. The research findings will be printed in color and distributed to different stakeholders, including to the local media (newspaper, radio, magazines, and television), press releases, flyers, posters, and brochures, policy makers, study newsletter, community agency, local events, seminars of conferences, and letter of thanks to research participants.

Recommendations for Further Study

Continuous needs assessment will help to design the Workplace Health Promotion program to prevent or reduce debilitating disease among workers and to enhance productivity. The health condition of the aging workforce needs attention by employers, health professionals, and by workers themselves. Because of office workers predisposed lifestyles; they do not pay attention to their food eating habits in daily diets until they suffer from any disease of the stomach or gastropathy, diabetes, or obesity.

Future researchers should explore the relationship between fast food consumption behavior and cardiovascular risk factors such as cholesterol level, diabetes mellitus, and hypertension among public employees. I recommend mixed method to obtain comprehensive

information on fast food consumption behavior through semi-structured interviews and fast food surveys. Qualitative method possibly will improve the quality of quantitative studies by discovering the hypotheses to be tested and improve the data collection instrument proposed to assess the dietary intake. Qualitative results will help to develop quantitative survey and dietary assessment instruments and tools to estimate the portion size. Food consumption study will incorporate both quantitative and qualitative approaches in order to achieve convergence of results. Using a combination of qualitative and quantitative approaches (mixed method) will provide a better understanding of the research problem than either approach alone.

Conclusion

The study had some limitations. The response rate to the questionnaire and participation of the sample persons during blood pressure screening and anthropometric measurement was not equal to survey respondents. Some department employees of the City, such as uniformed and the court workers, and beach patrol employees refused to complete the fast food questionnaire and returned it to the researcher. Underreporting on food records have been found among individuals with higher body mass index (BMIs) particularly women and elderly individuals (Thompson and Subar, 2001). Since it is difficult to measure an exact amount of food consumed at one meal, the food portion size (large, medium and small) was estimated based on the calorie contents.

Blood pressure measures were taken during a single visit, which may entail potential measurement errors due to unmeasured confounders such as caffeine use, white coat hypertension or masked hypertension.

The study also has several strengths. It is the first in its kind to be conducted in the history of the City Hall. The use of correlation and regression analysis allowed for the testing of the hypothesis, and for the measuring of the relationship between BMI and blood pressure

screening and survey. The findings will help to design the Workplace Health Promotion intervention to change sedentary lifestyles of office workers. The sampling frame also focuses on the city population only. According to Li et al (2009), the study being limited to only the city employees may increase the direct policy applicability of the study results.

Eating larger portion size of fast food frequently is associated with obesity and hypertension which is a common reason for physician's office visits. Socio-ecological intervention might affect the prevalence of these risk factors through education, counseling and follow-up. Office employees should be aware that obesity is the risk factor for progressive hypertension. Obese people are prone to the prevalence of hypertension than lean persons (Grundy, 2004).

Reducing alcohol, fat, carbohydrates, and protein intake and limiting the portion size on the plate at each meal is important. Daily calories must not exceed the number of calories spent. Logging daily consumption and physical exercise will help to weight control. Changes in eating habits and exercise can tremendously reduce weight and cardiovascular risk factors in general. Lifetime commitment and motivation for these changes by setting goals and monitoring the progress are critical to successful lifestyle modification programs.

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APPENDIX A: INFORMED CONSENT

Title of Study: Association Between Fast Food Consumption and Obesity and High Blood Pressure Among Office Workers

This is a research study. Please take your time in deciding if you would like to participate. Please feel free to ask questions any time. You are being invited to participate in this study because you are an employee of the City of Atlantic City municipal government.

INTRODUCTION

This study is conducted by a researcher Kifle Mihrete who is a doctoral student at Walden University and an employee of the Atlantic City Health Department.

BACKGROUND

The purpose of the study is to examine the links between fast food consumption and overweight and hypertension and as well as to educate the office workers about healthy eating habit and food choice. Participants will be selected using random sampling method which represents the target population. Random sampling is preferred for selecting participants in which every person will have an equal and independent chance of being selected.

PROCEDURES

If you agree to participate, you will be asked to complete a survey about your attitudes towards fast food consumption that should take about 12 minutes; you will be asked to participate in the blood pressure screening and anthropometric measurement sessions for 10-15 minutes at one of the following locations: City Hall 2nd floor, Public Safety Building, City Yard and the PAL; your blood pressure will be checked and your weight and height will be measured.

VOLUNTARY NATURE OF THE STUDY

Your participation in this study is completely voluntary. You may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, no one in the City Hall will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind during the study. If you feel stressed during the study you may stop at any time. You may skip any questions that you do not wish to answer.

RISK AND BENEFITS

The study has minimal risk and may cause inconvenience during blood pressure screening and anthropometric measurements. You may not benefit directly from taking part in this study. However, this study may help us better understand and design an educational intervention to promote healthy eating and food choice.

COMPENSATION

You will not be paid of compensate for your participation in this study.

CONFIDENTIALITY

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. Identifying information will be coded. Data will be kept for five years in password protected computer files and only the researcher will have an access. The researcher will not use your information for any purpose outside this research project. If the results are published your identity will remain confidential.

CONTACT AND QUESTIONS

You are encouraged to ask questions at any time during this study. For further information about the study contact Kifle Mihrete at (609) 347-5671; Kifle.mihrete@waldenu.edu Any questions about your rights as a research participant should be directed to Dr. Leilani Endicott, the Coordinator of Walden University's Institutional Review Board (800-925-3368, ext, 1210); IRB@waldenu.edu).
YOU WILL BE GIVEN A COPY OF THIS FORM WHETHER OR NOT YOU AGREE TO PARTICPATE.

If you agree to participate in this research please sign on this page. Thank you.

Agreement

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below I am agreeing to the terms described above.

_____ _____

Participant's signature Date

Participant's address (if participant wishes to receive the study results)

_____

_____

APPENDIX B: CONSENTIMIENTO INFORMADO

Título del Estudio: Asociación entre el consumo de comida rápida y la obesidad y la presión arterial elevada entre los trabajadores de Office

Se trata de un estudio de investigación. Por favor, tómese su tiempo para decidir si le gustaría participar. Por favor, no dude en hacer preguntas en cualquier momento. Usted está siendo invitado a participar en este estudio porque usted es un empleado de la Ciudad de Atlantic gobierno de la Ciudad municipales. **INTRODUCCIÓN** Este estudio es realizado por un investigador Kifle Mihrete que es un estudiante de doctorado en Walden University y un empleado del Departamento de Salud de Atlantic City. **ANTECEDENTES** El propósito del estudio es examinar los vínculos entre el consumo de comida rápida y el sobrepeso y la hipertensión y, así como para educar a los trabajadores de oficinas sobre el hábito de una alimentación sana y la elección de alimentos. Los participantes serán seleccionados mediante el método de muestreo aleatorio que representa a la población objetivo. El muestreo aleatorio se prefiere para seleccionar a los participantes en el que cada persona tendrá una oportunidad igual e independiente de ser seleccionado. **PROCEDIMIENTOS** Si usted acepta participar, se le pedirá que complete una encuesta sobre sus actitudes hacia el consumo de comida rápida que debería tomar alrededor de 12 minutos, se le pedirá a participar en el Examen de la presión arterial y las sesiones de las medidas antropométricas durante 10-15 minutos a una de los siguientes lugares: Ciudad de los pabellones 2 º, Edificio de Seguridad Pública, Ciudad Jardín y el PAL, será su presión arterial y su peso y la altura se medirá. **VOLUNTARIO DE LA NATURALEZA DEL ESTUDIO** Su participación en este estudio es completamente voluntaria. Usted puede negarse a participar o retirarse del estudio en cualquier momento. Si usted decide no participar en el estudio o salir temprano del estudio, nadie en el Ayuntamiento le tratará de manera diferente si usted decide no participar en el estudio. Si usted decide participar en el estudio ahora, usted todavía puede cambiar de opinión durante el estudio. Si se siente estresado durante el estudio se puede dejar en cualquier momento. Usted puede saltarse cualquier pregunta que usted no desea

responder. **RIESGOS Y BENEFICIOS** El estudio tiene un riesgo mínimo y puede causar molestias durante la investigación de la presión arterial y medidas antropométricas. Es posible que no se benefician directamente de la participación en este estudio. Sin embargo, este estudio puede ayudarnos a comprender mejor y diseñar una intervención educativa para promover la alimentación saludable y la elección de alimentos. **COMPENSACIÓN** No se le paga de compensación por su participación en este estudio. **CONFIDENCIALIDAD** Documentos identificación de los participantes será confidencial en la medida permitida por las leyes y reglamentos aplicables y no se harán públicos. La identificación de la información será codificada. Los datos se conservarán durante cinco años en archivos protegidos con contraseña ordenador y sólo el investigador tendrá acceso. El investigador no utilizará su información para cualquier propósito fuera de este proyecto de investigación. Si los resultados se publican su identidad se mantendrá confidencial. **CONTACTO Y PREGUNTAS** Se le anima a hacer preguntas en cualquier momento durante este estudio. Para más información sobre el estudio de contactos Mihrete Kifle en 609-347-5671; Kifle.mihrete @ waldenu.edu Una pregunta sobre sus derechos como participante de una investigación debe ser dirigida a la Dra. Leila Endicott, el Coordinador Institucional del Consejo de Walden University Review (800-925-3368, ext., 1210); IRB@waldenu.edu). **SE LE DA UNA COPIA DE ESTA FORMA O NO SE COMPROMETE A PARTICPAN.** Si usted acepta participar en esta investigación por favor firme en esta página. Gracias. **ACUERDO** He leído la información anterior y siento que entienden el estudio lo suficientemente bien como para tomar una decisión sobre mi participación. Al firmar este documento estoy de acuerdo con los términos descritos anteriormente. _____ _____ Firma del participante Fecha

la dirección del participante (si el participante desea recibir los resultados del estudio) _____ _____

APPENDIX C: FAST FOOD QUESTIONNAIRE

Fast Food Questionnaire

GENERAL INSTRUCTIONS

- **Answer each question as best you can. Estimate if you are not sure. A guess is better than leaving a blank.**
- **Use only a black ball-point pen. Do not use a pencil or felt-tip pen. Do not fold, staple, or tear the pages.**
- **Put an X in the box next to your answer.**
- **If you make any changes, cross out the incorrect answer and put an X in the box next to the correct answer. Also draw a circle around the correct answer.**
- **If you mark NEVER, NO, or DON'T KNOW for a question, please follow any arrows or instructions that direct you to the next question.**

BEFORE TURNING THE PAGE, PLEASE COMPLETE THE FOLLOWING QUESTIONS.

Date: _____ Code Number: _____

Date of Birth Month : _____ Gender ☐Male

Year: _____ ☐Female

Ethnicity: ☐Whites ☐Blacks ☐Hispanic

☐Asian ☐Pacific Islander ☐Alaskan Native

☐Others

1. Over the past 12 months, did you drink **soft drinks, soda,** or **pop**?

a☐NO

b☐ YES

1a.How often did you drink **soft drinks, soda,** or **pop IN THE SUMMER**?

a☐NEVER

b☐ 1 time per month or less
c☐ 2–3 times per month
d☐ 1–2 times per week
e☐ 3–4 times per week
f☐ 5–6 times per week
g☐ 1 time per day
h☐ 2–3 times per day
i☐ 4–5 times per day
j☐ 6 or more times per day

1b.How often did you drink **soft drinks, soda,** or **pop DURING THE REST OF THE YEAR**?

a☐NEVER

b☐ 1 time per month or less
c☐ 2–3 times per month
d☐ 1–2 times per week
e☐ 3–4 times per week
f☐ 5–6 times per week
g☐ 1 time per day
h☐ 2–3 times per day
i☐ 4–5 times per day
j☐ 6 or more times per day

1c.Each time you drank **soft drinks, soda,** or **pop,** how much did you usually drink?

a☐ Less than 12 ounces or less than 1 can or bottle
b☐ 12 to 16 ounces or 1 can or bottle
c☐ More than 16 ounces or more than 1 can or bottle

2. How often did you eat **coleslaw**?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

2a.Each time you ate **coleslaw**, how much did you usually eat?

a☐ Less than ¼ cup
b☐ ¼ to ¾ cup
c☐ More than ¾ cup

3.How often did you eat **French fries, home fries, hash browned potatoes**, or **tater tots**?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
I ☐ 5–6 times per week
J ☐ 1 time per day
k☐ 2 or more times per day

3a.Each time you ate **French fries**, **home fries**, **hash browned potatoes**, or **tater tots** how much did you usually eat?

a☐ Less than 10 fries or less than ½ cup
b☐ 10 to 25 fries or ½ to 1 cup
c☐ More than 25 fries or more than 1 cup

4. How often did you eat **potato salad**?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

4a.Each time you ate **potato salad**, how much did you usually eat?

a☐ Less than ½ cup
b☐ ½ to 1 cup
c☐ More than 1 cup

5. How often did you eat **baked, boiled,** or **mashed potatoes**?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

5a.Each time you ate **baked, boiled,** or **mashed potatoes**, how much did you usually eat?

a☐ 1 small potato or less than ½ cup
b☐ 1 medium potato or ½ to 1 cup
c☐ 1 large potato or more than 1 cup

6. How often did you eat **chili**?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐2 or more times ____per day

6a.Each time you ate **chili**, how much did you usually eat?

a☐ Less than ½ cup
b☐ ½ to 1 3/4 cups
c☐ More than 1 3/4 cups

7. How often did you eat **Mexican foods** (such as tacos, tostados, burritos, tamales, fajitas, enchiladas, quesadillas, and chimichangas)?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

7a.Each time you ate **Mexican foods**, how much did you usually eat?

a☐ Less than 1 taco, burrito, etc.
b☐ 1 to 2 tacos, burritos, etc.
c☐ More than 2 tacos, burritos, etc.

8. How often did you eat **bagels** or **English muffins**?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

8a.Each time you ate **bagels** or **English muffins**, how many did you usually eat?

a☐ Less than 1 bagel or English muffin
b☐ 1 bagel or English muffin
c☐ More than 1 bagel or English muffin

9. How often did you eat **roast beef** or **steak IN SANDWICHES**?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

9a.Each time you ate **roast beef** or **steak IN SANDWICHES**, how much did you usually eat?

a☐ Less than 1 slice or less than 2 ounces
b☐ 1 to 2 slices or 2 to 4 ounces
c☐ More than 2 slices or more than 4 ounces

10. How often did you eat **turkey** or **chicken COLD CUTS** (such as loaf, luncheon meat, turkey ham, turkey salami, or turkey pastrami)? (*We will ask about other turkey or chicken later.)*

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

10a.Each time you ate **turkey or chicken COLD CUTS**, how much did you usually eat?

a☐ Less than 1 slice
b☐ 1 to 3 slices
c☐ More than 3 slices

11. How often did you eat **luncheon** or **deli-style ham**? *(We will ask about other ham later.)*

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

11a.Each time you ate **luncheon** or **deli-style ham**, how much did you usually eat?

a☐ Less than 1 slice
b☐ 1 to 3 slices
c☐ More than 3 slice

12.How often did you eat **other cold cuts** or **luncheon meats** (such as bologna, salami, corned beef, pastrami, or others, including low-fat)? *(Please do not include ham, turkey, or chicken cold cuts.)*

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

12a.Each time you ate **other cold cuts** or **luncheon meats**, how much did you usually eat?

a☐ Less than 1 slice
b☐ 1 to 3 slices
c☐ More than 3 slices

13.How often did you eat **canned tuna** (including in salads, sandwiches, or casseroles)?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

13a.Each time you ate **canned tuna**, how much did you usually eat?

a☐ Less than ¼ cup or less than 2 ounces
b☐ ¼ to ½ cup or 2 to 3 ounces
c☐ More than ½ cup or more than 3 ounces

14.How often did you eat **GROUND chicken** or **turkey**? *(We will ask about other chicken and turkey later.)*

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

14a.Each time you ate **GROUND chicken** or **turkey**, how much did you usually eat?

a☐ Less than 2 ounces or less than ½ cup
b☐ 2 to 4 ounces or ½ to 1 cup
c☐ More than 4 ounces or more than 1 cup

15.How often did you eat **beef hamburgers** or **cheeseburgers**?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

15a.Each time you ate **beef hamburgers** or **cheeseburgers**, how much did you usually eat?

a☐ Less than 1 patty or less than 2 ounces
b☐ 1 patty or 2 to 4 ounces
c☐ More than 1 patty or more than 4 ounces

16. How often did you eat **ground beef in mixtures** (such as meatballs, casseroles, chili, or meatloaf)?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

16a.Each time you ate **ground beef in mixtures**, how much did you usually eat?

a☐ Less than 3 ounces or less than ½ cup
b☐ 3 to 8 ounces or ½ to 1 cup
c☐ More than 8 ounces or more than 1 cup

17. How often did you eat **hot dogs** or **frankfurters**? *(Please do not include sausages or vegetarian hot dogs.)*

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day

f☐ 1 time per week
k☐ 2 or more times per day

17a.Each time you ate **hot dogs** or **frankfurters**, how many did you usually eat?

a☐ Less than 1 hot dog
b☐ 1 to 2 hot dogs
c☐ More than 2 hot dogs

18. How often did you eat **chicken** as part of **salads, sandwiches, casseroles, stews,** or **other mixtures**?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

18a. Each time you ate **chicken** as part of **salads, sandwiches, casseroles, stews,** or **other mixtures,** how much did you usually eat?

a☐ Less than ½ cup
b☐ ½ to 1 1/2 cups
c☐ More than 1 1/2 cups

19. How often did you eat **baked, broiled, roasted, stewed,** or **fried chicken** (including nuggets)? *(Please do not include chicken in mixtures.)*

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

19a.Each time you ate **baked, broiled, roasted, stewed,** or **fried chicken** (including nuggets), how much did you usually eat?

a☐ Less than 2 drumsticks or wings, less than 1 breast or thigh, or less than 4 nuggets
b☐ 2 drumsticks or wings, 1 breast or thigh, or 4 to 8 nuggets
c☐ More than 2 drumsticks or wings, more than 1 breast or thigh, or more than 8 nuggets

20. How often did you eat **bacon** (including low-fat)?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

20a.Each time you ate **bacon**, how much did you usually eat?

a☐ Fewer than 2 slices
b☐ 2 to 3 slices
c☐ More than 3 slices

21. How often did you eat **sausage** (including low-fat)?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

21a.Each time you ate **sausage**, how much did you usually eat?

a☐ Less than 1 patty or 2 links
b☐ 1 to 3 patties or 2 to 5 links
c☐ More than 3 patties or 5 links

22.How often did you eat **fish sticks** or **fried fish** (including fried seafood or shellfish)?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

22a.Each time you ate **fish sticks** or **fried fish**, how much did you usually eat?

a☐ Less than 2 ounces or less than 1 fillet
b☐ 2 to 7 ounces or 1 fillet
c☐ More than 7 ounces or more than 1 fillet

23. How often did you eat **pizza**?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

23a.Each time you ate **pizza**, how much did you usually eat?

a☐ Less than 1 slice or less than 1 mini pizza
b☐ 1 to 3 slices or 1 mini pizza
c☐ More than 3 slices or more than 1 mini pizza

24. How often did you eat **biscuits**?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

24a.Each time you ate **biscuits**, how many did you usually eat?

a☐ Fewer than 1 biscuit
b☐ 1 to 2 biscuits
c☐ More than 2 biscuits

25.How often did you eat **potato chips, tortilla chips,** or **corn chips** (including low-fat, fat-free, or low-salt)?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

25a.Each time you ate **potato chips, tortilla chips,** or **corn chips**, how much did you usually eat?

a☐ Fewer than 10 chips or less than 1 cup
b☐ 10 to 25 chips or 1 to 2 cups
c☐ More than 25 chips or more than 2 cups

26. How often did you eat **ice cream, ice cream bars,** or **sherbet** (including low-fat or fat-free)?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

26a.Each time you ate **ice cream, ice cream bars,** or **sherbet**, how much did you usually eat?

a☐ Less than ½ cup or less than 1 scoop
b☐ ½ to $1\frac{1}{2}$ cups or 1 to 2 scoops
c☐ More than $1\frac{1}{2}$ cups or more than 2 scoops

27. How often did you eat **doughnuts, sweet rolls, Danish,** or **pop-tarts**?

a☐NEVER

b☐ 1–6 times per year
c☐ 7–11 times per year
d☐ 1 time per month
e☐ 2–3 times per month
f☐ 1 time per week
g☐ 2 times per week
h☐ 3–4 times per week
i☐ 5–6 times per week
j☐ 1 time per day
k☐ 2 or more times per day

27a. Each time you ate **doughnuts, sweet rolls, Danish,** or **pop-tarts**, how much did you usually eat?

a☐ Less than 1 piece
b☐ 1 to 2 pieces
c☐ More than 2 pieces

Thank you *very much* for completing this questionnaire! Because we want to be able to use all the information you have provided, we would greatly appreciate it if you would please take a moment to review each page making sure that you:

- **Did not skip any pages and**
- **Crossed out the incorrect answer and circled the correct answer if you made any change.**

APPENDIX D: CONFIDENTIALITY AGREEMENT

Name of Signer: Maria Peguero

During the course of my activity in collecting data for this research: "Association Between Fast Food Consumption and Obesity and Hypertension Among Office Workers." I will have access to information, which is confidential and will not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.
6. I understand that violation of this agreement will have legal implications.
7. I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: Maria Peguero **Date: 4/21/2011**

APPENDIX E: IRB MATERIALS APPROVED-KIFLE MIHRETE

Friday, May 06, 2011

Dear Mr. Mihrete,

This email is to notify you that the Institutional Review Board (IRB) has approved your application for the study entitled, "Association Between Fast Food Consumption and Obesity and High Blood Pressure Among Office Workers."

Your approval # is 05-06-11-0031177. You will need to reference this number in your dissertation and in any future funding or publication submissions. Also attached to this e-mail are the IRB approved consent forms. Please note, if these are already in an on-line format, you will need to update those consent documents to include the IRB approval number and expiration date. (Please also note, on the Spanish version, the Walden representative is Dr. Leilani Endicott, not Leila as was submitted.)

Your IRB approval expires on May 5, 2012. One month before this expiration date, you will be sent a Continuing Review Form, which must be submitted if you wish to collect data beyond the approval expiration date.

Your IRB approval is contingent upon your adherence to the exact procedures described in the final version of the IRB application document that has been submitted as of this date. If you need to make any changes to your research staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 1 week of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRB's approval, and the University will not accept or grant credit for student work that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB application, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.

Both the Adverse Event Reporting form and Request for Change in Procedures form can be obtained at the IRB section of the Walden web site or by emailing irb@waldenu.edu: http://inside.waldenu.edu/c/Student_Faculty/StudentFaculty_4274.htm

Researchers are expected to keep detailed records of their research activities (i.e., participant log sheets, completed consent forms, etc.) for the same period of time they retain the original data. If, in the future, you require copies of the originally submitted IRB materials, you may request them from Institutional Review Board.

Please note that this letter indicates that the IRB has approved your research. You may not begin

the research phase of your dissertation, however, until you have received the **Notification of Approval to Conduct Research** (which indicates that your committee and Program Chair have also approved your research proposal). Once you have received this notification by email, you may begin your data collection.

Both students and faculty are invited to provide feedback on this IRB experience at the link below:

http://www.surveymonkey.com/s.aspx?sm=qHBJzkJMUx43pZegKlmdiQ_3d_3d

Sincerely,
Jenny Sherer, M.Ed., CIP
Operations Manger
Office of Research Integrity and Compliance
Email: irb@waldenu.edu
Fax: 626-605-0472
Toll free: 800-925-3368 ext. 1341
Office address for Walden University:
155 5th Avenue South, Suite 100
Minneapolis, MN 55401

APPENDIX F: AUTHORIZATION REQUEST TO CONDUCT RESEARCH

LETTER TO DIRECTOR OF HEALTH AND HUMAN SERVICES

[Date]

Ronald Cash, Director of Health and Human Services/HO

Division of Public Health

Atlantic City, NJ 08401

Dear Mr. Cash:

A doctoral candidate at Walden University, I am conducting dissertation research on fast-food consumption by office workers in relation to overweight/obesity and hypertension. The goal of the research is to obtain new information about the links between fast-food consumption and health risks and to use that information in outreach aimed at promoting a healthy lifestyle.

I would like the study population to be municipal office workers in Atlantic City. Participation will consist of completing a Diet History Questionnaire and undergoing wellness screening. Questionnaire answers will provide information on fast-food consumption, and measurements taken during wellness screening will provide data on body mass and blood pressure. Participation will be entirely voluntary, and participants' identities will remain confidential.

Do I have your permission to invite Atlantic City municipal workers to participate in the study? Do I also have your permission to use data collected during the city's wellness screening? Thank you in advance for your reply.

Sincerely,

Kifle M. Mihrete

APPENDIX G: LETTER OF PERMISSION

Date:

Walden University Research Review Board

C/o Office of Human Subjects

155 Fifth Ave South Suite 100

Minneapolis, MN 55401

Dear Walden University Research Review Board:

It is my understanding that Kifle Mihrete will be conducting a research study in Atlantic City at the City Hall on "Association Between Fast Food Consumption and High Blood Pressure & obesity Among Office Workers." Kifle has informed me of the design of the study as well as targeted population.

I support this effort and will provide any assistance necessary for successful implementation of this study. If you have any questions, please do not hesitate to call.

I can be reached at (609) 347-5666

Sincerely,

Ronald Cash, MPH, MPA, ABD

Director of Health & Human Services/Health Officer

APPENDIX H: Authorization to Use or Disclose PHI for Research Purposes

The top portion of this form (above the dotted line) should be completed by the researcher. A copy of the form should be given to the research participant for his/her personal records.

Research Participant Name: Kifle Mihrete

Phone: 609-347-5671

Address: 1301 Bacharach Blvd, Atlantic City, NJ 08401

Discloser of Information: _____

Recipient of Information: _____

Means of disclosing information (i.e., verbal, written, etc.):_____

Information to be disclosed:

- θ School district/educational data
- θ Mental Health/psychological data
- θ Legal data
- θ Chemical dependency/abuse data
- θ **Medical data**
- θ Other (specify)_____

Reason for the Release: This information is being released/obtained for the purpose of

Blood pressure reading, weight and height measurement

Authorization Provided by Research Participant:

I understand that this authorization permits the release of information between the two parties named above.

I understand that I have the right to refuse to sign this release form.

I understand that upon release, this information will be kept confidential; my identity will be concealed and data will not be re-disclosed outside of the specified individuals or agencies.

I understand a photocopy of this release will be as effective as the original.

I understand this authorization will be in effect for 12 months from the date signed unless cancelled by me in writing. Upon receipt of the written cancellation, this release will be void.

Signature _____ Date _____

(Signature of a Parent/Guardian if the person is under 18 or incompetent)

Witness _____ Date _____

APPENDIX I: TABLES

Table 1

Demographic Characteristics (N =55)

Variable	Category	*n*	%
Gender			
	Male	12	21.8
	Female	43	78.2
Ethnicity/Race	Whites	13	23.6
	Blacks	38	69.1
	Hispanic/Latino	4	7.3

Table 2

Body Mass Index of Participants (n =36)

Demographic Characteristics		Weight Categories									
Ethnicity	Gender	Underweight <18.5		Normal 18.5-24.9		Overweight 25-29.9		Obese >30		Total	
		n	*(%)*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*
Whites											
	Men					1	(2.8)			1	(2.8)
	Women			3	(8.3)	1	(2.8)	3	(8.3)	7	(19.4)
Blacks											
	Men			1	(2.8)			6	(17)	7	(19.4)
	Women			5	(13.9)	6	(16.7)	9	(28)	20	(55.6)
Hispanic											
	Men										
	Women							1	(2.8)	1	(2.8)
Total				9	(25)	8	(22.2)	19	(52.8)	36	(100)

Table 3

Blood Pressure of Participants (n=36)

Demographic Characteristics		Blood Pressure Categories									
		Normal		Pre-hyper tension		HBP Stage 1		HBP Stage 2		Total	
Ethnicity	Gender	<120 *mm/Hg*		120-139 *mm/Hg*		140-159 *mm/Hg*		>160 *mm/Hg*			
		n	*(%)*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*
Whites											
	Men			1	(2.8)					1	(2.8)
	Women	3	(8.3)	3	(8.3)	2	(5.6)			8	(22.2)
Blacks											
	Men	2	(5.6)	2	(5.6)	2	(5.6)	1	(2.8)	7	(19.4)
	Women	1	(2.8)	14	(38.9)	3	(8.3)	1	(2.8)	19	(52.8)
Hispanic											
	Men										
	Women			1	(2.8)					1	(2.8)
Total		6	(16.7)	21	(58.3)	7	(19.4)	2	(5.6)	36	(100)

Note: *HBP High Blood Pressure*

Table 4

Blood Pressure of Participants by Gender and Age (N=36)

Demographic Characteristics		Blood Pressure Categories									
		Normal		Pre-hyper tension		HBP Stage 1		HBP Stage 2		Total	
Gender	Age	<120 *mm/Hg*		120-139 *mm/Hg*		140-159 *mm/Hg*		>160 *mm/Hg*			
		n	*(%)*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*
Female											
	30-40			1						1	2.7%
	41-50	1		3						4	11.1%
	51-60	3		6		1				10	27.8%
	61-70			6		3				9	25%
	71-80			2		1				3	8.3%
Male											
	30-40										
	41-50										
	51-60	2		2				1		5	13.9%
	61-70	1				1				2	5.6%
	71-80			1		1				2	5.6%
Total		7		21		7		1		36	100%

Note: *HBP High Blood Pressure*

Table 5

Psychometric Characteristics for Summated Scale Scores (N= 55)

Score	Number of Items	M	*SD*	Low	High	Alpha
Average Portion Size	27	1.66	0.42	0.74	2.59	.88
Frequency of Fast Food Consumption	26	2.57	1.12	0.92	5.38	.92

Table 6

Spearman Ranked Ordered Correlations for Portion Size and Food Consumption with Body Mass Index and Blood Pressure Scales (N = 36).

Variable		Body Mass Index	Blood Pressure
Average Portion Size	Correlation	.37 **	.35 **
	Sig. α (2-tailed)	.03	.04
Frequency of Fast Food Consumption	Correlation	.20	.40 **
	Sig. α (2-tailed	-	.02

Table 7

Spearman Ranked ordered Correlation for frequently consumed foods and average portion size of food with Blood pressure and Obesity (N = 36).

Variables		Blood Pressure	Body Mass Index
Fried potatoes	Correlation	.44**	
	Sig. α (2 tailed)	.007	
Cold Cuts	Correlation	.38**	.38**
	Sig. α (2 tailed)	.020	.02
Beef burgers	Correlation	.38**	.38**
	Sig. α (2 tailed)	.022	.02
Soft drink	Correlation		.42**
	Sig. α (2 tailed)		.01
Ground beef	Correlation		.41**
	Sig. α (2 tailed)		.01
Sausage	Correlation		.40**
	Sig. α (2 tailed)		.02

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APPENDIX J: CURRICULUM VITAE

Kifle M. Mihrete

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EXPERIENCE

Registered Environmental Health Specialist, 2004-Present

Atlantic City Division of Public Health, Atlantic City, NJ

EDUCATION

Candidate of PhD, Public Health - Epidemiology

Walden University, Minneapolis, MN, 2008-Present

Dissertation: Association between Fast-Food Consumption and Obesity and High Blood Pressure among Office Workers.

MS - Public Health

Walden University, Minneapolis, MN, 2005-2008

MS - Engineering Management

New Jersey Institute of Technology, NJ 2001-2003

BS - Environmental Engineering

La Salle University, LA, 1998-2000

AAS – Agricultural Science

Ambo College of Agriculture, Ethiopia, 1985-1987

LICENSURE

Licensure – New Jersey Department of Health & Senior Services

Registered Environmental Health Specialist

SKILLS

Proficient in Windows and Mac operating systems and software

Extensive knowledge of SPSS, EpInfo and ArcGIS