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Evaluating the Impact of an Evidence- Based Weight Reduction Program Among the Obese at a Medical Facility in North Central United States

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Abstract

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By

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MS, Morgan State University, 2009

BS, Washburn University, 1991

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

In September 2016, the Centers for Disease Control and Prevention (CDC) determined that more than one-third (36.5%) of U.S. adults have an obesity problem. According to the CDC, this issue results in other medical conditions such as type 11 diabetes, hypertension, cancer, heart disease, and stroke. This project was designed to evaluate the effectiveness of an evidence-based weight reduction program for obese individuals at a medical facility in the North Central United States. The methodology used consisted of a retrospective chart review of pre- and post-data for 45 people who participated in the medical facility's weight-reduction program over a 6 month period. Results showed an average weight loss of 19 pounds by participants in the program. A *t-test* for dependent samples was conducted to compare pre-and post-program weights. Findings suggested a statistically significant difference ($p < .001$) decrease in weight before and after participation in the program. Effect size, measuring the magnitude of the difference between pre- and post-program participant weight, was ($d = 0\ .58$). Findings of this project suggest that the program has merit and worth as a weight management aid for the context in which it was developed and implemented. The inclusion of other clinics in the weight loss program serves as potential transferability of knowledge in obesity management to similar contexts. Extending the program to a full one year may yield further benefits. A periodic follow-up with participants in the program may lead to opportunities for longer-term evaluation. This project contributes to social change by empowering participants in weight reduction and health management.

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Dedication

This project is dedicated to my delightful family, including all my children, my late parents, and in-laws. Diopka Peter and Scholastica Onyebadi and Chief Daniel and Janet Eke and most importantly to my wonderful husband the love of my life Gideon. My success and achievements will be incomplete without acknowledging these people who were showering their love, sacrifices, and support through thick and thin while in an incredible journey of the DNP program. To my in-laws and grandchildren, I love all of you for your support and prayers during this academic trip. To my six children, Sandra, Nathan, Laura, Linette, Amanda and Daniel, I will ever remain grateful to God to have given such intelligent and courteous children. As most of you are nurses, and nurse practitioners, never forget how you started and try to give back to the society and always keep up with that caring behavior as the hallmark in the Eke's family. My endless love as a mother will forever flourish among you all. I am very proud of you. To all my siblings especially the Most Rev Fr. Jude Onyebadi my sincere and special thanks to you. Finally, to my unassuming husband, words cannot express my utmost and enduring love for you, and I will ever remain indebted and grateful to you as always.

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Section 1: The Nature of the Project

Introduction

Obesity and overweight are public health problems that have become a matter of concern locally and globally (Volpe, Sukumar, & Milliron, 2016). The World Health Organization (WHO) projected that there were 2.3 million overweight individuals aged 15 and above, and seven million obese people worldwide in 2015 (Chan, & Woo, 2010). Only a few industrialized countries such as Germany and the United Kingdom experienced a decline in obesity rate in the past decade. However, the pervasiveness of obesity continues to rise in other parts of the world (Chan & Woo, 2010). A report from the Centers for Disease Control and Prevention (CDC, 2016) demonstrated the rapid and devastating spread of obesity in the United States. As at 1990, no state in the United States had an obesity rate as high as 15%. In 2000, Arizona and Colorado still had obesity rates below 15%, but by 2010, none of the states in the country had an obesity rate below 20%.

Khan et al. (2009) showed that between 2004 and 2009, the prevalence of obesity amongst U.S. adults doubled, with 33% being overweight (body mass index [BMI] > 30) and 6% considered extremely obese (BMI ≥ 40). The Department of Health and Human Services (DHHS) *Physical Activity Guidelines for Americans* affirms that obesity has become an epidemic and a serious ongoing health issue in the United States (DHHS, 2008). Furthermore, information from the Centers for Disease Control and Prevention showed a significant increase in cases of obesity between 1999 and 2004, with about 17% of both children and adolescents considered as obese (Khan et al., 2009).

The report on the increase in obesity rate in the United States also indicated an increase in the number of people with associated diseases, prominent among which are hypertension and Type II diabetes. The rate of diabetes has escalated in the past 20 years, and according to CDC's projection, by 2050 one-third of Americans could be diagnosed with diabetes. The recent CDC report (2016) stated that three out of every 10 cases of hypertension are diagnosed as obesity-related, thereby leading to an enormous potential drain on the healthcare system. Also, a recent report noted that obesity and its related illnesses cost the U.S. government about 147 billion dollars annually, which may double in the next 4 years (Williams, 2016). This rise has led to an urgent need to control, if not reverse, the spiraling rate of obesity through the established 2015–2020 Dietary Guidelines (CDC, 2016). The guidelines aim at prevention and management of obesity and the associated chronic illnesses with an initial loss of 5% to 10% of baseline weight in 6 months, promoting optimal health among all U.S. citizens.

Various reasons have been put forth to explain the rising level of obesity among individuals in the United States. These include sedentary lifestyles (Bhurosy & Jeewon, 2014; Millen et al., 2016). Many people live unhealthy lifestyles and do not engage in physical activities. Such people prefer sitting down, watching television, and going to sleep without engaging in any meaningful physical activity except to move around in their homes. The WHO estimated that only 60% to 85% of the world population engages in routine physical activities, noting that these figures are not adequate for healthy living (WHO, 2016). Goetzel et al. (2009) pointed out that some people become overweight or obese due to the pressure of work and time demands, explaining that employed adults

spend nearly a quarter of their lives at work. According to Kim et al. (2016), the pressure of work, limited time to accomplish official duties, and uncertain or prolonged meeting times, both structured and impromptu, result in inconsistency in eating habits, behaviors, and lifestyles. The result indicates that many employees eat whenever they have the opportunity to do so, and even more problematically, eat whatever is within their reach. Thus, they do not make healthy eating choices.

Another reason for this increase in obesity is limited financial resources. Many families cannot make a healthy food choice because they have to stretch their income to cover even their basic needs. Unfortunately, such families are forced to rely on the cheapest and most affordable food options available to them, especially junk food. Such food items usually have high calories and are accompanied by drinks that also have high sugar contents (Vartanian, Schwartz, & Brownell, 2013). It is challenging for the low-income earners because fast food sellers use marketing strategies such as reduction in prices, increases in sizes and portions, and promotions and coupons to attract customers. The result is that a sizeable number of families see unhealthy food as a better option because their meager finances do not allow them to make healthy food choices.

A review of the literature by Jackson et al. (2013) on the White/Black disparity in obesity/overweight trends by educational attainment in the United States between 1997 to 2008 showed an increase in BMI by a minimum of 1kg/m2. The mean BMI increases at a faster rate among Blacks when compared to Whites. Also, Black women are noted to have higher mean BMIs when compared to White women across all levels of educational attainment (Jackson et al., 2013).

In June 1998, the National Institute of Diabetes and Digestive and Kidney Diseases and the National Heart, Lung, and Blood Institute jointly issued a document on "Clinical Guidelines on the Identification, Treatment, and Evaluation of Overweight and Obesity in Adults. This report was the first federal clinical practice guidelines issued to address overweight and obesity related issues using an evidence-based approach (National Institute of Health, National Heart, Lung, and Blood Institute, National Institute of Diabetes and Digestive and Kidney Diseases, 1998). Seventeen years later in 2015, the U.S. Surgeon General called for proactive actions to prevent and decrease overweight and obesity. One of the Surgeon General's recommendations was the promotion of walking as a form of exercise by members of communities across the United States.

Notably, the National Institute of Diabetes and Digestive and Kidney Diseases and National Heart, Lung, and Blood Institute guidelines recommended practical strategies as standard precautions and preventive measures to reduce the risk of obesity among individuals in the United States (DHHS, 2015). Based on these established guidelines, a clinical change project guided by the theory of planned behavior, the Provider, Healthcare team & Adherence to Treatment Guidelines (PHAT-G), was implemented (Barnes, Theeke, & Mallow, 2015). The individual-based intervention contained in the guidelines considered the patient's health status and preferences while aiming at significant reductions in the obese patient's weight. Intervention strategies consisted of a series of educational sessions, additional provider resources for patient education, a provider reminder system, and provider feedback process.

Problem Statement

The recent surge in obesity cases and obesity-related health issues has become a national concern; governments, agencies, clinics, and other stakeholders have now deemed the eradication of obesity and encouragement of weight loss a priority. Baltimore County is an area where obesity is still on the rise, although at a slow pace. Data obtained from the county in 2011 show that 38.4% of people in the area were overweight, while 28.0% were obese and 24.0% engaged in no physical activity (Governing Data, 2011). In their study, Martino and Su (2013) determined that the obesity rate in Baltimore and the rest of Baltimore County showed a 6.3% increase for men and 6.9% for women. The authors noted that the obesity rates were 29.1% for men and 39.2% for females in 2001. However, by 2011, it had increased to 35.4% for men and 46.1% for women.

This DNP project evaluated the success rate of the weight reduction program of a Medical Center in the North Central geographic area of the United States. The focus was to assess the effectiveness of the educational program after 6 months of patient participation using archival data of individuals who participated in the medical center's evidence-based weight loss program (EBWLP). Another objective of the EBWLP evaluation was to determine if weight reduction practices have promoted weight loss in this context and might be considered a way to lead to positive change in the service population's behavior and improve their quality of life and other positive outcomes.

Statement of Purpose

This evaluation project assessed the efficacy of an EBWLP at the medical center in North Central United States. The focus of the project was to find out whether the

participants experienced weight loss after taking part in the program. The evaluation project appraised the effectiveness of the medical center's weight reduction program after 6 months of patients' participation in it. The project evaluated the program using archival data from the medical center.

The site for this scholarly project was a medical center in North Central United States. The majority of the medical center's patients in this area are low-income individuals with a mean income of approximately $30,000 annually. This facility has a weight loss program on the clinic's premises in addition to an on-site dietician who counsels participants on healthy eating strategies. Fast food businesses surround the city, and due to limited recreational parks for physical activities, such community is a rich environment for obesity. A preliminary review of the medical chart of 45 patients during a practicum experience indicated several obese individuals attending the weight reduction program. Thirty percent of the individuals were men compared to 70% women. Over 50% had a family history of obesity whereby at least one parent or sibling was also obese. The medical center's traditional weight reduction program involved a dietician overseeing obese patients through a medical doctor's referral/recommendation. As a quality improvement effort to enhance weight loss, a collaborative effort was launched to assess the EBWLP effectiveness. According to the medical director, the last weight reduction program update was in 2016 due to the increasing number of the obese patients. The DNP project evaluated the planning and implementation of the weight reduction program in the facility. The medical director pulled the selected unidentified charts that met the criteria for the project during the clinical rotation.

A significant percentage of increase in obesity is a critical challenge to healthy living in the United States despite existing scholarly projects that have demonstrated with evidence that a healthy diet pattern and regular physical activity are essential for long-term health benefits. Also, prevention of chronic diseases such as Type 2 diabetes and heart disease (Agency for Healthcare Research and Quality, 2014). The outcomes of the project evaluation were used to determine the efficacy of the EBWLP. Upon conceptualization, the purpose of the project was to identify ways to promote and enhance weight loss, and the anticipated outcome was a reduction in overweight and obesity and its associated diseases among adults in America. Also, it was hoped that results from the data would be useful in motivating other obese individuals to enroll in the obesity reduction program.

Nature of the Doctoral Project

This scholarly project used archived data collected by the medical center at the inception of a patient's participation in the weight loss program and the data collected at the completion of patients' participation. (Kansas University Work Group for Community Health and Development, 2015). Records of all individuals who participated in the clinical weight reduction program from May 1, 2016, to November 1, 2016, were reviewed as candidates for the project. The data on the prospective 45 participants were pulled from de-identified data by an authorized staff personnel. The hospital's electronic database named Amazing Chart contains all the patients' pre- and post-weight information that was assigned a coded identifier for confidentiality and future data retrieval evaluation. The code sheet was password protected and kept in a secured S-

Drive to ensure securely stored data. This project concluded with a pre- and post-data analysis to determine if the participants' weight loss program effectively helped in weight reduction.

Significance

The quality improvement process of the weight reduction project was guided by numerous theory applications aimed at planned behavior that will result in weight loss. The effort and reinforcement strategies included incentives (Allen, 2016). Noncompliance with dietary guidelines is largely dependent on socioeconomic and environmental factors, educational background, family history, cultural issues, and peer pressure. This project utilized the Population Intervention Comparison and Outcome (PICO) tool framework, Orem's self-care deficit theory, and the transtheoretical model. These evidence-based modules employed various methods of question formulation, locating, assessing, evaluating and reiterating as needed.

The PICO research question states as follows: Is there a change in weight, BMI, and blood pressure among the obese individuals after their attendance at the medical center's weight reduction program? The center implemented the PHAT-G in the management of the obesity epidemic. The following terms are relevant to this project:

Population: Obese Adults 20-60 years in North Central United States

Intervention: Educational programming on behavior modifications.

Comparison: Pre-education and posteducation.

Outcome: Weight reduction.

The project translation was guided by the application of Orem's theory of self-care deficit. This theory stipulates that nursing care is required when a patient is unable to perform self-care activities (Orem, 2011). The self-care deficit theory is applicable in a situation where people fail to accomplish what Orem described as requisites activities that maintain individuals' well-being (Orem, 2011). Evidence has shown that obesity-related interventions are most effective if a multi-approach method such as motivational interview, lifestyle change, or use of a nutritionist or dietician is applied.

In this project, the evaluation was based on the results of the pre- and post intervention education on lifestyle modification, routine physical exercises, and adherence to the healthy diet. The goal of the program was to achieve noticeable weight loss and improved health outcomes. The evidence for this was a decrease in associated obesity risk factors such as type II diabetes, hypertension, peripheral vascular disease, stasis ulcer, immobility, and knee replacement (Agency for Healthcare Research and Quality, 2014). The plan entailed putting in place benchmark measures that allowed the institution to monitor and sustain the program's implementation plan. The institutional manager acted as the liaison officer who created and maintained the institutional environment by making sure the lobby and practitioner's office had a visible poster displaying good habit information. The program also employed a periodic chart review and questionnaire that were essential because random chart auditing helps to track fluctuations in weight, BMI, and health-related issues such as hypertension and diabetes (Anyoha, 2015). The aim of the tracking was to monitor the program and ensure compliance with its objectives.

Statistical Test

The evaluation project also involved the use of the *t* test analytical instrument for paired samples to measure the outcome of pre- and post-data obtained from participants in the program (Mertler, & Reinhart, 2016). To do this, I set both null and alternate hypotheses to be tested and accepted or rejected. Also, I utilized a version 22.0 SPSS IBM statistical analysis through a paired sampled *t* test to comparing the pre- and post-results respectively. The implication of that outcome is discussed in the analysis and concluding segments of this project.

Summary

This section provided the background of the research project. The rise in obesity rate in the United States has resulted in increases in several diseases such as hypertension and typed II diabetes among individuals. Reports show a doubling of diabetes rate in the past two decades (CDC, 2016a). Obesity also results in huge financial loss to the economy of United States ((Williams, 2016). Obesity and its related illnesses cost the U.S government approximately 147 billion dollars yearly, and this may double in the next 4 years. Thus, an evaluation of the effectiveness of the obesity reduction program may guide similar clinics to integrate the EBWLP model for change. The facility will be able to use these findings to fulfill individualized health care needs with positive outcomes and enhance the knowledge in the fight to combat and eradicate obesity.

Section 2: Background and Context

The WHO defines overweight and obesity as the excessive or abnormal fat buildup that presents a risk to an individual's health and well-being (WHO, 2016). Similarly, the NSW Center for Overweight and Obesity, University of Sydney (2005) explained that weight gain and obesity develop from accumulated periods of imbalanced energy, where intake of energy exceeds energy expenditure. The WHO fact sheet further explains that the underlying factor for overweight and obesity is a power disparity between calories consumed and calories expended (WHO, 2016). This happens when an individual does not burn the calories gained from eating. Instead, the calories are transformed into fat stored in the body. The WHO's definition of overweight is BMI greater than or equal to 25, and a BMI above 30 is considered obese.

Since 1980, overweight and obesity have more than doubled globally (WHO, 2013). In 2014, an estimated 1.9 billion adults 18 years and older were overweight, and 600 million were obese (Ogden, Carroll, Kit, & Flegal, 2014). Also, in 2014, forty-one million children under 5 were overweight and obese (WHO, 2016). Statistics on this epidemic show that most of the world's population resides in countries where overweight and obesity issues are rampant, and both diseases kill more people than underweight problems (WHO, 2013). Both obesity and overweight problems are the results of excessive, abnormal fat accumulation that may negatively affect a person's well-being. Nevertheless, they are preventable diseases (WHO, 2016).

Global Data on Obesity from the World Health Organization

- Since 1980, obesity has more than doubled.
- More than 1.9 billion individuals 18 years and older in 2014 were overweight. Among these people, over 600 million were obese.
- 39% of adults aged 18 years and over were overweight in 2014, and 13% were obese.
- Most of the world's population lives in countries where overweight and obesity kill more people than underweight problems.
- Forty-two million children under age 5 were overweight or obese in 2013.
- Obesity is a preventable disease (WHO, 2016).

Obesity in the United States

Research has revealed that in the United States, overweight is associated with genes, skin color, and other ethnicity features such as diet, language, traditions, history, religion, preferences, and ancestry (Bilger, Finkelstein, Kruger, Tate, & Linnan, 2013). As at September 2015, the CDC Office of Vital Health Statistics confirmed that 60% of Black men were overweight, as well as 78% of Black women. Statistics show that Blacks have the highest rates of obesity in the United States, a 51% higher prevalence of obesity when compared with Whites. Also, the percentage of obese Black women is higher than that of Black men. In the breakdown, 53% of Black women are overweight compared to 36% of Black men. Wang and Beydoun (2007) asserted that "the prevalence of extreme obesity among African-American women was more than twice that of White and

Mexican-Americans" (p.8). There was also a correlation between education levels and the levels of BMI in women.

Table 1

Obesity Percentage by Race

Obese	2008 (%)	2015 (%)	Change (%)
White	24.4	27.0	2.8
Hispanic	27.4	28.6	1,2
Asian	8.6	9.8	1.2
Black	35.1	35.6	0.5

Source: http://www.thefiscaltimes.com/2016/02/12/US-Obesity-Rate-Hit-Record-High-2015.

There is statistical evidence to conclude that black women have the highest rate of obesity or overweight compared to other groups in the United States. One of the reasons the black community has the highest rate of obesity compared to other populations in the United States (see Table 1 above) is related to has to food and dietary habits. Most of the black ethnic foods are high in calories, fat, and sodium (e.g., "soul food," including fried chicken, barbecued meats, gravies and sauces, and corn bread). Moreover, the African culture tends to encourage being heavy as a symbol of wealth and beauty (Cassidy, 1991). The Food Research Action Center national data attested 82.1% of Black women and 75.7% of Hispanic women are overweight or obese compared to 59.5% of White women (Wang & Lim, 2014). Also, over half of black women are obese (versus 38.8 % of Black men and 32.2 % of white women). Extreme obesity is prevalent and greater

among women (8.1%) than men (4.4%), especially among black women who have more than twice the rates (17.8%) of extreme obesity as white (7.1%) and hispanic women (6%) (Wang & Lim, 2014).

The 2015 report from the Baltimore County community showed the food environment statistics in the North Central United States site of the project as 137 grocery stores in the area, an estimated median household income $54, 411, and the appraised per capita income $25,410. Demographics are as follows: White 60.1 %, Black 26.4%, Hispanic 6.3%, Asian 3.5%, two or more races 0.1%, American Indian, 0.5%, and others 0.1%. Though the white population was 60.1 % versus the black population of 26.4%, more Black than white obese individuals attended the EBWLP.

Factors leading to the high rise of obesity. A number of factors have led to a significant increase in obesity in the United States.

Unhealthy eating habit. There has been a global increase in sugar consumption in the last three decades. In recent times, the global diet has changed to mostly foods with a lot of fats and carbohydrates, which enhance obesity (Thow & Hawkes, 2014). Foods higher than the recommended daily dose in sugar, salt, and fat are widely marketed and sold at low prices. Vivero-Pol (2017) gave another reason for food consumption affected by economic trends. Income disparities, low paying jobs, and single parenthood result in parents spending more time away from home, often consuming foods with less fiber, higher fat content, and more calories. Low income women also often do not meet recommendations for daily diet for iron, calcium, fat, and sodium. Convenient, fast, high calorie, low cost, and large-portioned meals are a way of life for most black women

(Vivero-Pol, 2017). Unfortunately, low-income earners and people dwelling in rural areas have little or no access to affordable healthy foods. Thus, they tend to patronize what is cheaper and accessible to them. Although fast foods have higher calories than healthy food, they are readily available. Contrary to what is more affordable or available, the Dietary Guidelines for Americans stresses the importance of eating healthy to prevent obesity (CDC, 2011). A healthy diet as recommended by the guidelines includes eating whole grains, fruits, lean protein, low-fat vegetables and fat-free dairy products as well as drinking water. The assertion is that healthy diets prevent chronic diseases such as heart disease, hypertension and Type 2 diabetes (CDC, 2011).

The majority of the plaintiffs who have legally challenged fast food restaurants affirm that the food they purchase is not as healthy of ideal in quality as the cafes advertise them to the public. Notably, in Ashley Pelman v. McDonald's Corporation, one of the most well-known cases against a fast food restaurant, the plaintiff alleged that MacDonald's food products were not suitable for consumption. Further, the plaintiff accused the corporation of doing little to nothing in warning customers about the possible dangers faced from eating their foods (Vartanian et al., 2013). The judge who presided, in this case, held that "if consumers knew the potential ill health effects of dining at McDonald's, they could not blame the restaurant" (Vartanian et al., 2013, p.2).

Lack of physical activity. Unfortunately, technological advancement plays a vital role in the problem of overweight and obesity; technological progress has affected the level of physical activity, and people's participation in physical fitness has significantly reduced (WHO, 2016). The advancement of technology has made human beings more

sedentary. Many actions involving physical activity and movement have been replaced with technology and conducted with technological devices. For instance, many individuals are inactive because they stay on the computer for an extended period without engaging in any physical activities. People have come to rely on cars even for short distance errands. Physical education has been removed from the curriculum in several schools, and students have little or no physical activities during school hours. Most chores are now mechanized. Examples include the vacuum cleaner that has replaced traditional broomsticks and the escalator or elevator that people now prefer instead of the exercise of using the staircase.

Lifestyle change. People now spend a great deal of their time in front of the screens of their television sets, computers, phones, and so forth. Research shows that individuals, especially children, spend about 7.5 hours watching one form of media entertainment or another. Meals often are eaten around the TV. A sedentary lifestyle largely accounts for increases in obesity, and it is likely to become one of the primary causes of death in the United States (WHO, 2016). As a result, obesity has now become one of the many complex health issues that are of great concern to governments and stakeholders due to its consequences and the associated cost of prevention and treatment (WHO, 2013).

Inadequate breastfeeding. Many women erroneously cite breastfeeding as the cause of potential sagging of breasts (Yeung, Leff, & Rhee, 2017). Therefore to prevent possible breast-sagging and keep their breasts firm, some young mothers in recent years have opted not to breastfeed their babies long enough to allow them to develop an active

immunity. This false notion is ill-advised because research has confirmed that in addition to numerous other health benefits, breastfeeding reduces the chances of children becoming obese (Yeung et al., 2017).

Hereditary/genetic factors. Some genetic health conditions cause obesity. An example is the Prader-Willi syndrome. Igarashi et al., (2017) define Prader-Willi syndrome as a complex genetic condition that affects many parts of the body (Gol, 2015). Affected individuals may develop an insatiable appetite, which leads to chronic overeating (hyperphagia), obesity, and type II diabetes (Angulo, Butler, & Cataletto, 2015). Also, the genetic makeup of an individual may predispose that person to obesity (Angulo et al., 2015).

Diseases. Certain ailments like Hashimoto's disease, hypothyroidism, Cushing syndrome and dysthymia can cause weight gain and obesity (Tomer et al., 2015)

Medication side effects. The side effects of some drugs such as antidepressant, migraine, and epilepsy drugs are known to cause weight gain and obesity (Setchell, Watson, Jones, & Gard, 2015).

Facts about Obesity.

The Body Mass Index (BMI) is the most common way to measure and determine if an individual is obese or overweight. BMI calculated by dividing a person's weight (usually in kilogram) with the square of his or her height (usually in meters). BMI is equal to weight in kilogram divided by height in meters (CDC, 2014).

Typically, a BMI figure that is greater than 25 signifies overweight; if the BMI number is higher than 30, it suggests obesity while any BMI of over 40 indicates morbid

obesity. The BMI measure is the same for male and female. Below are the recommended BMI and the classification of BMI that exceeds the recommendation by experts:

A healthy adult's BMI should be between 18.5 and 24.9. An individual with a BMI of 25 to 29.9 is considered an overweight adult. Obesity, Stage 1: for an adult starts with a BMI of 30 to 34.9 while obesity, stage 2 for an adult starts with a BMI of 35 to 39.9. Individual's BMI greater than 40, categorized as obesity, stage 3. Two other ways to measure obesity are by measuring an individual's waist to hip ratio (anything higher than 0.88 in women and 0.94 in men requires weight control), and waist circumference (anything greater than 88cm for females and greater than 102cm for men depicts the presence of metabolic disease).

The effects of obesity primarily categorized into two by the Centers for Disease Control and Prevention. These are the Health Impact and the Economic and Societal Consequence (CDC, 2014).

Consequences of Obesity

Health consequences. According to Mokdad, obesity is a leading cause of American morbidity and mortality, causing an estimated 300,000 deaths each year (Mokdad, 2001). It is important to offer the clarification that although related and tends to have similar characteristics, overweight and obesity are not the same diseases. A person who is overweight has an excess amount of weight which composes of water, fat, muscle and bone whereas an obese person is one with excess body fat. However, individuals who are overweight or obese are predisposed to the following diseases and health conditions: breathing problem, high blood pressure (hypertension), coronary heart disease, stroke,

gallbladder disease, infertility, sleep apnea, type 2 diabetes, body pain are the leading causes of all death (mortality).

Also, difficulty with physical functioning, some cancers (endometrial, breast, colon, kidney and liver), arthritis, gout, and hyperlipidemia are as a result of obesity complications (CDC, 2011). The CDC National health report on the leading causes of mortality, morbidity's associated risk behavior and obesity factors from 2005-2013 indicate that about seventy-eight million adults and twelve million youngsters in the United States are obese (Johnson et al., 2014; Wang & Beydoun, 2007). The age-adjusted prevalence of obesity among individuals aged ≥20 years believed to be steady over the years, almost increased by 35 percent in 2011–2012.

Economic and societal consequences. Prevention and treatment of obesity have a significant impact on the present economy of the United States. Through the direct and indirect costs associated with the disease and its associated chronic diseases. Examples of direct expenses incurred are preventive, diagnostic and treatment services related to obesity. Indirect costs include morbidity and mortality costs according to the Center for Disease Control (CDC). The CDC (2016) showed that the national healthcare department had spent about $150 billion on obesity. Annual hospital costs related to obesity were reported to be $ 127 million during 1997-1999 (CDC, 2011). On the whole, from 1987-2001, overweight-associated diseases were responsible for 27 percent of the increase in U.S. medication costs (CDC, 2016a).

Management/Treatment of Obesity

The following are steps taken in controlling and treatment of overweight and obesity.

Awareness/Education. Obese individuals should be encouraged to be more aware of the importance of their health, the adverse effects of obesity and the importance of proper nutrition and exercise. The affected people, particularly the obese black women, should participate in a weight loss program that is culturally adapted to facilitate weight reduction (Stolley et al., 2008). Individuals should routinely observe regular medical checkups with primary health care providers.

Healthy eating habits. Consumption of foods high in fiber, fruits, vegetables, grains, and moderate portion- size diet should be maintained and controlled. Eating in-between meals should also be minimized, including foods low in nutrients and high in calorie (sugary drinks, chips, and fast foods). Parents should encourage healthy habits by, for instance, refraining from using food as reward or punishment. Nursing mothers are also encouraged to breastfeed exclusively for at least 6 months.

Increase physical activity. Time spent watching television should be reduced to a maximum of 1 to 2 hours daily. A minimum of 1 hour intensive physical activities such as climbing the stairs, walking, and cycling is encouraged daily.

Bariatric surgery. No matter how hard and intense some people with obesity problems have tried to take care of their ailment with healthy eating and physical activity, some of the individuals find it tough to lose weight. Consequently, there is a

recommendation for bariatric (obesity) surgery as a treatment for morbid obesity on people with BMI of 40kg/m2 and higher (Hanipah & Schauer, 2017).

Government policies. Federal, State, and local governments can enforce stricter regulations on Fast Food restaurants and their products, including advertisements and marketing strategies. The government may also increase taxation on unhealthy foods to serve as a deterrent in purchasing them. Watch groups within every community should be encouraged. These groups are the ones that will be proactive in creating awareness on the effects of obesity and how to combat the disease. Farmer markets that sell quality fresh fruits and vegetables should be encouraged and made available and affordable within every community.

Concepts, Models, and Theories

The transtheoretical model (TTM) a good fit for this study that seeks to analyze the various stages of change in the process where the individual intends to discontinue old habits that are detrimental to their health. Prochaska developed TTM with his colleagues at the University of Rhode Island in 1997. The theoretical model derived its name from the use of various theories, hence the transtheoretical name model. Presently, TTM model is being used in diverse professional settings such as hospitals, clinics, online programs, businesses, health promotions, including personal usage (Velicer, Prochaska, Fava, Norman, & Redding, 1998). The credibility of the model could be seen in its usage in different environments, and by individuals, businesses, and the academia. It is an ideal framework that assists in the management and assessment of obesity

The significant variables identified in the TTM are a decisional balance, self-efficacy, and stages of behavioral change. These five stages of change used for behavior change has been applied in a variety of health promotion organizations model namely, pre-contemplation, contemplation, preparation, action, and maintenance stages. The steps allow individualized progression in meeting their need at their pace in various stages (Velicer et al., 1998; & Prochaska 2008). Prochaska (2008) describes decisional balance as an idea of balancing the "pros" and "con" during the decision-making process. An emphasis of pros outweighing the cons during the progressive stages is vital and demonstrates individual's growth enhancement that is fundamental to the theory. TTM model borrowed the concept of self-efficacy from Bandura's 1997 Self- efficacy theory. Bandura's theory describes the personal self-confidence in changing a particular behavior demonstrated, as individual progress through the modification and determinant of self-efficacy identified.

The pre-contemplation phase is the initial of the five stages. People at this stage have no intention of taking action to modify their behavior shortly, usually the next 6 months (Lenio, 2006; Spencer et al., 2006). At this pre-contemplation phase, individuals are undecided, unaware or uninformed of their behavior and may have had numerous, past failed attempts to address their problem (Prochaska & DiClemente, 1983). This stage expresses an individual's primary trait to show resistance to modifying or recognizing a behavior problem. Those people who are not planning or anticipating starting an exercise program in the next several months may lack the motivation to do so, or may not even be aware of the benefits of such practices in solving their health issues. Therefore, the

strategy for intervention for this group of individuals should include barrier's identifications, patient handouts, encouragement in weight management, identification of the pros and cons of weight reduction, as well as general education on the implications of being overweight (Spencer et al.,2006). The rationale for employing these strategies at this stage is for individuals to move out of the pre-contemplation stage. Also to assists problematic persons acknowledging the existence of the problem, then continue to experience a cognitive reality of their condition, and appreciate its adverse effects on their health (Prochaska & DiClemente, 1983).

The contemplation stage is a period of decision-making, how the pros and cons weighed before making the behavioral change. This stage lasts for approximately 6 months, and when individuals are stuck in that phase, it is known as a situation of constant contemplation and also called the behavioral procrastination stage (Prochaska & DiClemente, 1983). The individuals will adversely and positively contemplate the behavioral change if they believe that the pros outweighed the cons. People at this stage have mix feelings on the desire to change behavior without, however, being ready for action (Spencer et al., 2006). The possible intervention at this juncture is constant reinforcement on the nature of the health hazards posed by the problem, the benefits of possible remedies, and the provision of available resources, education and encouraging a commitment to change.

The next is the preparation stage. In this juncture, individual plans and makes a behavior change in a 6-month period. People at this point may have taken unsuccessful actions to change unhealthy behavior in the past year and still engage in the high-risk

behavior (Prochaska & DiClemente, 1983). Individuals in this stage may not know how to proceed to make a change and could be uneasy about the ability to change (Spencer et al., 2006). Therefore, for an individual who is eager to begin the exercise, the intervention should include the provision of the training plan and proper dietary regimen. Following the person's commitment, his or her family and friends should be involved in supporting and caring for individual patient's needs and education. The plan of action should hinge on the elimination or significant reduction of the problem behavior in which the person can choose between possible alternate resolutions. After that, the individual moves to the action stage.

In the action stage, individuals' selection of the deed that they feel confident in and comfortable with, is evident. Individuals now have confidence and have made efforts to modify experience, behavior or environment in 6 months to eradicate the obesity problem. This step requires some commitment, time and effort due to the existence of the recognition of change and effort made (Spencer et al., 2006). Regular exercise and healthy dietary has begun, and the visible difference becomes evident over time, due to the individual's action including appropriate intervention. Most of the interventions will be on advice on diet and exercise, self-monitoring, problem-solving, continued social support, tips on advancing intensity and ongoing support (Lenio, 2006). The advancement into the final stage occurs when individuals see evidence of performance improvement including positive feedback.

In the last TTM or maintenance stage, people work to avert relapse and secure the gains made during action stage (Prochaska & DiClemente, 1983). At this point, the

people are less tempted to relapse and more confident that they can continue to change. The drive of this phase is to prevent deterioration. The intervention aimed at program modification continue with encouragement, ideas, and tips on how to incorporate and encourage behavior towards the continued new way of life.

Studies have found TTM to be very useful towards bridging behavioral change, especially determining individual readiness to begin dietary exercise and modification (Ceccarini et al., 2015). People were placed in one of the five phases based on readiness for starting exercise or dietary modification program: pre-contemplation, contemplation, preparation, action, and maintenance (Lenio, 2006). Upon determinant of individual's willingness to change, the person will be properly assessed and identified. An appropriate intervention can be targeted at the person while making the process exciting (Prochaska, 2013). The guideline developed for the treatment of obesity is found to be in line and support the idea of using TTM in eradicating obesity, and its co-morbidities.

Relevance to Nursing Practice

The study is significant when considering the need for research on obesity among the underserved population; it is also beneficial to other clinics with weight loss programs to understand the strategies used by this particular medical center. Thus, future studies have to be carried on possible changes that will address the problem of obesity and serve as a platform to help other medical centers towards reducing and eradicating obesity. There is a need to learn the strategies used in the weight reduction program so that valuable lessons can be drawn from the success stories for the benefit of other obese individuals, nutritionists, dieticians, agencies and the government. As a change agent, the

essence is to determine whether the program results in a meaningful and successful accomplishment of attaining an effective weight reduction with a healthy range BMI without associated co-morbidities. Also, having a better understanding of the factors that contribute to or impede individual's success in weight loss programs would help other obesity prevention and eradication programs or clinics to identify, plan for, encourage and provide a support structure to people who want to lose weight.

Local Background and Context

There is a growing recognition that the impact of overweight, and obesity-related chronic illnesses and treatments must be assessed in reference to the quality of life, in addition to enhancing traditional measures of medical outcomes, such as mortality and morbidity (CDC, 2016a). The Johns Hopkins University Baltimore City, (Williams, Pasch, & Collins, 2013) indicated that obesity and obesity-related ailments rate among youngsters and adults in the United States had risen significantly in recent decades. The growth is increasing the risk for adverse health conditions, including heart disease and type II diabetes. In 2007, overweight and obesity in adulthood were also associated with increased risk of premature death. Also in 2007, the Behavioral Risk Factor Surveillance System indicated that thirty-five percent of adults in Baltimore were obese, and another thirty-three percent were overweight. Overall, at the state level, twenty percent of Maryland residents were classified as obese (Williams et al., 2013).

Similarly, the report from Youth Risk Behavioral Risk Factor Survey estimated Baltimore City high school students as eighteen and a half percent overweight. Therefore, twice the rate of overweight in the state of Maryland. Consequently, heart disease

resulting from obesity is now the prominent killer in Baltimore City and accounts for more than twenty percent of additional deaths in Baltimore City compared to Maryland as a state. This rate portends negative implications in adulthood, as the obesity epidemic among youngsters has grown exponentially in the past three decades. Studies like (Gortmaker et al., 2015; Lobstein et al., 2015 and Pharmaco Econ Outcomes News, 2015) suggested that children are spending more of their childhood and adulthood overweight or obese than they have in recent decades.

Obesity epidemic disproportionally affects racial/ethnic minority children, thus, increasing their risk for adverse health conditions including type II diabetes and heart disease. The rising number of research now conclude that neighborhood environments affect residents' risk for obesity and its associated ailments such as diabetes and heart disease (Health Education Behav, 2016; Lovasi, Hutson, Guerra and Neckerman, 2009). For example, zoning can influence the nearness between residences and other users, hence, increase the likelihood that individuals may walk or bike to gain daily exercises. Also, the area may affect the availability of different types of food establishments and thereby influence diet (Thornton, 2009-2010). Zoning is very significant because the majority of the patients at the clinic who became participants in the weight reduction program are minorities from low-income homes. The city is surrounded by fast food businesses and limited recreational parks for physical activities since the Medical Center located at the border of Baltimore county and Baltimore city. Demography of the area shows that majority of the population are minorities and of low-income group. Racially,

whites are the most populous in the area, followed by blacks and Hispanics. However, participants in the program are more blacks than any ethnic group.

According to Gudzune et al., (2015) two-third of adults in the United States of America are overweight or obese. This excess body weight increases the risk for type II diabetes and hypertension. However, the good news is that about 63% of Americans are keen on, and endeavoring losing weight at some point in their lives (Gudzune et al., 2015). The Journal, however, reports that only 29% are presently trying to lose weight. Therefore, there is a need to examine weight reduction programs. In 2014, the American government was expected to spend $2.5 billion on proprietary weight-loss services, or commercial with Nutrisystem (14%), Weight Watchers (45%), and Jenny Craig (13%) dominating the market share (Gudzune et al., 2015). Additionally, in 2014, revenues for weight-loss services' were anticipated to increase by 3.2%.

Subsequently, and as a result of the 2010 Patient Protection and Affordable Care Act (ACA) provisions covering obesity screening, revenue from weight- loss services continue to rise over the years due to an increase in referrals from clinicians. When comprehensively implemented, Gudzune et al., (2015) explain that the ACA would more likely cover 25 million uninsured Americans through the organization exchanges that facilitate health insurance purchases and Medicaid expansion. Individuals who obtain health insurance through the exchanges receive full coverage for all preventive services grade A or B commendations from the U.S. Preventive Services Task Force (USPSTF). These include obesity screening and counseling (Gudzune et al., 2015). To enhance and

encourage weight reduction, the ACA provides new incentives as federal matching funds for states (Gudzune et al., 2015).

Role of the DNP Student

The obesity prevention and population health of the community remains a problematic concern. Obesity may contribute to poor mental health leading to unhealthy lifestyle choices and increased appetite for unhealthy food (Latner et al., 2014). The biological effect of greater stress is accompanying negative thoughts, poor adherence to weight loss programs, binge eating, and reduced social support, and lack of physical exercise may encourage introverted individuals to evade programs aimed at cutting down on their weight (Latner et al., 2014). Some medical centers' weight reduction program might be laid back in enforcing or meeting the national guideline for obesity prevention. Hence the role of the DNP nurse in leading program evaluation to identify those gap in knowledge becomes necessary. The provision of insufficient educational interventions remains in some healthcare locales.

To addressing the national health issues on obesity, various studies must be incorporated towards the establishment of an educational objective to enhance disease prevention through health promotion and education (AACN, 2011). Helping to improve the quality life calls for the role of the DNP student's doctoral project. Nurses in the healthcare arena play a vital role in the prevention and management of diseases including obesity and overweight (Zhu, Norman, & While, 2013). Nurses are trained in high-quality nutritional education required in working across primary and acute care sectors (Murphy & Girot, 2013).

The knowledge acquired through the nursing process from the assessment, diagnosis, planning, implementation, and evaluation guides nurses towards making an effective and efficient decision in providing optimum care to patients most importantly the obese and overweight individuals. The process necessitates monitoring efficiently and encouraging patients to know where, when, and from whom they can access specialist help. Through Interprofessional Collaborative working across multi-center settings (Non-National Health Service and National Health Service) is significant to delivering the best adequate care and support for obese and overweight patients (Murphy, & Girot, 2013). The identification of the gap in an existing medical center's program will lead to quality improvement through evaluation of the effectiveness of existing obesity program in a medical center that serves as part of DNP student role (Zaccagnini & White, 2014).

The DNP nurse will carry out an inquiry viewed as an essential form of scholarly activity, and an enlarged perspective of scholarship developed through new paradigms that encompass more than the discovery of actual knowledge. Also, the doctoral project will accentuate outcome evaluation on weight reduction program (Butler, 2015). The collected information will be useful for the administrators, clinical directors in investing resources and effort. Also, evaluating an existing health care program is a reciprocated focus and aligned within the DNP role as practice-oriented nursing scholars, and Walden Universities Mission of enhancing positive social change through behavior modification as in portion control and physical activates (Walden, 2011-2012).

Summary

This chapter reviewed existing literature on obesity globally and in America. Obesity was examined within the local context of the North-Central United States where the study took place. The study's relevance to Nursing Practice and the role of the DNP student about the project was also discussed. Additionally, factors leading to obesity, its health consequences and the economic implications were reviewed. Studies have shown convincing evidence of weight gain and obesity as a result of increased consumption of energy- dense foods, physical inactivity, smoking and sedentary lifestyle (WHO, 2013). Other potential secondary causes could be fast food outlets, heavy marketing of energy dense foods, adverse social and economic conditions, fad dieting, sugar-sweetened soft drinks and juices and large portion sizes of the high quantity of food prepared outside of homes (NSW Centre for Overweight and Obesity, University of Sydney, 2005).

The reviewed literature showed what is being done to contain the disease and statistics about the prevalence of the diseases. Also, this section discussed the relevance of TTM to obesity eradication. The conceptual framework served as the pathway to understanding the management and assessment of obese individuals and their part in the journey to lose weight. The significant variables identified in the TTM are a decisional balance, self-efficacy, and phases of the different stages.

Section 3: Collection and Analysis of Evidence

Conceptualizing this project was largely influenced by my clinical practicum experience at a medical facility in the North Central region of the United States (see Appendix A). Primarily, this project examined the outcome of the EBWLP in the medical facility, utilizing the quantitative methodology in the structuring and interpretation of data. Data collection in this study was accomplished through a review of 45 charts of obese patients who attended the weight reduction program at the medical facility in the North-Central region of the United States. The outcome evaluation approach to this study provided context for the quantitative data obtained in the course of the project (Östlund, Kidd, Wengström, & Rowa-Dewar, 2011). As an outcome evaluation project, the collection, and interpretation of data were done against the backdrop of evaluating the effectiveness of the medical facility's program in meeting the established guidelines of weight reduction (CDC, 2016b).

The method utilized for this project consisted of a retrospective de-identified chart review of information on overweight individuals who participated in the medical weight reduction program at the medical facility. Emphasis was placed on the pre- and post-data extracted from the medical facility's archives. This enabled me to evaluate the effectiveness of the EBWLP among the individuals who participated in the program, which lasted for a 6-month period, using PHAT-G.

A comparison of the pre- and post-data sets obtained from the participants resulted in a better understanding of the problems that impede individual weight loss. With this information, the project not only evaluated the effectiveness of the EBWLP but

also provided reliable information on how to improve retention and successful participation in the EBWLP for people challenged by chronic obesity.

Population and Sampling

Participants in this project were selected through purposive sampling. As a method, purposive sampling assists investigators in choosing individuals that display variations of the phenomena under investigation (Mason, 2002). Therefore, through purposive sampling, data for 45 participants in the medical center's EBWLP were retrieved from the facility archival database for this project. These 45 individuals were enrolled in and voluntarily participated in the weight loss program. Their medical doctor recommended the participants as good subjects for the project because:

- They lived in Baltimore County, which has an increased obesity problem.
- They were patients of the medical center and enrolled in the 6-month weight loss program
- They had a BMI of 30 and above, and a history of obesity for over 2 years.
- Their ages ranged from 20 to 60 years
- The participants had health problems associated with obesity and its comorbidities.

Data Collection

Data for this project were obtained through the process of appraising chart review and using the Amazing Chart electronic medical record system utilized in the medical facility. This electronic system designed in such a way that patient-centered data are used to answer one or more research questions. It calculates all the measures and provides

information on both initial and post data analysis (Mead, Batterham, Atkinson, & Ells, 2016). Although such reviews also exist in numerous electronic databases, such as diagnostic tests, and notes from health service provider. The appraising chart review system is a more widely used and reliable method of choice in various healthcare-based disciplines such as professional education, quality assessment, epidemiology, and residency training, clinical research and inpatient care (Vassar & Holzmann, 2014).

Before data collection began, I applied for project approval by the Institutional Review Board (IRB) at Walden University and the medical site to review the participants' information. Approval was granted in June 2017 (Appendix A and Appendix B). This review is from the records of the participants in the EBWLP that commenced on May 1, 2016, and ended on November 1, 2016.

Two sets of data, the pre-weight and post-weight recorded information on the participants, were obtained from the facility and analyzed in this project. The electronic chart at the medical center recorded all patients' visits, including pre- and post-weight visits.

Practice-Focused Question

This project evaluation addressed the following practice-focused question:

PQ: Is there a change in weight among the obese individuals after participation in the medical center's weight reduction program using the Provider and Healthcare team Adherence to Treatment Guidelines (PHAT-G) for a 6-month period?

Although it is recognized that social and economic factors contribute to obesity, the nature of this project is limited to evaluating the pre- and post-weight loss.Taking into

account the literature examined in an earlier section of this study, and given the primary objective of this work, the aim of this project was to strive for an empirical response to the practice-focused question. The following hypothesis was also tested in the process of seeking an answer to the practice-focused question: Statistically significant weight loss accompanied the use of the Provider and Healthcare team Adherence to Treatment Guidelines (PHAT-G) EBWLP at the medical center in North Central geographic area of the United States.

Sources of Evidence

There is empirical evidence to suggest that obesity prevention and management seen in behavior modifications such as healthy nutrition and routine physical exercises have a direct effect on obesity. The EBWLP evaluation will guide the program development based on the best practices, and practical outcomes for weight management. The DHHS and American Health Association have published recommendations aimed at obesity prevention and a reduction in obesity's associated chronic illnesses (DHHS, 1998). These recommendations were made to promote optimal health of every individual. It is expected that established positive interventions and governmental policies will drive obesity prevention and management guidelines to yield positive outcomes (Mead et al., 2016). The sources of evidence were based on a review of the suggestions from 45 randomized clinical trials on blood pressure articles. This panel made the following recommendation: suggested weight loss to lower high blood pressure in overweight and obese individuals with hypertension (DHHS, 1998). Also, randomized clinical trial evidence revealed that weight loss reduced the risk factors for most diseases and may not

only control conditions worsened by obesity but may also contribute to lessening the likelihood of developing many diseases (DHHS, 1998).

Therefore, evaluating the interventions would assist in determining if the medical center's EBWLP led to a reduction in weight with a focus on improving health outcomes through individual motivation and willingness to adapt and desist from unhealthy habits. This doctoral project used archived data collected from the medical center in Maryland before the PHAT-G was implemented to determine whether there was a significant reduction in individuals' weight and improvement in the health outcomes after implementation

Analysis and Synthesis

This project examined the PHAT-G guided by the theory of planned behavior, as well as the overall effect of the PHAT-G on weight loss (Barnes et al., 2015). The evaluation was based on the National Institutes of Health guidelines for the diagnosis and treatment of obesity. The guidelines, PHAT-G, suggest that a clinical change project implemented that includes the provider reminder system, additional resources for patient education, and training sessions, and provides feedback (Barnes et al., 2015), is a useful intervention for obesity. The application of the logic model includes inputs, outputs, activities, outcomes, and impact efficiently utilized to evaluate plans. Assuring meaningful and timely analysis and collection of data to inform and improve obesity prevention efforts at community, state, and the national levels is essential.

The evaluation framework offers context for the measurement, components, and rationale underlying the committee's recommendations (Barnes et al., 2015). This

assessment provided evidence on the effectiveness of a range of interventions aimed at preventing obesity through the application of summative evaluation that provides judgment of the policy or program's worth and merits.

The following sets of data were obtained and analyzed in this study:

- The pre-program weight data of each of the participants in the weight-loss program
- The post-program weight data of the each of the same participants in the weight-loss program

Both sets of data were essential in measuring the impact of dietary counseling on weight loss and lifestyle changes among participants in the program. Data analysis was done using version 22.0 of the IBM-SPSS statistics package.

More specifically, the *t* test analytical instrument in Excel was utilized as a tool to determine if there were statistical differences in the data obtained from the same participants in the pre- and post-stages of this study. The *t* test is most suited for this type of analysis because it deals with a comparison between the mean results obtained from two sections of the same group on the same continuous variable. In this case, the test compared the means of the pre- and post-tests of participants in the same weight loss program. A 2-tailed *t* test specifying the null and alternate Hypothesis H_0: $\mu_d = 0$. H_a: $\mu_d > 0$ was utilized to find the *p* value for the 2-tailed *t* test (Sanfilippo, Casson, Mackey, & Hewitt, 2016). A *p* value less than 0.05 rejects the null hypothesis that there is no change in the average weights (Koniak-Griffin et al., 2015). However, if there is a change in the mean weights, then the alternative hypothesis would be accepted indicating active or

positive intervention if $p < 0.05$, and the null hypothesis will be rejected. However, the average difference in the population greater than 0 supports the claim that the educational intervention worked efficiently and was accepted (Koniak-Griffin et al., 2015).

The steps used for the statistical analysis were in five sections. Section one involved an indication of what the evaluator was testing for, such as the difference between the pre- and post-educational intervention. The independent variables were the pre- and post-intervention statuses, and the dependent variable was the weight loss change. Section two entailed the type of data to be utilized, which was a nominal indicating number of men and women affected in the program. Section three showed how many sample groups were intended to be measured. Section four and five dealt with related data whereby each datum in number one set has the corresponding datum in set two, ensuring each pair of measurements came from the same person such as in pre- and post-repeated data collection.

The result of the *t* test enabled me to reject the null hypothesis and proffered an answer to the EBWLP project question regarding the effectiveness of the program resulting in weight loss among participants in the study. I believe that results from this project will assist various stakeholders, including legislators, in developing programs and regulations that will enhance weight reduction among obese individuals beyond the medical center in the North Central United States where the data obtained.

Summary

This section dealt with the method of data collection and analysis of evidence. The project adopted an outcome evaluation approach. A quantitative methodology was

employed in the structuring and interpretation of information. It was used to appraise 45 chart reviews through the Amazing Chart electronic medical record system utilized in the medical facility.

The study compared the pre-weight with post-weight data to determine the degree of difference in weight loss in meeting the established guidelines of the weight loss program. Evaluating the interventions assisted me in determining if the medical center's weight-loss program led to a reduction in weight for the participants. The overall objective was that of improving health outcomes through an individual’s willingness and motivation to adapt and abstain from unhealthy practices.

Section 4: Findings and Recommendations

Introduction

This project was conceptualized as an assessment of the effectiveness of a weight loss and obesity reduction program at a medical center in the North-Central area of the United States. Data analyzed consisted of purposively sampled archival records of participants in the program (N = 45) which showed the general characteristics of obese individuals. The participants, women (n = 32) and men (n = 13), met the weight criterion for this assessment in that they all had a BMI over 30. During the 6-month weight-reduction program, the participants were made to undergo an intervention process that included counseling on the benefits of staying on a healthy diet. The average pre-test weight of the 45 participants was 266 lbs. while the post-test average weight of the same 45 participants' was 231 lbs. The post-intervention average of the 35 who completed the program was 206 lbs.; 10 of the original members did not complete the entire 6-month duration of the program.

The medical history of these individuals who participated in the weight-reduction program showed an obesity problem that had extended to 5 or more years. Consequently, and for this project, it appeared unrealistic to set a high bar of 50 to 100 pounds of weight loss as a benchmark to determine a productive and efficient weight loss program. It was, therefore, more pragmatic to set a benchmark of five to 10 pounds over 6 months of weight reduction for each participant. Overall, the outcome of this assessment suggests that the obesity reduction program offered at the medical center was adequate, as evidenced by the average weight reduction of 35 lbs. among participants in the program.

This project was conducted from May, 2016, to November, 2016. Given the weight loss that resulted from the intervention, the obesity reduction program developed and implemented at the medical center could serve as a template for obesity reduction across the United States.

Findings and Implications

An examination of the data retrieved from the archival database of the medical center's obesity reduction program yielded impressive results. Table 2 and Figure 1 show the average weights of the participants in the pre- and post-intervention periods by gender. Results indicate that 13 male participants in the project experienced an average weight loss of 40 pounds. This means the average weight loss among the male participants was seven to eight pounds per month. A total of 32 female participants also collectively lost weight, with an average loss of 28 pounds, which translates to about 4 to 6 pounds lost in each month of the entire 6-month program.

Table 2

Average Pre- and Post-Intervention Weight of Participants by Gender

Participants	Pretest Weight average	Posttest weight average	Post-weight loss average	Post-weight loss average of those not completing the program
Female (32)	287	259	28	(4) 11
Male (13)	244	204	40	(6) 24
Total (45)	266	231	35	(10) 18

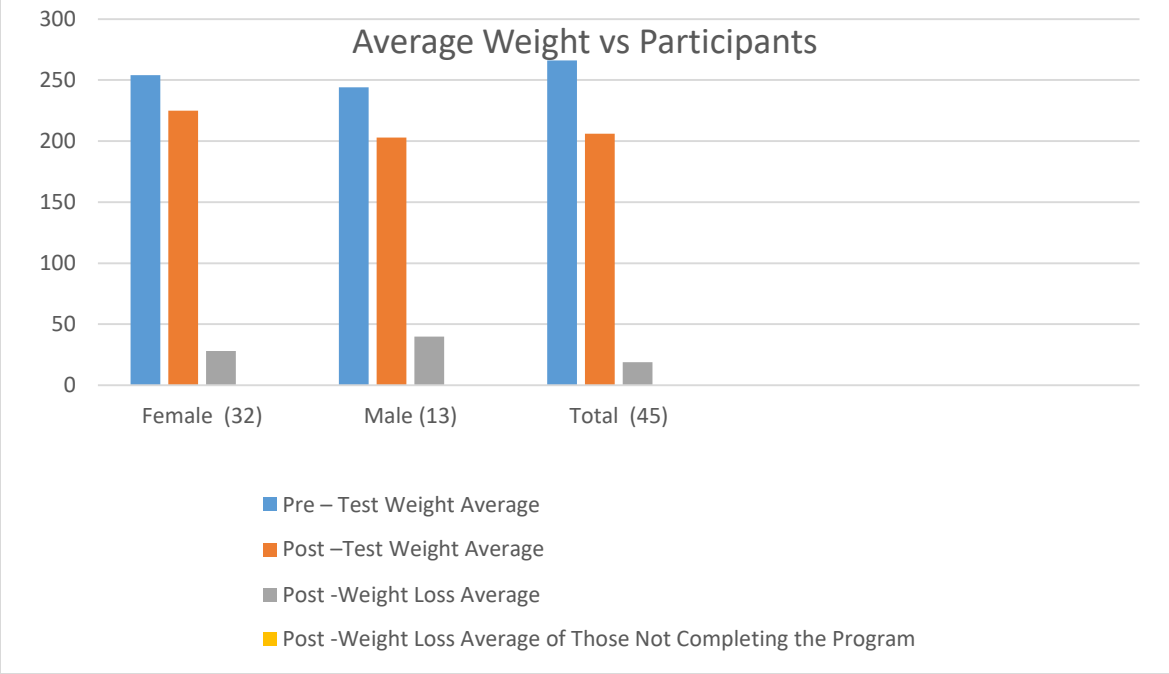

Figure 1. The average weight of participants by Gender.

In Table 3, the two paired-sample *t* test utilizing SPSS IBM Version 22.0 was used to compare the pretest and posttest of the mean weight of the two pairs. The chart

below shows an average weight loss of 35 pounds among the 45 participants over a 6-month period. The level of significance was set at 0.05. The statistical test resulted in the significance level of .000001 ($p < .05$). As shown below, the mean weight for the pre-weight was 265.7 with a standard deviation of 60.7, and the post-weight mean was 230.8 with a standard deviation of 60.5. Although ten participants did not fully complete the whole 6-month program, all 45 participants experienced at least a nine-pound weight reduction outcome as a result of the self-care approach used in the behavior modification structured program. A $p < 0.00001$ at the ≤ 0.05 significance level affirms the hypothesis that the obesity reduction program at the medical facility in the North-Central United States would lead to weight reduction by individuals who participated in the exercise.

Calculating the value of Cohen's *d* and the effect-size correlation using the means and standard deviations of the two groups (pre- and post-), the following are the results:

- The Cohen's *d* equal 0.6 (0.57588).
- The effect size *r* equal 0.3 (0.27669).

The Cohen's *d* was moderate. The effect-size percentile standing was at 62 and the non-over lab at 21.3%

Analysis and Interpretation of Findings

In Table 3, a paired sample statistics for pre- and post-weight depicts a significant difference (46) between the standard deviation in pre- and post-weight comparison to each pair. Both the Cohen's *d* and effect-size *r* values were positive, indicating the magnitude of the difference as a moderate improvement. This data analysis supports the weight loss program effectiveness. The mean weight deduction of the 45 participants was

35 pounds, a total of 1,575 pounds lost among the participants in a 6-month period. The findings demonstrated a statistically significant decrease ($p < .05$) among the participants.

Table 3

Paired Sample Statistics for Pre- and Post-Weight Reduction Participants

Test	Mean weight	Std. deviation	Std. error mean	Sig. (2 pair)
Pair 1 pre-weight	265.7	60.7	9.05	N/A
Pair 2 post-weight	230.8	60.5	9.01	N/A
Pre- & post-Weight	34.9	14.4	2.15	.0001

Note. $N = 45$.

Findings Discussion in the Context of the Framework and Literature

There occurs a significant difference in the mean weight of the pre- versus post-educational intervention. The findings are consistent with the guideline developed for the treatment of obesity and found to be in line with and support the idea of using TTM in eradicating obesity and its co-morbidities (Velicer et al., 1998; Prochaska 2008; Prochaska 2013). The justification of adherence to a clinical change project guided by the theory of planned behavior such as the PHAT-G was vital in promoting weight reduction among the participants. The intervention strategies consisting of a series of educational sessions, additional provider resources for patient education, a provider reminder system, and provider feedback process contributed to the success of weight loss program' (Barnes et al., 2015; DHHS, 2015).

Implications for Practice

The weight reduction evidence-based program interventions supported many of the literature and systematic reviews that helped obese individuals to lose weight. The counseling and education provided by nurses, particularly during the intervention phase of the program, proved successful in assisting obese people in detecting and selecting the behavior that they felt comfortable modifying. The clinical environment created an enhanced forum for the nurses to employ their skills and knowledge to provide professional education, enhancing healthy eating habits, promoting physical exercise, and encouraging adherence to medical treatment modalities among the obese participants. Instruction on adopting a healthy behavioral change program now translated to all levels of entry into the nursing program. Education and empowerment occurred for both the participants in the project in taking over their health issues and health care professionals, most importantly nurses. in caring for obese patients. The experience solidified their proficiency in the management and health promotion of individuals in the weight reduction program.

Implications for Social Change

According to Bridges and Bridges (2017), the starting point for dealing with change includes seeking a positive outcome as well as abstaining from the old habit. Additionally, understanding and embracing the change process serves as an initial step in the task of transition management. Thus, French-Bravo and Crow (2015) indicated that the effect of work on others serves as the initial step to effect change.

The identification of the gap in an existing medical center's program will lead to quality improvement that serves as part of the DNP student role in enhancing health promotion. (Zaccagnini & White, 2014). Also, a better understanding of the factors that contributed to individual success in the weight reduction program would help other obesity prevention clinics to identify, encourage, plan for, and provide structure to people who want to lose weight. This DNP project will help guide future research evaluating the impact of weight reduction program integration into professional settings and academia given that the obesity problem is on the rise along with its associated diseases and comorbidities, prominent among hypertension and type II diabetes.

Recommendations

While the outcome of this weight reduction program was that participants experienced varying degrees of weight loss, the question that remains unanswered is whether or not the program can produce a long-term lifestyle change among the participants. Whether what the participants experienced encouraged them to continue to maintain the self-discipline they acquired in the structured weight loss program is not known.

Since this project was about weight loss or obesity reduction, my recommendation is that whereas there exists a possibility of a relapse among participants in the weight reduction program, it should be extended beyond the 6-month period of its initial implementation. This would provide an opportunity for participants to remain in the program until each of them realizes his or her weight loss goal and probably become more accustomed to staying faithful to all they learned in the weight reduction program.

Another recommendation is for the managers of the weight reduction program to do a periodic individual follow-up with the participants, pending when they can return to the formal weight loss classes for reinforcement education and peer support.

One of my primary lessons from this project was that self-management in partnership with healthcare management experts is the key to healthy living and ensuring that people adequately monitor their weight. When people take responsibility for their health, make the decisions to stay healthy, and take ownership of their weight gain problem, it is much easier to assist them to reduce their weight.

Strengths and Limitations of the Project

One of the advantages of this project was the retrieval process of the participants' data. The de-identified record was provided by the officials at the medical center. It was therefore relatively easy recording the participants' weight. Another advantage of this evidence-based weight reduction project was providing awareness and knowledge through educational intervention to assist people in maintaining a healthy life style. The interventions proved successful by empowering participants in health promotion and management.

One significant limitation has to do with how this study was conceptualized to only examine the effectiveness of the weight loss program, without paying attention to the ancillary medical issues related to obesity. The literature on obesity shows that there are health problems associated with the disease. Consequently, it would have been worthwhile to look at the program's effects on the BMI, high blood pressure, A1C, and other blood work associated with the participants for a more comprehensive

determination of the impact of the program on the fight to combat and possibly eradicate obesity. Another substantial limitation was the sample size (N = 45). Ten of the participants did not complete the program. Therefore, a smaller sample size affects the outcome of the project. The project lacked generalization since the study was limited to one location. Also, since the project was a retrospective program, recall bias is expected as some of the participants have a tendency to forget the list of food consumed in a week or month period due to poor record keeping.

Project Evaluator

The ability to successfully evaluate the effectiveness of an evidence-based weight reduction program at the medical center in the North Central United States can be justified by the experience and knowledge gained during the DNP at Walden University Nursing Program. The experience includes but is not limited to reviewing and synthesizing clinical practice interventions in addressing the rise in obesity and the associated health-related problems including its substandardized treatment in the healthcare industry and clinical practice guidelines. The study provided guidance and information to empower individuals to take control of their health in collaboration with healthcare professionals. Information derived from this project provides key guideline recommendations for the treatment of obesity at local and state level, impacting social change at both levels of the government

Section 5: Dissemination Plan

Doing a project such as evaluating the effectiveness of weight reduction program undertaken can be considered as incomplete without determining how to share knowledge about its outcome. As Forsyth, Wright, Scherb, and Gasper (2010) noted, “It is vital to disseminate evidence-based practice (EBP) findings to stakeholders and other health care professionals so that innovations for practice can be replicated or applied in other settings.” (p.4).

Though there are a variety of methods available for the dissemination of knowledge in this regard, I will adopt the poster approach as an effective way to communicate the outcome of this project. Posters are not only cost-effective in their preparation and used widely at symposia, conferences, and similar gatherings, but Jackson and Sheldon (2000) determined that they are one of the best and simple platforms to disseminate information in a concise and uncomplicated manner that enables the intended audience to grasp the message quickly.

Consequently, the poster used in the DNP dissemination plan consists of an introduction, problem statement, purpose statement, methodology, significance to practice, results, conclusion, statistics, recommendations, and references. Appendix F contains the 36 x 56 poster presented to the medical center in July 2017.

The choice of venue in which to display the poster and present it to an audience determined by (a) location or area where obesity and overweight is a problem, (b) the availability of a health-care institution in that place that is charged with curbing obesity and overweight.

Summary

The increasing problem of obesity among adults and children in the United States gives rise to other medical conditions, including type II diabetes, heart disease, stroke, and hypertension. This project was aimed at examining the effectiveness of a weight-loss program at a medical facility in North Central United States. In executing this project from May to November 2016, the pre- and post-recorded weights of 45 participants in the program were extracted from the facility's medical archives and compared. The 32 female participants lost an average of 28 pounds, while their 13 male counterparts lost 40 pounds on average.

On the strength of this outcome, the medical facility's weight-loss program can empirically be asserted to be effective. Nevertheless, I recommend that its period of implementation be reasonably extended to allow participants more time to become involved in it and assume greater ownership of their obesity problem and the measures taken to arrest it. This recommendation assumes adequate resources to carry out the program. Where this is not the case, program facilitators could improvise by making periodic visits to the participants to monitor how well they have kept to their weight-loss schedule of activities. It is also hoped that other medical facilities interested in weight-loss programs would borrow from the experience of the medical facility in the North Central United States whose weight-loss program was the source of data in this project.

Analysis of Self

Starting the DNP program at Walden University was a culmination of a lifelong passion. My satisfaction from this project was that its outcome is an efficient instrument

for promoting evidence-based practice weight reduction with the goal of optimal health for individuals. As a DNP nurse, I fully understand the concerns and consequences of obesity and its comorbidities that are detrimental to human health. This project underscores the urgency of the need to promote optimal wellness in every community. It also demonstrates the need to determine the effectiveness of any program that is aimed at evaluating weight reduction by meeting the established PHAT-G clinical guideline of 5% to 10% baseline for meaningful weight loss.

I recommend that a reasonable period beyond 6 months be allocated to this weight reduction program to allow participants more time to become immersed in it and consequently more engaged in the ownership of their obesity problem and what it takes to combat it. However, where resources to do this are limited, the alternative would be for the program facilitators to make periodic visits to the participants to monitor how well they kept to their weight-loss schedule of activities. It is my hope that this project would be accessible to other medical facilities in the United States and beyond that are interested in weight-loss programs to learn and adopt the experience of the medical facility in the North Central United States.

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Appendix A: Letter From Medical Center Authorizing Project to be Carried Out in Its Facility

Sent: Monday, May 29, 2017, 4:56 PM
Subject: Subject: Clarification of QI committee and approval

Good afternoon,

Please find the letter of approval for Petronilla Eke and clarification regarding our QI committee at the facility

Appendix B: IRB Project Approval

The IRB approval number was 06-12-17-0382810.

Appendix C: Numerical Identified Pre- & Post-Weight of Participants

Number	Pre Weight	Post Weight
1	286	250
2	278	253
3	190	145
4	351	311
5	272	242
6	205	187
7	437	394
8	221	185
9	287	251
10	320	278
11	203	164
12	275	265
13	198	153
14	256	216
15	238	185
16	221	201
17	322	287
18	216	195
19	299	275
20	252	199
21	275	210
22	288	265
23	195	172
24	356	311
25	260	230
26	206	173
27	435	388
28	223	188
29	288	243
30	323	295
31	201	165
32	276	241
33	203	169
34	250	212
35	288	198
36	227	216
37	317	291
Number	Pre Weight	Post Weight

38	**216**	**184**
39	**291**	**256**
40	**255**	**210**
41	**380**	**371**
42	**204**	**190**
43	**257**	**227**
44	**219**	**184**
45	**198**	**163**

Appendix D: *t* test Calculation

Equation:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\left(\frac{(N_1 - 1)s_1^2 + (N_2 - 1)s_2^2}{N_1 + N_2 - 2}\right)\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

Outcome:

Difference Scores Calculations

Mean: -34.89
$\mu = 0$
$S^2 = SS/df = 9164.44/ (45-1) = 208.28$
$S^2_M = S^2/N = 208.28/45 = 4.63$
$S_M = \sqrt{S^2_M} = \sqrt{4.63} = 2.15$

T-value Calculation

$t = (M - \mu)/S_M = (-34.89 - 0)/2.15 = -16.22$

Significance Level: 0.05

Two-tailed hypothesis

The value of *t* is -16.216856. The value of *p* is < 0.00001. The result is significant at $p \leq 0.05$.

APPENDIX E: Paired Samples

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Weight	265.7333	45	60.69050	9.04721
	Post-Weight	230.8444	45	60.47425	9.01497

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre-Weight & Post -Weight	45	.972	.0001

Paired Samples Test

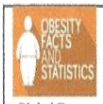
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig (2-tailed
				Lower	Upper			
Pair 1 Pre-Weight & Post-Weight	34.88889	14.43201	2.1540	30.55303	39.22474	16.217	44	.0001

Appendix E: Poster Presentation

Evaluation the Impact Weight Reduction Program at Medical Center in North – Central USA

Petronilla Eke, MSN, BSN

INTRODUCTION



Global Data on Obesity **by World Health Organization** (WHO) Since 1980, Obesity has more than doubled. In 2010 the **WHO** projected in 2015 that 2.3million Overweight individuals aged 15 & above And 7 million obese people worldwide. Forty-two million children under age five were overweight or obese in 2013. More than 1.9 billion individuals 18 years and older in 2014, were overweight. Among these people, over 600 million were obese. 39% of adults aged 18years and over were overweight in 2014, and 13% were obese. **Williams, 2016** recent report showed a 35%- rate increase in obesity nationally

The rise in obesity rate in the USA also indicated an increase in the number of people with associated diseases, such as:

* Hypertension	* Type II diabetes.	* Heart disease
* Mood disorder	* Liver disease	* Reproductive disease
* Dyslipidemia	* Depression	* Arthritis

PROBLEM STATEMENT

The rise in obesity rate in the U.S. has resulted in several diseases such as hypertension and typed II DM. Also, the financial implication of obesity is also a huge loss to the economy of United States.

Some of the medical centers' weight reduction program might be laid back in enforcing or meeting the national guideline for obesity prevention.

Hence the role of the DNP nurse in leading program evaluation to identify those gaps in knowledge becomes necessary.

PURPOSE STATEMENT

The focus of the EBP weight reduction program evaluation is to determine if weight reduction practices have promoted weight loss. Since the provision of insufficient educational interventions remains in some healthcare locales. Therefore, as a change agent, seeking to improve the quality life calls for the role of the DNP student's doctoral project in evaluating the facilities programs effectiveness.

Also, the program is considered a possible way to lead to positive change in the service population's behavior and improve their quality of life and other outcomes

METHOD

The project used a quantitative methodology in the structuring and interpretation of information.

The method was useful in measuring the outcome of the pre and post data obtained from the participant to determine the program effectiveness. (Mertler, & Reinhart, 2016).

More precisely the t-test analytical instrument in Excel was most suited for this type of project because it deals with a comparison between the mean results obtained from two sections of the same group, on the same continuous variable.

Another methodology was the utilization of the quantitative statistics and a T-test for paired sample to run version 22.0 of the IBM statistics package

The following sets of data were obtained and analyzed in the study: The pre-program weight data of each of the 45 participants in the weight-loss program

The post-program weight data of the each of the same participants in the weight-loss program. Both sets of data will be essential in measuring the impact of dietary counseling on weight loss changes among participants in the program.

Data analysis will be done using version 22.0 of the IBM-SPSS Statistics package

SIGNIFICANCE TO PRACTICE

Nurses are trained to educate and empower participants in the collaborating with healthcare professionals taking over their health issues hence solidifying their proficiency in the management and health promotion of individuals as observed in the weight reduction program.

The weight reduction evidence-based program interventions supported many of the literature and systematic reviews that helped obese individuals to lose weight. The counseling and education provided by nurses particularly during the intervention phase of the program proved successful in assisting obese people detecting and selecting the deed that they felt comfortable in behavior modification.

RESULTS

The significance level was established at 0.05. The mean on the pre-test was 265.73 (SD = 60.70). The average on the post-test was 230.84 (SD = 60.47). The findings demonstrated statistically significant decrease ($p < .05$) among the participants in a six-month weight reduction program intervention. A ($p < 0.00001$, at the ≤ 0.05 significance level) affirms the hypothesis that the obesity reduction program at the medical facility in the North-Central United States would lead to weight reduction by individuals who participated in the exercise.

The Cohen's d equal 0.6 (0.57588) and the effect-size r equal 0.3 (0.27669). The Cohen's d was moderate. The effect-size percentile standing was at 62 and the percent of nonoverlab being at 21.3%.

CONCLUSION

Given the increasing problem of obesity among adults and children in the United States, an issue that gives rise to other medical conditions including type II diabetes, heart disease, stroke, and hypertension. This project was aimed at examining the effectiveness of a weight-loss program at a medical facility in North-Central U.S.A. In executing this project from May to November 2016, the pre and post recorded weights of 45 participants in the program were extracted from the facility's medical archives and compared. The result displayed an average weight loss of 35 pounds among the participants. On the strength of this outcome, the medical facility's weight-loss program can empirically be asserted to be effective.

RECOMMENDATION

Since the project was about weight loss, my recommendation is that whereas there exists a possibility of a relapse among participants in the weight loss program, it should be extended beyond the six-month period of its initial implementation. This would provide an opportunity for participants to remain in the program until each of them realizes his or her weight loss goal, and probably become more accustomed to staying faithful to all they learned in the weight reduction program. Another recommendation is for the managers of the weight reduction program to do a periodic individual follow-up with the participants, pending when they can return to the formal weight loss classes for reinforcement education and peer support.

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