Obesity in Female Patients: A Multidisciplinary Approach to Improve Health Outcomes

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Abstract

Obesity, a human property under which one possesses a body mass index (BMI) above 30, is a significant global health issue on the basis that it negatively impacts one's health by increasing the risk of high blood pressure, cancer, diabetes, sleep apnea, infertility, and heart disease, amongst a variety of other conditions. Obesity prevalence has increased significantly over the past semi-century, as women have historically exhibited higher risks than men. To address this issue, this project develops a protocol for nutrition and exercise based on evidence-based practices that may address obesity. This project seeks to determine if the implementation of a protocol for nutrition an exercise will improve body weight and BMI levels in obese adult women over a four-week period. This project takes place in a clinic in New York, where patients seek assistance for weight management. This project evaluates pre and post-intervention body weight and BMI and employs statistical analyses to determine the effectiveness of the intervention. This project improves patient care and provides evidence-based practices that may serve as a resource to other clinics. This paper examines the problem, the literature surrounding the problem and the solutions, a theoretical framework, the project design, analysis, and limitations of a quality improvement project. The success of the weight loss protocol is validated using specific outcome and process measures. This project provides further support that the national weight loss protocol postulated by Health.gov (2016) can result in beneficial weight loss outcomes in obese adult women when followed appropriately. This project can shape future weight-loss interventions, weight management efforts, and the current multifaceted understanding of weight management.

Keywords: *obesity intervention, public health, health education, weight management*

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Hamdy (2018) defines obesity as a human property under which one possesses a body mass index (BMI) above 30. However, varying definitions of what is considered obese have also been gathered from other medical authorities as BMI may not be the sole determinant of what is considered obese. Hamdy (2018) states that various medical sources define obesity by body fat percentage. Some parameters include a body fat percentage — as an indication greater than 25% for men and 33% for women is considered obese. Obesity negatively impacts one's health as it can increase the risk of high blood pressure, cancer, diabetes, sleep apnea, infertility, and heart disease (WHO, 2018). State programs have led current efforts to reduce obesity in the United States (US); however, in the state of New York, those efforts have been found insufficient and ineffective. The obesity rate in New York has risen from a lowly 14.3% in 1995, to 21.7% by 2005, to what is currently 25.7% (25.3% for women and 26.1% for men) (State of Obesity, 2018). There may be a general lack of leadership in this domain and a quality improvement project will be employed with a focus on measures to reduce obesity in female patients using non-pharmacological solutions as it relates to patient health history, other comorbidities, and family history. It should be noted that various social and demographic factors can contribute to obesity such as patient demographics and a patient's living situation, among others.

Background

According to Mitchell and Shaw (2015) women are more likely to be overweight and obese than men, as it is supported by the aforementioned data. An overweight female may have impaired reproductive health and pregnancy, which may lower health outcomes for both the mother and the infant (Williams et al., 2015). The etiology of female obesity encompasses environmental, genetic, physiologic, cultural, political, and socioeconomic factors (Williams et

al., 2015). The complexities of female obesity may make it difficult to combat health issues. This is demonstrated in patients with a family history of obesity, as these individuals may be more likely to be obese (Mitchell & Shaw, 2015). Additionally, certain races/ethnicities could be more susceptible to obesity and comorbidities of obesity as can be seen by the fact that non-white women in New York elicit the highest prevalence (State of Obesity, 2018). According to Williams et al. (2015) the causes of obesity are complex and still unclear but can be addressed through a multidisciplinary approach (i.e., healthcare organizations partnering with schools, colleges, government institutions, and other stakeholders to provide patient education about obesity). Psychological and emotional patterns can optimize or hinder an individual's ability to manage weight as stressors can lead to weight gain or weight loss (Mitchell & Shaw, 2015). As such, stress management is crucial to controlling individual weight and allowing an opportunity to improve health. Stress management techniques can include mindfulness training, yoga, meditation, and general exercise (Mitchell & Shaw, 2015).

The World Health Organization (WHO) (2018) states that there are more obese persons than underweight persons today. In fact, this is true for most parts of the world. The Centers for Disease Control and Prevention (CDC) (2018) states that obesity related healthcare costs can range as high as $147 billion. Further, the CDC (2018) stipulates that this cost will continue to rise in the absence of action with the increasing incidence of obesity around the world. Obesity can affect patients in various ways depending on demographic data. According to Edmunds et al. (2014) childhood obesity, is increasing; while Sahoo et al. (2015) reported that obese children tend to be obese adults. According to Hruby and Hu (2015) women are disproportionately affected by obesity. Devaux and Sassi (2013) stated that low-income women and those of lower socioeconomic status are most likely to be obese. Therefore, females of certain patient

populations may be more affected by obesity and comorbidities of obesity.

Overall, some patient populations are at a higher risk than others for obesity. Arroyo-Johnson and Mincey (2016) state that African-Americans and Hispanics may be more affected by obesity. Arroyo-Johnson and Mincey (2016) define obese 'class I' as a BMI between 30-34.9, obese class II as a BMI between 35-39.9, and obese class III as a BMI over 40. Overall, 36.2 percent of women versus 32.6 percent of men were obese, while more men than women were classified as obese class I (21.7 percent to 17.7 percent) (Johnson & Mincey, 2016). However, more women than men were in obese class II (11 percent to 6.6 percent) and obese class III (7.6 percent to 4.3 percent) (Johnson & Mincey, 2016).

Obese patients are likely to experience various comorbidities; the most common of which include type 2 diabetes and hypertension (Hamdy, 2018). Just like obesity, these conditions also have defined clinical values that delineate diagnosis. Khardori (2018) defines type 2 diabetes as any blood glucose level above 126 mg/dL (fasting), 200 mg/dL (non-fasting), or a glycated hemoglobin (HbA1C) level of at least 6.5%. Hypertension is defined by Alexander (2018) as blood pressure of over 140/90 mm Hg. Healthy People 2020 (2018) states that there are five social determinants of health that could help address obesity in females aged 18-50 years old. According to Healthy People 2020 (2018), the five social determinants of health include economic stability, neighborhood and built environment, health and health care, social and community context, and education. In addition, economic stability can ensure that patients get suitable exercise. Neighborhoods and built environments can ensure that there are areas where patients can exercise and make lifestyle changes. Health and health care can ensure patients get regular care to address obesity and any associated comorbidities (Healthy People 2020, 2018). Social and community context can ensure patients can raise questions and concerns to all

stakeholders regarding obesity and any associated comorbidities (Healthy People 2020, 2018). Lastly, education can ensure proper eating habits and nutrition as early as childhood to prevent future cases of obesity among this patient population (Healthy People 2020, 2018).

Hamdy (2018) states that obesity is defined either by BMI or body fat. Health.Gov (2015) recommends between 2,000 (sedentary) to 2,400 calories (active) per day between the ages of 18 and 64 years. Health.Gov (2015) also recommends around 150 minutes of moderate intensity exercise a week and up to 300 minutes a week for additional health benefits from ages 18-64 years. These standards are subject to change depending on patient comorbidities.

Purpose Statement

The purpose of this project is to develop a protocol for nutrition and exercise based on evidence-based practices which may address obesity in females over the age of 18 years. This project will evaluate pre and post-intervention body weight and BMI. The focus will be on non-pharmacological solutions such as diet and exercise. This DNP project will improve patient care and provide evidence-based practice which may serve as a resource to other clinics.

PICOT Question

In obese women ages 18 years and older, will the implementation of a protocol for nutrition and exercise improve body weight and BMI levels over a period of four weeks?

Objectives

In the timeframe of this DNP project, the following objectives will be implemented at the project site:

1. Develop a nutrition and exercise protocol based on evidence-based practice to be used by the staff and providers in a clinical practice site.

2. Present the developed nutrition and exercise protocol to staff and providers and evaluate the understanding of the protocol.
3. Implement the nutrition and exercise protocol into the care of the clinical practice site patients in the practice setting.
4. Evaluate the impact of the nutrition and exercise protocol through patient chart reviews pre and post-implementation.

Search Terms

Accessing the Touro University Library database, the following search engines were utilized: PubMed, UpToDate, ProQuest, MEDLINE, PsychINFO, CINAIIL, Cochrane Collaborations/Cochrane Nursing Care Network, SAGE Research, Psychiatry Online, EBSCO, Ovid, and JAMA. Key terms used for the review of literature included: obesity, stress, weight management, weight loss, stress management, non-pharmacological, study, mindfulness, and yoga.

This search found over 500 articles, therefore, boolean search terms of "or" and "and" were utilized to narrow the search down to less than 100 articles which would be considered for use in this DNP project.

Inclusion and Exclusion Criteria

Inclusion criteria consisted of articles published within the past five years, full-text available, written in the English language, and peer-reviewed articles. Articles that were older than five years old, and were in a language other than English were excluded from the literature review.

The exclusion criteria included abstract only articles, non-English articles, articles that do not apply to the project, resources published prior to the last five years, and sources which were

not peer-reviewed.

Review of Literature

Many factors can contribute to weight gain and the development of obesity. Various co-existing paradigms can enable obesity, such as genetics, metabolism, hormones, behavior, the environment, sociocultural pressures, psychological and emotional determinants (Hamdy, 2018). Most nutritional plans are limited to adjusting two specific behaviors, namely dieting (eating) and exercise.

Female obesity and at-risk populations. As of 2018, 30% of the US. population is obese (County Health Rankings, 2018). Throughout the US, various determinants may increase individual risk of obesity, including, being a female, racial minority (non-white), being socioeconomically disadvantaged, being older, and being physically handicapped (County Health Rankings, 2018). Women are naturally more likely to exhibit higher BMI levels due to individual body compositions, low-testosterone, and high estrogen values (Hamdy, 2018). In the US., 54.8% of Black women, 50.6% of Latina women, and 38% of white women are obese. Such is indicative of a discrepancy. Furthermore, income is tied to obesity, as over 40% of individuals who earn less than 25,000 per year are obese, in comparison to 28% of individuals who earn more than $75,000 per year (County Health Rankings, 2018).

National standards for nutrition and exercise. HealthGov (2015) lists the national dietary guidelines for Americans, an edition which runs from 2015 to 2020. An eating pattern is defined as the total representation of foods and beverages that one consumes (Hamdy, 2018). HealthGov (2015) discusses a variety of healthy eating patterns, diets, and exercise requirements for various groups of individuals. Healthy eating patterns are discussed as plans which include carbohydrates, fats, and proteins in appropriate quantities, and emphasizes the importance of

'variety,' and eating all the food groups, namely vegetables, fruits, grains, lean protein, healthy fats, and dairy. HealthGov (2015) emphasizes the importance of making smart food choices, maintaining moderation while reducing sugar, refined foods, fried foods, and fat intakes. In order to maintain health, an individual must monitor weight, and actively work to maintain a healthy BMI; as values above 30 comprise obesity (Hamdy, 2018). Weight loss requires a caloric deficit, weight gain requires a surplus, and weight management requires that the caloric expenditure equates to exercise and nutrition consumption (HealthGov, 2015). Furthermore, it is of importance to develop strong social networks, wherein those surrounding the individual also support healthy eating patterns. HealthGov (2015) recommends that on a weekly basis, adults should get at least 150 minutes of moderate intensity physical activity, with some muscle strengthening exercises at least two days per week.

Obesity and psycho-emotional factors. Psychological and emotional distress can promote obesity in various ways; particularly by shaping individual behaviors, metabolic processes, and hormonal makeup. It should be noted that psycho-emotional distress is systematically shaped by environmental and sociocultural surroundings, genetics, and behaviors. Hruby and Hu (2016) describe obesity as a complex, multifaceted, preventable disease, which should be understood as being much more than merely dietary and exercise related, as it has much to do with individual internal composition; since cognitive, emotional, and physiological factors can inhibit or stimulate weight gain. Historically, a multitude of dietary precautions have been developed by supposed experts, and over time, most were either debunked or refined. Such includes diets based solely on one category of foods or one nutrient (i.e. sugar, meat, protein, etc.), extreme deprivation, periodic eating patterns (i.e. intermittent fasting), amongst others (Hruby & Hu, 2016). One thing is for certain, namely, that consumption and exercise play a significant role in

body composition. However, recently, a more holistic understanding of weight management has flourished, which considers a larger multitude of co-existing variables in individual life style.

Despite the refinement in diets and dietary patterns, obesity continues to be an issue since individuals actively strive to solve this predicament as if it were a temporary issue; when, in fact, it should be managed as a long-term process (Hruby & Hu, 2016). Weight management is a life-long pursuit, which requires daily continuity in all matters of life (Hruby & Hu, 2016). This notion ties into Maclean et al. (2015) findings, which stipulate that weight loss is often transiently effective, in that the great majority of individuals who attempt to lose weight, are incapable of sustaining a reduction of 10% or above, for at least one year. In order to actualize the long-term goal of reducing obesity prevalence in the United States (US), a longer-term understanding of obesity, weight loss, and weight management are necessary. As opposed to merely adjusting caloric intake and levels of exertion for a specific period of time, solutions which enable sustained weight loss are necessary.

Hemmingsson (2014) proposed a new model for understanding the role of psychological and emotional distress, in obesity promotion; wherein a conceptual review was used, with the implications for the treatment and prevention of obesity. Hemmingsson (2014) determined that psychological and emotional distress pose a fundamental link between socioeconomic disadvantage and the likelihood of weight gain. Hemmingsson (2014) eludes to weight gain is exasperated by psycho-emotional distress, which is thereon exasperated by socioeconomic strain; i.e. wealth, quality of life, job/employment, residence/neighborhood, and education. The issue in this purview is the ‘poverty cycle,’ which finds a cyclical limitation wherein in individual low socioeconomic status may contribute to less college affordability/accessibility, which thereon contributes to fewer job opportunities (Armstrong, 2017). In any case, Hemmingsson (2014)

found that lower socioeconomic status contributed to low-esteem, self-worth, negative self-belief, powerlessness, insecurity, negative emotions, anxiety, depression, and a heightened sensitivity to stress. As such, these negative indicators are typically combatted by coping strategies. Such coping strategies include over eating and the eating of 'comfort foods' which can temporarily suppress the negative psycho-emotional processes being experienced (Hemmingsson, 2014). Since socioeconomic status is relative to environmental exposure and influences, there aren't necessarily clear distinguishing factors which determine whether an individual is disadvantaged in this regard, therefore the aforementioned demographic is not limited to those below or near the poverty line (Armstrong, 2017).

Building off the importance of stress, Scott, Melhorn, and Sakai (2013) systematically analyzed the effects of chronic (psychosocial) stress and found that it alters patterns of food consumption and the regional distribution of adipose tissue. Psychosocial stress is an umbrella term for an array of social stressors, which are shaped by individual situations in life and relationships with others. In the sympathetic nervous systems of both humans and animals, hypothalamic-pituitary-adrenal axis hyperactivity (the primary predictor of stress and anxiety) is directly linked to visceral obesity (Scott et al., 2013). As such, increased levels of stress lead to altered food consumption patterns, and the promotion of cravings for nutrient-dense foods which include comfort foods (Scott et al., 2013). Scott et al. (2013) note that although psychosocial stress can stem from an array of interdependent factors, the effects that stress has on the body (ie. the body's response to stress) is quite similar across the board, in that it alters the normative behaviors of individuals, and decreases overall body effiency (Scott et al., 2013). In the absence of stress, a human body should work efficiently to overcome illnesses and limit adipose storage through a heightened metabolic rate and health food cravings (Scott et al., 2013). However,

increased stressors lead to a decreased metabolic rate, and cravings for calorically dense (unhealthy) foods; such as foods that are processed, sugar-filled, fried, and/or high in fat (Scott et al., 2013). Further, higher stress may de-motivate/inhibit exercise, which further contributes to more stress and a greater inability to manage weight (Scott et al., 2013). In sum, there manifests a cyclical relationship between stress, eating, and exercise, since higher stress leads to poorer eating and less exercise; while less exercise can lead to higher stress and less fat burning; while unhealthy eating can lead to elevated stress and weight gain. This cyclical relationship shapes behavior, since it can determine the capacity to adhere to a strict diet; while it also shapes physiological processes, which are responsible for burning calories/fat, storing fat, and metabolizing foods appropriately. This ties into the findings and studies of Zhang et al. (2016), which includes the metabolic effects of stress, and determined that chronic stress produces betatrophin, which systematically slows fat metabolism, thus rendering the body to be less efficient in scope, and more conducive to experiencing weight management problems. This supplements the idea that stress merely contributes to weight gain through stress eating, in that it also has internal effects, regardless of individual dietary patterns that have been altered (Zhang et al., 2016).

The findings of Hemmingsson (2014), Hruby and Hu (2015), MacLean et al. (2015), Scott et al., (2013), and Zhang et al. (2016) emphasize the importance of stress management as a necessary constituent in weight management. The evidence indicates that weight irregulates during times of stress are overlooked, and that ‘stress-eating’ is not the only contributing factor to weight gain, but rather, the physiological effects produced by stress on the metabolism ultimately reduce the body’s natural fat burning mechanisms, which enable greater fat storage (Hemmingsson (2014), Hruby & Hu (2015), MacLean et al. (2015), Scott et al., (2013), and

Zhang et al. (2016)).

Managing stress. Anxiety and stress result from a mix of genetic, biological, and environmental factors. Social anxiety stems from perceptions and evaluations of an individua's surroundings, which enable faulty and unwanted behavioral responses (Chung et al., 2013). Chung et al. (2013) explained that to optimize well being and to reduce the pervasiveness of negative behavioral responses, greater mindfulness must be developed; since it enables an individual to achieve a state of equilibrium, which is favorable for mitigating stressors. Through equilibrium, there manifests increased connectivity in the central nervous system, which suppresses stress production, as effectuated through the diminishment in size of the ventromedial prefrontal cortex (vmPFC), leading to an increased anterior insular cortex (AIC) activity and capacity, which then leads to an improved decision-making capability through increased connectivity (Chung et al., 2013). In addition to the aforementioned neural changes which cause unwarranted behavioral responses, individual behaviors can exasperate negative mental processing; particularly overeating, eating poorly, and hampering of dietary goals.

Many studies such as that of Chung et al. (2013) support the implication of mindfulness training, in that it can reduce psychological stress and stress-related health problems such as obesity, anxiety, and depression. Killingsworth and Gilbert (2010) studied mental states of happiness, anxiety, and fear based on data points from 2,350 participants, and found there to be a strong positive correlation between happiness, a state of equilibrium, and a mind that doesn't wander. Killingsworth and Gilbert (2010) found that when an individual's mind wanders, there mady be a more likelihood to conceptualize negative ideas, which in turn causes greater worry, anxiety, stress, and adverse emotional effects. Furthermore, Killingsworth and Gilbert (2010) found that individuals will expend almost half of a day thinking about something other than the

present, whether the past or the future, and that during such times, individuals are more likely to attain lower levels of happiness. Much of the psychological distress experienced by individuals in times of anxiety stems from uncontrollable thoughts about the past or the future; however, in focusing on the present, the prevalence of worry is less significant. In remaining in the moment, individuals were found to be less worrisome overall. As a result, Killingsworth and Gilbert (2010) noted that greater mindfulness could help ensure that an individual's mind doesn't wander unfavorably, which in turn can help minimize the effects of anxiety when one engages in negative thoughts about their past or their future. Reducing the time that an individual expends on distracting thoughts can ultimately help alleviate adverse effects such as anxiety, while it can bolster happiness, motivation, and positivity (Killingsworth & Gilbert, 2010). In conjunction with the findings of Zhang et al. (2016), weight management can be extended to stress management, seeing how the two are strongly connected according to Killingsworth and Gilbert's (2010) findings.

Acccording to Killinger and Gilbert (2010) the findings are based on observational phenomena. Hernández et al. (2018) extended this inquiry through an empirical study; wherein a magnetic resonance scanner was utilized to study brain matter during states of meditation and absolute mental silence which specifically by analyzing the brain's anatomy, and the functional connectivity which ensued during such mental states. Forty-six participants took part in the study, half of whom were self-proclaimed experts in Sahaja Yoga meditation, and half of whom had never meditated. Hernández et al. (2018) had all the participants meditate while being scanned, and prevalent differences were then noted. Among expert mediators, the part of the brain called the "rostral anterior cingulate cortex" (rACC) comprised of an average of 7.5% more grey matter than non-meditators (Hernandez et al., 2018). This difference was marked as a

determinant in one's ability to attain a state of mental silence, in that those who practiced this form of mindfulness often were better mentally equipped to calm their mind and body on demand. Hernández et al. (2018) note that individuals experiencing anxiety and/or depression have less grey matter within the rostral anterior cingulate cortex (rACC) than those who don't have such issues; while those who practice meditation have more grey matter in this region than those who don't practice; thus, delineating that mindfulness through meditation can prove to be a solution to increasing the grey matter of the brain as a means of alleviating attributions to such negative mental states. In effect, Hernandez et al. (2018) empirical data posits that meditation will minimize the physical deficiencies in the brain which allow anxiety to manifest, thus providing a behavioral solution (meditation) to a biological process (grey matter in the rACC). Hernandez et al. (2018) weren't the first to study Sahaja Yoga's effects; as Chung et al. (2013) found that this mindful practice improved the quality of life in participants, it helped stabilize blood pressure levels, and it helped alleviate anxiety. Additionally, Hoge et al. (2013), and Goyal et al. (2014) found conclusive evidence that meditation programs and yoga enabled individuals to become more mindful, which in turn helped them cope with anxiety more optimally. In reducing anxiety, weight loss can be fostered (Zhang et al., 2016).

According to Hofmann, Sawyer, and Witt's (2010) metanalysis of literature related to mindfulness-based therapy (MBT), MBT can be seen as an alternative for anxiety therapy, since a review of 727 articles postulated that the pre-post effect size estimates were in moderate ranges for reducing anxiety symptoms (as per hedges G=0.63). The findings from this review indicated that MBT could effectively reduce stressors, anxious thoughts, and subsequent negative/unwarranted behavioral outputs (Hofmann et al. 2010). This is of importance, because if stress and anxiety contribute to weight issues, and MBT can decrease anxiety and stress, then

MBT should be considered as a supplement to traditional weight loss programs, which thereon warrants its place in health management.

Of particular interest is how so much scientific evidence has found meditation, yoga, MBT, and any practice which improves mindfulness to be effective at minimizing anxiety, or at least anxious states of mind. This isn't to say that mindfulness on its own can enable weight management, but that in supplementation to a proper diet and adequate exercise, it can contribute to one's capacity to manage their weight appropriately, in the long-term. In some, mindfulness establishes greater self-awareness, which leads to the development of the ability to control oneself more optimally, which in turn can lead to weight management through a deficit for weight loss, and thereon caloric maintenance to maintain one's weight and avoid the notorious re-gaining phase. It should be noted that anxiety isn't remedied on the collective level, but rather on the individual level; therefore, it should effectively be handled as such. Rather than generalizing solutions to an entire group of overweight or obese individuals, it would be optimal to assess each individual's unique stressors and to thereon establish means to mediate such safely and healthily. In obese individuals who elicit elevated stress levels, mindfulness training should be considered as an effective supplement to their dietary and exercise regimes.

Addressing the Problem with Current Evidence

Although a relatively broad scope can be systematically analyzed, this project will focus on the development of a protocol which addresses body weight and BMI of patients. The project's focus on obesity was motivated by the ever-increasing prevalence across the US and a greater need for solutions in an otherwise misunderstood spectrum. The literature posits that nutritional and exercise plans for weight management are limited in scope. In light of such a limitation, a quality improvement project is being proposed, as a means of determining the

limitations of dieting and exercise.

Study Methods

The types of literature reviewed included national standards, randomized controlled trials, qualitative studies, systematic reviews, evidence-syntheses, cohort studies, case-controlled studies, and literature metanalyses. Emphasis was made on synthesizing information and findings in order to develop a unified understanding of the improvement of weight management efforts. These methods are relevant to this DNP project because proper nutrition and exercise contribute to lowering of body weight and BMI. These methods will be able to be translated to the practice site where the DNP project will be implemented, with anticipated successful results (Sharma & Padwal, 2017).

Significance of Evidence to Profession

The health profession in its entirety is shaped by the health and wellbeing of the population, therefore the use of nutrition and exercise protocols are helpful tools to assist patients with weight management. Nurses are regarded as leaders of health, advocates of techniques, practices, and tools which individuals could utilize to improve health and wellbeing. As such, these leaders must continuously expand their knowledge base, in order to uncover new and innovative techniques for improving patient care. The use of nutrition and exercise protocols will be of use at clinical practices due to the high prevalence of obesity among certain groups such as women, minorities, and low socio-economic groups.

Theoretical Framework

The theoretical model that underpins this DNP project is Sharma and Padwal's (2017) 'aetiological framework,' which posits that the characteristics of a person's socio-cultural, psychological, biomedical, and iatrogenic factors ultimately affect one's energy input,

expenditure, and metabolism (see appendix A). The framework assesses the root causes of weight gain, through three branches, in order to thereon develop appropriate restitutive action for affected persons. The first branch is concerned with whether weight gain and obesity are caused by a slow metabolism, as it considers one's age, sex, genetics, neuroendocrine factors, prandial thermogenesis, brown fat, sarcopenia, post-weight loss, and medications (Sharma & Padwal, 2017). The second branch is concerned with whether weight gain is caused by an increased energy intake, as it considers sociocultural factors, knowledge deficits, saboteurs, mindless eating, physical hunger, emotional eating, psychological factors, sleep deprivation, and medications/pharmaceuticals (Sharma & Padwal, 2017). The third branch is concerned with whether weight gain is caused by a reduction in one's activity level, as it considers one's sociocultural factors, physical limitations, chronic fatigue, musculoskeletal pain, cardiorespiratory, comorbidity, emotional barriers, psychiatric disorder, and medications (Sharma & Padwal, 2017). Wherein feasible, Sharma and Padwal (2017) propose thereon addressing the root causes for a slowed metabolism, increased energy intake, and/or reduced activity level.

Historical Development of the Theory

Aetiological frameworks for understanding obesity can be traced back to the early 19th century when William Banting wrote the first official multifaceted dieting book (Beller, 1978). Banting investigated the overarching causes of obesity because he couldn't quite comprehend the reasons for his own obesity (Beller, 1978). Banting's physicians advised him to eat less, but when he did so, he was always hungry, tired, and his weight loss efforts eventually stagnated. In pursuit of an optimal solution, he restricted certain food groups (sugars and starches) as opposed to merely reducing calories (Beller, 1978). As such, he was the first to advocate a particular dietary regime for weight loss, at a time where mere caloric restriction was noted as being the

solution to obesity (Beller, 1978).

By the late 19th century, William Osler (the father of modern medicine) developed a high-protein diet, since he believed that they provided greater energy and satiety than fats and carbohydrates (Beller, 1978). By the 1950s, weight loss efforts were understood as having health implications that reached beyond mere weight loss or gain, in that certain food groups were found to cause cardiovascular diseases (Bray & Bouchard, 2014). As such, heart-health awareness rose, which opened a whole new realm of factors and determinants (Bray & Bouchard, 2014). The 20th century also saw the rise of stress awareness, as Hans Selye pioneered the field of stress research, wherein he posited empirical data that stress impacts one's health (Bray & Bouchard, 2014). By the mid-20th century, studying the impact that stress had on obesity became ever more prominent, as individuals became more cautious and alert to their behavioral lifestyles than they had ever been before (Bray & Bouchard, 2014). Greater consciousness rose over time, as the mainstream media began alerting individuals about the risks of a poor diet, obesity, stress, and inactivity, and how each is interrelated (Bray & Bouchard, 2014). Although the theories corresponding to an optimal diet have changed over time, the overarching idea that a stressed body is less efficient at metabolizing/burning fat continues to be prevalent.

Applicability of Theory to Current Practice

Sharma and Padwal's (2017) 'aetiological framework' is applicable to the current practice, since it upholds the importance of managing stress, emotion, and mindfulness in the pursuit of weight management/loss. Optimizing population health is central to this practice, hence why it's of great importance to better understand obesity through this particular theoretical framework, so as to thereon investigate the proposed relationships. The analyzed framework proposes a multitude of facets which can exasperate or hamper weight loss efforts, therefore

rather than merely looking at diets and exercise like too many individuals and providers already do, it's essential also to consider other processes which should be better controlled in order to improve one's overall health, and their pursuit of long-term healthy weight sustainability. When healthcare encompasses a holistic perspective, it is better able to provide viable solutions to individuals. Nurses are responsible for investigating new paradigms, advocating for practices which can improve patient health, and thereon refining such practices according to the specific needs of their patients. As such, the framework is certainly applicable to current nursing practice in the area of medical weight loss.

Major Tenets of the Framework

This section will discuss the major tenets in Sharma and Padwal's (2017) aetiological framework, with a consideration of the root causes of weight gain which can be studied through this project.

Low Metabolic Rate. A low metabolic rate can facilitate weight gain and can hamper weight loss efforts, therefore its critical to assess one's rate through an observation of their daily intake in conjunction with their supposed healthy expenditure (Sharma & Padwal, 2017). Lower energy requirements lead to higher risks of obesity. There are various tools and practices which can enhance one's metabolism, such as healthy diets, exercise, and supplementation. The metabolic rate can be influenced by genetics, sex, age, sarcopenia metabolically active fat, medications, and weight reduction (Sharma & Padwal, 2017). In terms of genetic, heritable factors shape between 45-75% of inter-individual variations in BMI, therefore its crucial to consider this factor to optimize healthy and sustainable weight loss (Sharma & Padwal, 2017). Considering genetics can provide a thorough assessment of obesity, which can facilitate the transition towards improving one's health outcomes (Sharma & Padwal, 2017). On average, males have higher

metabolic rates than females, while aging is correlated with a decline in one's metabolism. Meaning, an elderly woman is likely to experience a slowed metabolism when compared to younger individuals or male counterparts (Sharma & Padwal, 2017). Furthermore, medications must be considered, since some can slow a metabolism (beta-blockers), while others can increase the metabolism and thereon promote thermogenesis (beta-adrenergic agents, stimulants, performance-enhancing drugs, etc.) (Sharma & Padwal, 2017). Moreover, a reduction in weight leads to a reduction in energy requirements, meaning that in one's weight loss journey, they will have to either have to continuously decrease caloric intakes or increase their expenditures (exercise) to maintain steady progress (Sharma & Padwal, 2017).

Eating Too Much. Consuming more calories than one expends leads to weight gain while consuming an equal amount as one expends will lead to the maintenance of weight (Sharma & Padwal, 2017). To lose weight, one must consume fewer calories than they expend, over time (Sharma & Padwal, 2017). Eating too much is largely shaped by socio-cultural factors, physiological or homeostatic factors, psychological or hedonic factors, and medications (Sharma & Padwal, 2017).

Psychological and Emotional Factors. Eating and weight loss efforts are highly influenced by psychological and emotional factors, which can cause abnormal behaviors (i.e. overeating, eating unhealthy foods, or under exercising) and can lead to a decrease in one's bodily efficiency (i.e. in metabolizing food, burning fat, developing energy to exercise, etc.) (Sharma & Padwal, 2017). Such factors include stress, frustration, anxiety, feeling lonely, angry, disgusted, unhappy, among others, which can shape one's dietary restraint and physiological functions. Reducing negative psychological and emotional factors can thereon improve one's weight loss efforts by improving one's restraint, control, mindfulness, and physiological

functions (Sharma & Padwal, 2017). Psychological factors which can hamper weight loss efforts include lacking motivation, energy, and interest in eating healthily, dieting, and exercising appropriately. At high enough levels, these factors can elicit depression and/or anxiety, which require professional intervention (Sharma & Padwal, 2017). As such, merely focusing on one's diet and/or exercise patterns when underlying physiological or emotional factors manifest is extremely difficult; therefore one must better comprehend how to improve their states of mind in order to better improve their behaviors and abilities to control their behaviors (Sharma & Padwal, 2017).

Socio-Cultural Factors. Societal and cultural factors can shape one's ability and willingness to pursue a healthy weight range, in that they hold the capacity to shape one's eating patterns and choices, along with inclinations to exercise (Sharma & Padwal, 2017). Such includes belief systems (religious restrictions), habitual patterns (tradition, family, friends), peer pressures (family, friends, media/mainstream), the availability of foods (economics, access, availability), and the environment wherein one interacts with food and other persons (Sharma & Padwal, 2017). Socio-cultural factors can affect one's weight loss efforts, and they can mitigate or exasperate one's experienced psychological and emotional factors — as stress can result from one's socio-cultural interactions, in conjunction with their self-image (Sharma & Padwal, 2017).

Theory Application to the DNP Project

The aforementioned tenets will be applied to the implementation process of the DNP project at the system level. The focus of this project will be on psychological and emotional factors, with particular respect to stress, which can effectively shape one's weight loss efforts. Consideration to socio-cultural factors will also be made, seeing the role they play in shaping one's context. Addressing a slowed metabolism can be quite complex and difficult seeing how it

requires scientific investigations through biological testing; however, addressing an increased energy intake or reduced activity level, while considering stress, sleep, emotion, fatigue, mindfulness, personal limitations, and sociocultural factors, is feasible, seeing how these factors are reportable by subjects, and they solely require some careful self-consideration through introspection (Sharma & Padwal, 2017).

Implementation Framework

Implementation science uses best practice approaches to health care in order to improve outcomes (Moran, Burson, & Conrad, 2017). The framework is appropriate for this project as it strives to improve health outcomes in obese adult women. Such is used to integrate evidence into healthcare practice, as it systematically addresses the research/practice gap. An implementation framework which is applicable to this project is Lewin's Change Model, which postulates that there are three steps in successful change, as denoted by the stages of unfreezing, changing, and refreezing (Moran et al., 2017).

First and foremost, the unfreeze process entails each subject's decision that weight loss is necessary to improve their health (Yoost & Crawford., 2015). Such includes each subject's personal factors which contributed to their realization that they were categorized as 'obese,' and the motivation they developed to pursue weight loss (Yoost & Crawford., 2015). Such enabled the subjects to pursue their weight loss efforts and health promotion; wherein they would obtain the necessary education and tools to spur their weight loss efforts in a healthy and sustainable manner. In conjunction with the dietary and exercise adjustments they sought, many self-determined that they experienced relatively high levels of stress, which further established a need to reduce such, as it would contribute to their health, wellness, and even to their weight loss efforts. Overall, the patients realized that they could no longer continue with their ways, which

prompted a need for change (Yoost & Crawford., 2015). Transitioning from this stage to the next isn't immediate, as it can take time to acknowledge the need, but when it comes about, it's a powerful driver (Yoost & Crawford., 2015).

Secondly, the change process entails utilizing effective change methods through participation in a weight loss program (Yoost & Crawford., 2015). The ascribed weight loss program includes dietary restrictions and exercise plans which were carefully tailored to each individual's unique needs and limitations, in conjunction with a mindfulness training program, as spurred through yoga. To adopt the ascribed changes, the patients had to understand how each process (diet, exercise, and yoga) could contribute to their overall health, wellness, and weight loss journey (Yoost & Crawford., 2015). Ongoing participation in the program ultimately enables the change to ensue, as noted by healthy weight loss progress. Not all of the patients pursuing diets and exercise plans will also seek yoga, but those willing can partake in the program. The change that can be expected depends on how well each subject adheres to their ascribed plan. Furthermore, the subjects communicate with their provider often, to continuously adjust their programs, to partake in the mindfulness program, and to tend to any questions or concerns they may have. Overall, the patients are empowered to act throughout the change model, particularly by healthcare professionals, other patients, friends, and family members (Yoost & Crawford., 2015). In this case, none of the patients can be harmed by the changes, seeing how evidence-driven methods are tailored to everyone's specific needs and limitations.

Thirdly, the refreezing stage comprises anchoring the changes into each persons' lives, in order to guide them toward a future wherein they actively eat healthily and sensibly, exercise adequately, and practice mindfulness (Yoost & Crawford., 2015). Such also comprises developing ways to help the patients sustain the change; particularly by providing them the tools

to maintain their own healthy eating and exercise plans and guiding them toward appropriate facilities which can offer yoga (Yoost & Crawford., 2015). Once the program concludes, it's crucial that the subjects are instilled with the tools to succeed on their own. Hence, why it's crucial that they can sustain their weight loss, as opposed to regaining their weight or re-establishing their unhealthy patterns. Lastly, the success of each patient must be celebrated with a congratulatory sending off (Yoost & Crawford, 2015). Such a celebration can take the form of a victory group walk; wherein all patients can feel empowered to walk together at the conclusion of the program.

Project Design

An evidence-based quality improvement (QI) project design will be utilized for this DNP project. A nutrition and exercise protocol will be developed by the project lead. This design was chosen because the purpose of this project is to improve body weight and BMI in patients at the practice site. This project will consist of both independent and dependent variables. The dependent variable is the amount of weight lost by obese patients, which is identifiable as a reduction in pounds and in BMI. The independent variable is the weight loss protocol being ascribed to obese patients.

The population of interest will be the staff and providers that will implement the protocol in the practice site. Data analysis will be performed using the Statistical Package for the Social Sciences (SPSS). Data analysis will include the collection of data from pre and post implementation chart audit of 30 charts.

The following variables will be included in data collection: weight loss as a change in pounds and in BMI (dependent variable) and the incorporation of the ascribed weight loss protocol (independent variable). To determine such changes, data will be collected both before

and after the intervention. These specific variables will determine if the implementation of a nutrition and exercise protocol affected the outcome of the project.

By using a quality improvement design for this project, the DNP project objectives will be accomplished; namely, the healthcare organization will utilize evidence-based research to optimize the quality of care and outcomes that it provides its patients. The overarching outcome being targeted is healthy and sustainable weight loss for obese patients. After the implementation of the protocol, the pre- and post-implementation data will be compared to determine if there was an improvement in body weight and BMI. By comparing the pre- and post-implementation data after the intervention is implemented, the fourth project objective will be accomplished. This objective is to evaluate the impact on body weight and BMI using the nutrition and exercise protocol through patient chart review.

Population of Interest

The population of interest at the practice site will be the practitioners that will be implementing the nutrition and exercise protocol. Since this is a quality improvement project, all persons at the site will be performing the ascribed changes. The staff comprises of one physician, one Nurse Practitioner (NP), and one Registered Nurse (RN); all three of whom will be implementing the protocol. The exclusion criteria are those who are not employed at the practice site. The patients at the practice site will be secondary to the project implementation in order to determine outcomes.

Setting

The project site is a chiropractic clinic located in New York City. The owner and primary physician within this establishment has approved this project at the practice site. See appendix (B) for the letter which confirms that the project can be implemented at the site. Thousands of

patients are seen at the site every year, for a variety of health and wellness related issues. Such include, obtaining weight loss guidance through customized nutrition and exercise plans, adjusting the muscles and bones of patients through chiropractic manipulations, alleviating tension headaches and migraines, overcoming stress and anxiety, enhancing weak immune system functions, improving flexibility, amongst others. Patients of all ages are seen at the practice site, particularly community members. Patients can gain coverage from a variety of methods, private pay and insurance, and Medicaid and Medicare.

Stakeholders

Since this is a leadership program, indirect patient care is being provided. Additional stakeholders in this project include other employees at the site that have an interest in the project outcomes, the organizational leader, RNs, NPs, service users, mentors, colleagues, and community organizations. These stakeholders include those that will provide support for the project. Rapport will be developed with the shareholders through the use of sharing information, maintaining interviews, and working together to achieve the project aims.

Recruitment Methods

The recruitment method for this project design was that of direct recruitment that consisted of meetings with the staff and providers to provide information about the DNP project and the nutrition and exercise protocol that will be developed by the project lead. The specific staff and providers (Physician, NP, and RN) that will be involved in this project protocol were recruited after listening to a presentation on the proposed nutrition and exercise protocol, which informed them about its potential advantages. Since this is quality improvement initiative all providers and staff will participate in the project. These providers will be working together to meet the project objectives as detailed by the project lead.

Chart Recruitment

Recruitment of charts for the DNP project will include those charts with patients between 18 years old and 75 years old, both male and female. Recruitment of charts will not include those patients that are pregnant, suffer from any underlying condition, or are otherwise incapable of gaining approval from their primary physicians to participate in a nutrition and weight loss inititiave. The reason being that the safety and wellness of all patients is important.

Tools/Instrumentation

The following tools that will utilized for this project are: the nutrition and exercise protocol, an educational PowerPoint, handouts/pamphlets, and a chart auditing tool.

Protocol

The nutrition and exercise protocol (see Appendix C) will be developed by the project lead in collaboration with the medical providers, medical director, clinic manager, and nursing leaders. The protocol will be evaluated for validity through review of content experts at the project site. The protocol lists how the needs assessment comprises determining the weight management specific needs of the patient, pursuing determinants of sustained exercise adherence and improved dietary behavior, developing the intervention, implementing the intervention, and evaluating it thereafter.

Educational Presentation Tool (PowerPoint)

An educational intervention will be used for staff training. This will include a PowerPoint presentation (see Appendix D) developed by the project lead. This will be presented during the implementation phase to educate the staff at the facility on the nutrition and exercise protocol. The information in the PowerPoint is provider-driven, in that it educates the staff on the protocol and what they should teach their patients when communicating with them. The PowerPoint

educational training session will take approximately 120 minutes.

Handouts

Staff will be provided educational handouts (Appendix E) that contain information on nutrition and exercise. These handouts are provider-driven, in that they will instruct providers on the information they should integrate into their teaching patterns, whereby they instruct their own patients on healthy eating, exercise, and weight management. The information in the handouts will be evidence-based practice, as based upon the Health.Gov (2015) guidelines for the US. These national guidelines are intended to be utilized across the nation, hence permission to integrate such information for use in the DNP project is not necessary in this particular regard. Therefore, the handouts are appropriate to use in the project.

Chart Auditing Tool

The project lead will conduct pre and post-implementation chart audits and will develop a chart audit tool (Appendix F). The project will include a pre- and post-implementation chart audit to determine patient weight and BMI. The chart tool will be an Excel spreadsheet used to input the pre and post implementation data from the chart audits and compare pre and post-implementation body weight and BMI. The collected data will be analyzed using the IBM Statistical Package for the Social Sciences (SPSS) software for correlations between the variables and the outcome.

Data Collection

The data collection procedure will consist of pre and post-implementation chart audits. The project lead will conduct the-pre and post-implementation chart-audits. Implementation of the project will take place over a four-week time period. The pre and post-implementation chart audits, and data collection will include 30 charts that meet the inclusion criteria.

The project variables will be collected from the patient charts that meet the criteria. Patient body weight and BMI will be compared. This will allow the project lead to compare body weight and BMI to evaluate whether or not the nutrition and exercise protocol is successful in decreasing body weight and BMI. The data will be compiled into an Excel spreadsheet created by the project lead and analysis will be conducted using the SPSS software. The following statistical test will be performed, a paired sample T-test and a partial correlation controlling for the effects of the protocol/intervention. The data will be de-identified and stored in a secure file that meets the standards of the practice site for security. The data will be identified through two measures, weight in pounds (lbs) and BMI, whereby each measure at the beginning of the protocol will be compared to the measures post-intervention, thus making for two comparable measurements.

Intervention & Timeline

The timeline for this project is six weeks. The timeframe includes implementation of the project intervention, data collection, and analysis/interpretation. The project implementation will start at the beginning of DNP Project III. Data collection from the patient charts will determine if the implementation was successful and beneficial to the patients and practice site. Patient chart reviews will be completed, and patient weight and BMI will be collected and compared, pre and post implementation. Furthermore, approval for implementation of the project has been obtained from the practice site.

Week 1. The education provided will define key weight loss modules, terms, and processes entrenched within the health.gov (2015) diet and exercise protocol. A full understanding of caloric restriction, physical expenditures, and a health-food balance will be explored. The presentation will emphasize the importance of maintaining realistic targets,

striving for sustainability above short-term targets, balance with regard to healthy eating, variety, nutrient density, sugars, carbs, fats, protein, sodium, amongst other key determinants. The project lead will invite the target population, which are the providers at the practice site. Participation amongst the providers will be mandatory as this is a QI inititiave at the practice site. The target population is the providers that will be implementing the protocol; while the stakeholders are those other individuals that have an interest in the project but who are not implementing the intervention.

Week 2. The implementation of the nutrtion and exercise protocol by staff and providers will occur.

Week 3 and 4. The data obtained from the chart audits will be collected. The collection of pre-implementation data from the patient charts will be recorded. In week 4, the collection of post-implementation data from the patient charts will be recorded.

Week 5. Analysis of the data collected from chart audits in the previous two weeks.

Week 6. Interpreting the efficacy of the nutrition and exercise protocol by comparing patient weight and BMI before and after implementation of the protocol to determine if it is beneficial. Since this project requires pre and post chart audits, the charts will provide information pertaining to the BMI and weight beforeand after the protocol implementation. The providers will be documenting the data in the patients'charts. This is outlined in the table below:

Week 1	Educational training of the providers and staff which includes the nutrition and exercise protocol
Week 2	Implementation of the nutrition and exercise protocol by staff and providers
Week 3	Collection of pre-implementation data from the patient charts will be obtained and recorded, specifically, the patient weight and BMI
Week 4	Collection of post-implementation data from the patient charts will be obtained and recorded, specifically, the patient weight and BMI
Week 5	Analysis of the collected data will be performed

Week 6	Evaluation of the efficacy of the nutrition and exercise will be performed by comparing patient weight and BMI before and after implementation of the nutrition and exercise protocol

Ethical Considerations

This project will not require full investigational review board (IRB) oversight since it is a quality improvement initiative. The practice site provided permission to implement the project. Although the facility already uses its own weight loss protocol, the proposed protocol gained approval from the organizational leader, particularly after being supported by evidence-based research, as posited by health.gov (2015), a governmental resource. The project lead will collaborate with the organizational leader (and primary physician) and the nursing staff at the practice site.

The information extracted from the patient charts will be documented on the chart audit tool. No patient names or identifying data will be utilized. HIPAA compliance will be followed. Any patient information that needs to be emailed will be encrypted with the proper software to protect patient information.

Benefits of the participation of the project is to allow the organization and staff to determine if the nutrition and exercise protocol is beneficial to patient care. By providing these benefits to the patients, the nutrition and exercise protocol will also increase patient satisfaction and improve the health of patients. In addition, the practice site will benefit by assisting patients to adapt to healthier lifestyles. A potential risk includes the unwillingness of providers to change current approaches to treatment. There is no compensation to providers for participating in this project.

Plan for Analysis/Evaluation

In order to determine the outcome of the nutrition and exercise protocol, patient weight and BMI will be analyzed and evaluated. The plan to analyze results include collection of data from the patient charts pre and post implementation. Once this data is analyzed, evaluation of weight and BMI prior to implementation of the nutrition and exercise protocol can be compared to weight and BMI after implementation in order to identify the benefit of the nutrition and exercise protocol. The project variables will be collected from the patient charts that meet the criteria. Patient body weight and BMI will be compared across time 1 (pre-intervention) and time 2 (post-intervention). This will allow the project lead to compare body weight and BMI, to evaluate whether or not the nutrition and exercise protocol is successful in decreasing body weight and BMI. The data will be compiled into an Excel spreadsheet created by the project lead and analysis will be conducted using the SPSS software. The statistical tests that will be performed include a paired sample T-test and a partial correlation controlling for the effects of the protocol/intervention. The data will be identified and stored in a secure file that meets the standards of the practice site . The data will be identified through two measures, namely, weight in pounds (lbs) and BMI, whereby each measure at the beginning of the protocol will be compared to the measures post-intervention, thus making for two comparable measurements for each participating subject.

According to Pallant (2016), t-tests should be used when one has two sets of data (such as before and after), and they want to compare the mean score on a continuous variable. The paired sample t-test (repeated measure test) is appropriate because based on the data collected from patient charts the results will be determining if there are changes of BMI scores that are tested at time 1 (before the intervention) and then again at time 2 (post-intervention). Moreover, the

samples (1 and 2) are related, comparing the chart data at two different time periods (Pallant, 2016).

Significance of Project

The potential significance of the project results includes the possibility of influencing future weight-loss and weight-management interventions, with the intent of enhancing the health of the population; particularly with regard to obese and overweight persons. By providing patients with a healthy weight loss trajectory, health can be enhanced, optimizing health and wellbeing, which includes reducing any interfering conditions and costs typically related to unhealthy weight ranges. Nurses can use such information to guide future practice, with the intent of maintaining a continuous quality improvement (CQI) framework across healthcare settings. As identified in the literature review, obesity negatively impacts –individual health as it can increase the risk of high blood pressure, cancer, diabetes, sleep apnea, infertility, and heart disease. Moreover, obesity generally costs more money in terms of long-term health care expenditure. By providing patients with a healthy and sustainable solution, such issues could be mitigated, thus enhancing the overall wellbeing of patients, and the capacity of nurses to continuously enhance the patient experience and outcomes.

Implications for Nursing

The implications for nursing are paramount. The results of this project are important as nurses can provide patients with information such as traditional weight loss programs and nutrition and exercise protocols as a means to improve population health and the overall wellbeing of patients (Roberts, 2013). Expansion of the nursing knowledge base of these weight loss programs and protocols is important as to incorporate innovative, helpful mechanisms which can be used to improve patient health and wellbeing. With greater knowledge, nurses can

advocate for programs, which include nutrition and exercise protocols that may enhance patient care, education, and opportunities within various healthcare settings (Roberts, 2013). Nurses play a crucial role in advocating positive programs which improve holistic health (Roberts, 2013).

Analysis

The aim of this project is to evaluate the impact of the nutrition and exercise protocol through patient chart reviews of pre and post interventions to see if there was an improvement in body weight and BMI in women over 18 years old at the practice site.

This project consists of both independent and dependent variables. The dependent variable is the amount of weight lost by obese patients, which is identifiable as a reduction in pounds and in BMI. The independent variable is the weight loss protocol being ascribed to obese patients. Using a sample size of 30 patient records, the incorporation of the ascribed weight loss protocol was evaluated analogous to the weight loss changes.

Educational training was provided by the project lead to the providers and staff, which included the nutrition and exercise protocol; how the staff and providers will implement the nutrition and exercise protocol; the collection of pre-implementation data from the patient charts was obtained and recorded, specifically, the patient weight and BMI. The collection of post-implementation data from the patient charts was obtained and recorded, specifically, the patient weight and BMI; and the analysis of collected data was performed (Figure 1). The anonymity of all patients is secured, as all patients are recognized by respondent ID numbers as opposed to any personal details.

Pre and Post Implementation Data Collected

Figure 1

Respondent ID #	Pre-Intervention BMI	Post-Intervention BMI
1	30.3	29.7
2	30.5	30
3	31	30.2
4	31.8	30.9
5	31.8	31.1
6	32	31.2
7	32	31.4
8	33	32.2
9	33	32.3
10	33	32.4
11	33.7	33.7
12	33.9	33
13	34	33.1
14	34.3	33.1
15	34.5	33.2
16	34.8	33.5
17	34.9	33
18	34.9	33.9
19	35.1	34
20	35.3	34
21	35.5	34.6
22	35.6	35
23	36.1	35.2

24	36.5	36.4
25	37.1	36.5
26	37.8	36
27	38	36
28	38.3	36.1
29	38.8	37.9
30	39.2	38.1

Data Analysis

The statistical test used to analyze the data is a paired sample t-test. The data collection supports this test on the basis that the paired sample t-test (repeated measure test) helps to analyze changes of the BMI scores that are recorded at time 1 (before the intervention) and then again at time 2 (post-intervention) (McClave & Sincich, 2017; Pallant, 2017). Since the samples (1 and 2) are related, comparing the chart data at two different time periods is effective (Johnson, Turner & Christensen, 2014).

The first step consisted of calculating the difference (diff) between the pre and post-implementation data collections (See Figure 2 below) (Bergin, 2018). The differences are reflected in the fourth column below. SPSS was used for the calculation of the mean, standard deviations, and the t-value calculation; which are presented in figure 3 below (McClave & Sincich, 2017; Pallant, 2017). Importantly, the mean for BMI changes was -0.97; which means that the average BMI loss that was presented by patients was of 0.97 BMI points. Next, the deviation was calculated by taking the difference and subtracting the mean from it (Diff – M = Dev) (McClave & Sincich, 2017; Pallant, 2017). Lastly, the rightmost column presents the square deviation. Furthermore, the calculations used to find the T-value is postulated in Figure 3, as a T-value of -10.48 was found (McClave & Sincich, 2017; Pallant, 2017).

Figure 2

Respondent ID #	Pre-Intervention BMI	Post-Intervention BMI	Difference in BMI	DEV	Sq. Dev
1	30.3	29.7	-0.6	0.37	0.13
2	30.5	30	-0.5	0.47	0.22
3	31	30.2	-0.8	0.17	0.03
4	31.8	30.9	-0.9	0.07	0
5	31.8	31.1	-0.7	0.27	0.07
6	32	31.2	-0.8	0.17	0.03
7	32	31.4	-0.6	0.37	0.13
8	33	32.2	-0.8	0.17	0.03
9	33	32.3	-0.7	0.27	0.07
10	33	32.4	-0.6	0.37	0.13
11	33.7	33.7	0	0.97	0.93
12	33.9	33	-0.9	0.07	0
13	34	33.1	-0.9	0.07	0
14	34.3	33.1	-1.2	-0.23	0.05
15	34.5	33.2	-1.3	-0.33	0.11
16	34.8	33.5	-1.3	-0.33	0.11
17	34.9	33	-1.9	-0.93	0.87
18	34.9	33.9	-1	-0.03	0
19	35.1	34	-1.1	-0.13	0.02
20	35.3	34	-1.3	-0.33	0.11
21	35.5	34.6	-0.9	0.07	0
22	35.6	35	-0.6	0.37	0.13

23	36.1	35.2	-0.9	0.07	0
24	36.5	36.4	-0.1	0.87	0.75
25	37.1	36.5	-0.6	0.37	0.13
26	37.8	36	-1.8	-0.83	0.69
27	38	36	-2	-1.03	1.07
28	38.3	36.1	-2.2	-1.23	1.52
29	38.8	37.9	-0.9	0.07	0
30	39.2	38.1	-1.1	-0.13	0.02

Figure 3

Difference Scores Calculations	
Mean	-0.97
μ	0
S^2	SS/df = 7.41/(30-1) = 0.26
S^2_M	S^2/N = 0.26/30 = 0.01
S_M	$\sqrt{S^2_M}$ = √0.01 = 0.09
T-Value	$M - \mu)/S_M$ = (-0.97 - 0)/0.09 = -10.48

(Zagumny, 2001).

Addressing the P Value

The last statistical analysis consisted of calculating the p-value, which is the level of marginal significance within a statistical hypothesis test which represents the probability of the occurrence of a specific event (Pallant, 2017). In this case, the specific event being examined is BMI decreases under the weight loss protocol. Since the T-value (-10.48) and the DF (29) are

already known (see figure 3), a simple calculation postulates that the p-value is < .00001. Meaning, the P-value is less than 0.0001, which by conventional criteria is considered to be extremely statistically significant (Pallant, 2017).

Final Thoughts

By running a paired sample t-test on the data that was collected, the findings of the DNP project was deemed a success. There was an improvement in BMI, which was demonstrated by the pre and post chart reviews. Pre-intervention data collected from 30 patient charts showed that all findings were above a BMI of 30, which is considered obese (Health.gov, 2015). There was one patient chart which showed no changes in BMI throughout the periods between the pre and post-implementation data collections, and 29 patient charts showed a decrease in BMI. A success rate of 96.67 percent showed there was a decreased BMI of 29 of 30 patient charts. None of the patient charts indicated an increase in BMI. Decreases in BMI signify weight loss and progress towards a healthier weight (Health.gov, 2015). The progress is indicative that the weight loss protocol is effective.

Discussion of the Findings

The objectives of this project were to develop a nutrition and exercise protocol based on evidence-based practice to be used by the staff and providers in a clinical practice site; present the developed nutrition and exercise protocol to staff and providers and evaluate the understanding of the protocol; implement the nutrition and exercise protocol into the care of the clinical practice site patients in the practice setting; and evaluate the impact of the nutrition and exercise protocol through patient chart reviews pre and post-implementation. The overarching goal was to produce healthy weight loss in obese patients, as denoted by decreases to their BMIs. The objectives were accomplished, as will be discussed in this section.

The analyses conducted upon the pre-intervention and post-intervention patient BMIs prove that significant weight loss was achieved by patients partaking in the weight loss protocol across the short implementation phase. Obesity was not mitigated entirely, but substantive progress toward a healthy weight was achieved by 29 of 30 patients (96.7 percent). This assertion was made due to the fact that by subtracting the post-implementation BMI values from the pre-implementation BMI values, negative values were found for 29 of 30 patients, as postulated in the 'Difference in BMI' column in figure 2. It is to be expected that continuing with such progress would eventually allow the patients to attain healthier, non-obese weight ranges, as postulated by BMI levels below 30 (Health.gov, 2015).

Using a paired sample t-test, which is a repeated measure test, the changes in the BMI scores of patients across the pre-implementation (before the intervention) and post-implementation (after the intervention) were analyzed (McClave & Sincich, 2017; Pallant, 2017). Both samples (pre and post-implementation BMI data) are related, on the basis that they present the BMIs of patients at two different time intervals (Johnson, Turner & Christensen, 2014). Using SPSS, the mean was found to be -0.97, meaning that the average BMI decreased by 0.97 across the 30 patient sample. Moreover, the standard deviation was found to be 0.26, which means that the data was not too spread out, as the majority of patients experienced weight losses which were relatively close to the aforementioned mean. The standard deviation indicates that the extent of deviation for a group as a whole was relatively marginal in scope (McClave & Sincich, 2017). The T-value was found to be -10.48 while the p-value was $< .00001$; meaning that there is an extremely statistically significant between the weight loss protocol (the intervention) and weight loss (the desired outcome for the intervention). The p-value postulates the level of marginal significance within a statistical hypothesis test, which represents the

probability of the occurrence of a specific event (Pallant, 2017). As such, by incorporating the presented weight loss protocol, one could statistically expect their patients to lose weight. The success rate of the weight loss protocol, within such a short period of time, is indicative that declines in BMI levels can be replicated on a larger scale, across a larger number of patients, over a longer period of time.

The results of the project were in alignment with previously published literature. Health.gov (2015) postulates that this weight loss protocol is effective at reducing the weight of obese patients on the basis that it does not rob patients of any vital nutrients or food groups, as has been the case with various mainstream diets (i.e., the ketogenic diet, low-carb diet, low-fat diet, high-carb diet, etc.). According to Beller (1978), diet fads may come and go, but sustainable eating has always been the key to maintaining healthy weight ranges. According to Hemmingsson (2014), emotional distress is tied into obesity, so when patients are at peace with their diets, such translates into greater emotional wellness, which in turn permits them to remain on track with their progress. Meaning, when a patient has a diet which is easy to follow, they will feel better emotionally, which will allow them to make sustainable progress (Hemmingsson, 2014). Although stress levels were not analyzed in this project, many patients noted that they felt better emotionally, socially, and psychologically through the balanced weight loss regimen they were introduced to; which would align with the findings postulated by Hofman et al. (2010), Park (2014), and Zhang (2016), in that greater psycho-emotional wellness permits greater progress with regard to weight loss. Nonetheless, this is something to be studied in the future.

Significance/Implications for Nursing

This project is of great significance to nursing. The implications of this project to nursing are paramount. The findings in this project can be used as a teaching tool for nurses. Nurses can

provide patients with information about this weight loss protocol as a means of promoting their health and wellness (Yoost & Crawford, 2015). Nurses can also advocate for the incorporation of this weight loss protocol across their organizations, which was found to be effective (Yoost & Crawford, 2015). Nurses use evidence-based data to continuously improve the quality of healthcare that can be provided across their organizations. When presented with effective tools and mechanisms which attain desirable goals (weight loss), the nurse can incorporate such in their practice, and they can advocate for the expansion of such incorporations across the healthcare systems.

It is significant to be able to contribute to the library of data on weight loss and obesity, as such can help improve the ways in which the obesity epidemic is handled in the future. Expansion of the nursing knowledge base of these weight loss programs and protocols is important as to incorporate innovative, helpful mechanisms which can be used to improve patient health and wellbeing (Moran et al., 2017). Through the incorporation of more knowledge on obesity, nurses can advocate for the incorporation of effective, evidence-based programs. Such programs can include nutrition and exercise protocols which are proven to enhance patient care, education, and opportunities within various healthcare settings (Roberts, 2013). Overall, nurses play a crucial role in advocating positive programs which improve holistic health (Roberts, 2013).

Limitations of Project

Despite the success of the project, there were several limitations with regard to the project design, data recruitment and collection methods, and the data analysis. First and foremost, the duration of the intervention (6 weeks) and the sample size (30-patient charts) were limited. A longer duration with a larger sample size could have provided higher-quality data

(Johnson et al., 2014). For example: a longer period of time for the intervention should show continued weight decreases recorded in the patient charts.

Second, the data recruitment and collection methods were limited to one local healthcare facility. The fact that the patient charts indicated that all patients belonged to one specific socio-environment can be indicative that other factors played a role in shaping the data, such as the time of the year, the opportunities to eat healthy or unhealthy within the community, motivators to eat healthily or unhealthily, opportunities to exercise, amongst other factors (Johnson et al., 2014). Any time a project bases all of its results on a group of individuals from one single community, they must consider the role that the community could potentially play in swaying the results (Yin, 2014).

Third, the data analysis was limited to the information that could be collected, namely, the BMI levels of patients prior to the intervention and after the intervention. Had more data been collected, then more analyses could have been conducted on the overall efficacy of the weight loss protocol. The available data does not tell us anything about the behaviors of these patients across the intervention. We do not know if all the weight loss is merely attributed to the dietary changes being made, or if strenuous exercise programs were also undertaken, which would have exasperated the weight loss progress as well. In any case, the goal was to promote healthy weight loss, which was evidenced in this project.

Dissemination of Project

The findings of this project should be disseminated to the general population, nurses, and other healthcare providers as a means of improving the health and wellbeing of the general population. Any time evidence-based data finds a new way to improve the health and wellbeing of patients, the implications can be immense. This DNP project should be published online and

thereon read by any and all interested persons (Yoost & Crawford, 2015). As a nurse leader, I will advocate on behalf of my findings and the weight loss protocol, to my healthcare organizations, to healthcare providers, and to obese patients willing to make a healthy change. Notably, I will discuss the findings at a local conference called "The New York City Regional Obesity Forum," which brings together researchers from around the nation in order to discuss the latest research pertaining to obesity. I would present my findings through a poster presentation, which can contribute to the open dialogue surrounding the implementation of the ascribed weight loss protocol. Furthermore, I will be disseminating the findings at my practice site, to staff and stakeholders who can learn a lot from this project and how it can help improve patient outcomes. Moreover, I plan on disseminating my findings to the Touro University nursing faculty and to my peers. In today's technological, social-media-driven landscape, the findings of this DNP project can readily be shared across various platforms such as Facebook, Instagram, Twitter, and YouTube, whereupon interested users can be redirected to the full report (Moran et al., 2017). I plan on using all these strategies for dissemination. I will share links to my research on all platforms that I can, as a means of maximizing the exposure that the project has in the world. Obesity afflicts humans across the world; hence, sharing the findings of this project can potentially assist individuals around the world who are looking for a sustainable weight loss solution. Overall, this report has the potential to reach the target population.

Project Sustainability

When it comes to weight loss and healthy weight maintenance, the sustainability of this project is dependent on the delivery of the information by health care providers to each person and how vested they are to a diet and exercise program (Hruby & Hu, 2015). The sustainability of this project within my practice site is a certainty on the basis that the expected outcomes were

presented, which in turn is optimal to the optimization of patient outcomes and the improvement of the general health of our patients. My practice site will continue to offer this program, and it will continue to monitor results. My peers and organizational leaders were highly supportive of the project and the results it elicited; hence, it is sustainable, particularly through the continuous quality improvement (CQI) framework that our site maintains as a means of ensuring that continuous analyses, re-assessments, and refinements are made across the board as a means of mitigating any weaknesses and amplifying the strengths of our practices.

Based on the improved results, this intervention will continue at the practice site. Our organization will continue to sustain the results through our CQI. As a DNP nurse leader, I will lead the CQI by continuously seeking new evidence-based information, which can help us improve our practices.

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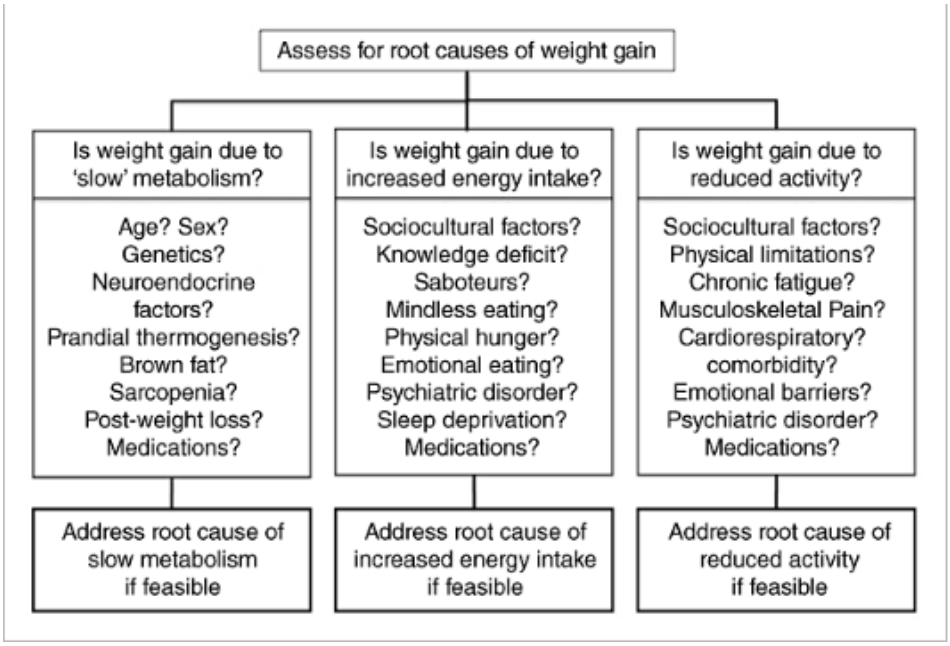
Appendix A

Theoretical Framework Diagram



(Sharma & Padwal, 2017).

Appendix B

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Email drrseibert@aol.com

March 23, 2018

Dear Dr. Judith Carrion,

I, Dr. Seibert, authorize Catherine Enaho, to conduct her DNP project at my facility, Seibert Chiropractic, in accordance with the exercise and nutrition protocol that she is developing.

Sincerely,

Dr. Richard Seibert

1991 Merrick Ave.

Merrick, NY 11566

Appendix C

This protocol is provider-driven. It lists the approaches providers must take when dealing with patients. They will be tasked with educating and instructing patients in the following areas:

Consume a healthy eating pattern that accounts for all foods and beverages within an appropriate calorie level.

A healthy eating pattern includes:

- A variety of vegetables from all of the subgroups—dark green, red and orange, legumes (beans and peas), starchy, and other
- Fruits, especially whole fruits
- Grains, at least half of which are whole grains
- Fat-free or low-fat dairy, including milk, yogurt, cheese, and/or fortified soy beverages
- A variety of protein foods, including seafood, lean meats and poultry, eggs, legumes (beans and peas), and nuts, seeds, and soy products
- Oils

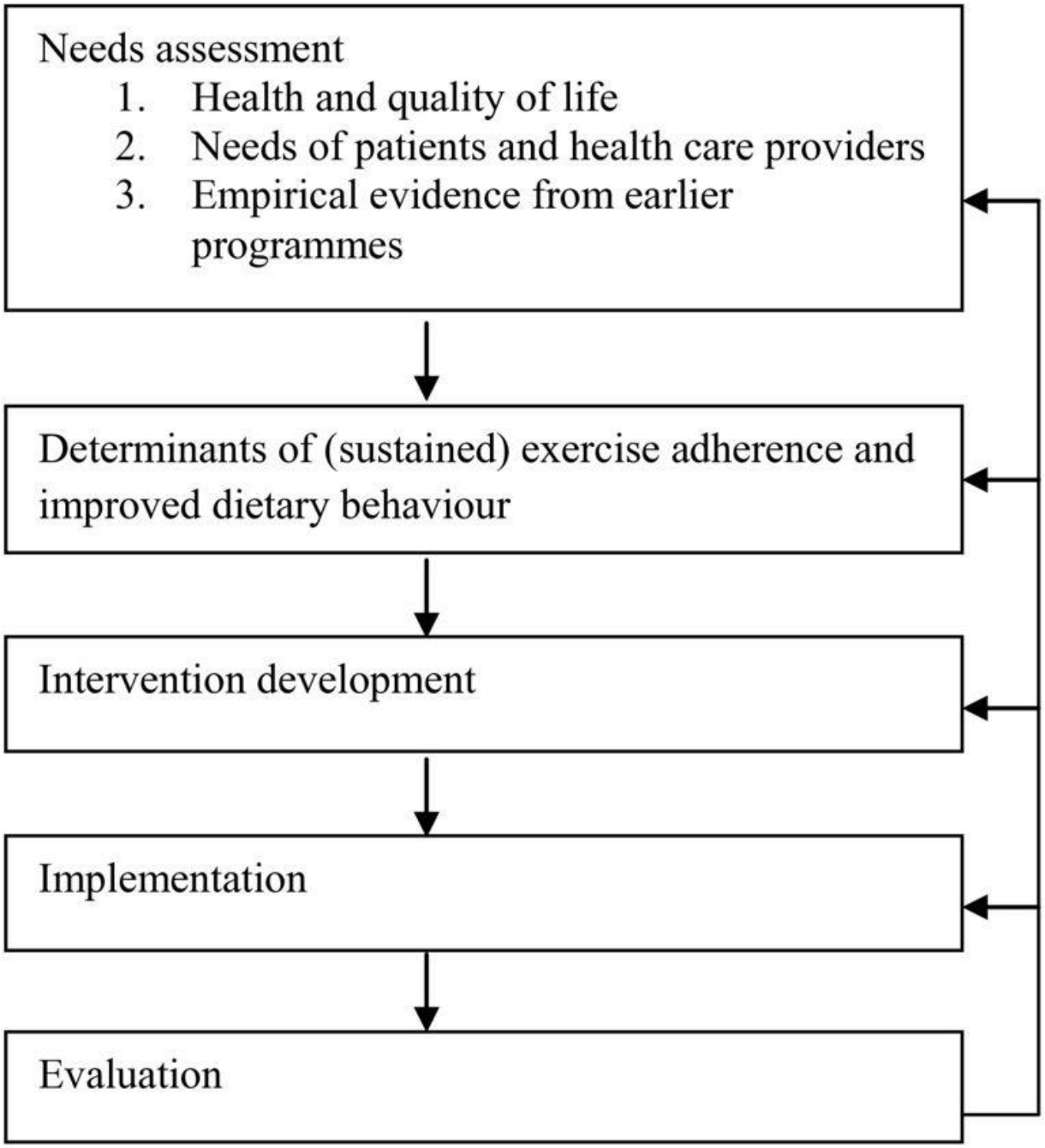
A healthy eating pattern limits:

Saturated fats and *trans* fats, added sugars, and sodium

Key Recommendations that are quantitative are provided for several components of the diet that should be limited. These components are of particular public health concern in the United States, and the specified limits can help individuals achieve healthy eating patterns within calorie limits:

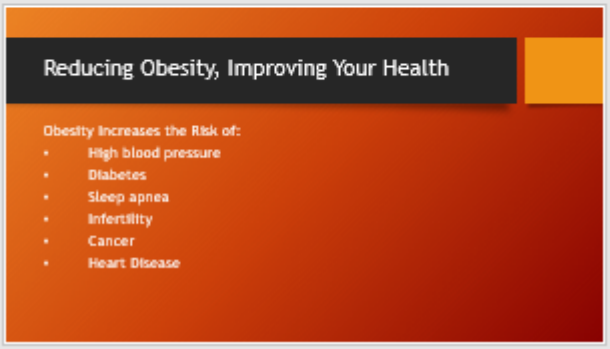
- Consume less than 10 percent of calories per day from added sugars
- Consume less than 10 percent of calories per day from saturated fats
- Consume less than 2,300 milligrams (mg) per day of sodium
- If alcohol is consumed, it should be consumed in moderation—up to one drink per day for women and up to two drinks per day for men—and only by adults of legal drinking age.

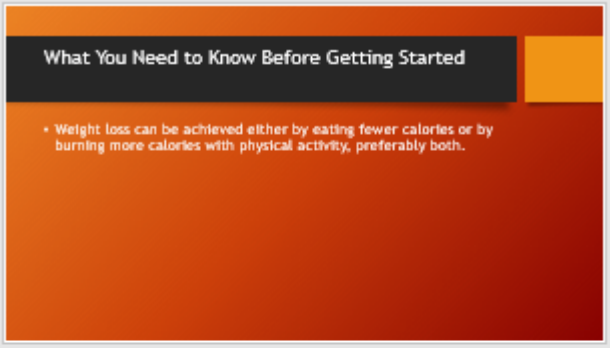
In tandem with the recommendations above, Americans of all ages—children, adolescents, adults, and older adults—should meet the *Physical Activity Guidelines for Americans* to help promote health and reduce the risk of chronic disease. Americans should aim to achieve and maintain a healthy body weight. The relationship between diet and physical activity contributes to calorie balance and managing body weight. As such, the *Dietary Guidelines* includes a Key Recommendation to: Meet the *Physical Activity Guidelines for Americans*.



(Health.gov, 2015)

Appendix D: Educational Presentation Tool (PowerPoint)






Health.gov Guidelines
Follow a healthy eating pattern across the lifespan.
All food and beverage choices matter.
Choose a healthy eating pattern at an appropriate calorie level to help achieve and maintain a healthy body weight, support nutrient adequacy, and reduce the risk of chronic disease.
Limit calories from added sugars and saturated fats and reduce sodium intake.
Consume an eating pattern low in added sugars, saturated fats, and sodium.
Cut back on foods and beverages higher in these components to amounts that fit within healthy eating patterns.
Focus on variety, nutrient density, and amount
• To meet nutrient needs within calorie limits, choose a variety of nutrient-dense foods across and within all food groups in recommended amounts.
Shift to healthier food and beverage choices.
Choose nutrient-dense foods and beverages across and within all food groups in place of less healthy choices.
Consider cultural and personal preferences to make these shifts easier to accomplish and maintain.
Limit calories from added sugars and saturated fats and reduce sodium intake.
Consume an eating pattern low in added sugars, saturated fats, and sodium.
Cut back on foods and beverages higher in these components to amounts that fit within healthy eating patterns.
Support healthy eating patterns for all.
• Everyone has a role in helping to create and support healthy eating patterns in multiple settings nationwide, from home to school to work to communities.

Appendix E: Handouts

What You Need to Know Before Getting Started

Weight loss can be achieved either by eating fewer calories or by burning more calories with physical activity, preferably both.

A healthy weight loss program consists of:

- A reasonable, realistic weight loss goal
- A reduced calorie, nutritionally-balanced eating plan
- Regular physical activity
- A behavior change plan to help you stay on track with your goals

We want to help you with each of these components.

Keep in Mind

- Calories count
- Portions count
- Nutrition counts
- Even a small amount of weight loss can lead to big health benefits
- Strive to develop good habits to last a lifetime
- Discuss weight loss with your doctor before getting started

Getting Started

- Check your Body Mass Index (BMI) - an indicator of body fat - and see where it fits within the BMI categories.
- Discuss weight loss with your doctor and decide on a goal. If you have a lot of weight to lose, set a realistic intermediate goal, maybe to lose 10 pounds. Remember that even a small amount of weight loss can lead to big health benefits.

How Do I Know Which Weight Loss Plan is Right For Me?

- Keep in mind that you want to develop lifestyle habits that will help you maintain your weight in a healthy range. A short-term "diet" that you "go on" and then "go off" is not the answer to long-term weight management.
- In choosing how to go about losing weight, keep in mind key habits of people who have lost weight and kept in off. These people are called "Successful Losers" by the weight control experts who have studied them.

Key Behaviors of Successful Losers*

- Getting regular physical activity
- Reducing calorie and fat intake
- Eating regular meals, including breakfast
- Weighing themselves regularly
- Not letting small "slips" turn into large weight regain

Staying On Track with Your Goals

Setting realistic goals and tracking your progress are key to your success. In fact, research has shown that those who keep track of their behaviors are more likely to take off weight and keep it off. A reasonable rate of weight loss is 1 to 2 pounds per week.

Figure 1(Health.gov, 2015)

Appendix F

Subject #	Participation in Protocol/Intervention 1=yes, 2=no	Age	Weight & BMI at Time 1 (Start)	Weight & BMI at Time 2 (End)	Total Differences in Weight & BMI
1					
2					
3					
4					
5					
5					
6					
7					
8					
9					
10					