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PROVIDER AWARENESS ASSOCIATED WITH
LIFESTYLE INTERVENTIONS AND ADULT OBESITY

A Project Submitted to the Graduate School in Partial Fulfillment of the
Requirements for the Degree of Doctor of Nursing Practice

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PROVIDER AWARENESS ASSOCIATED WITH
LIFESTYLE INTERVENTIONS AND ADULT OBESITY

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PROVIDER AWARENESS ASSOCIATED WITH LIFESTYLE INTERVENTIONS AND ADULT OBESITY

An Abstract of the Scholarly Project by
Reilly Tackett

The obesity epidemic cannot be solved through a single solution. A complex problem like obesity requires an intricately designed approach, comprised of both behavioral and environmental changes (Centers for Disease Control, 2015). Obese adults attempting to alter their lifestyles often experience barriers to success. One such barrier is a provider who may be unfamiliar with evidence-based lifestyle interventions. Research suggests large variances both in provider knowledge levels and practice recommendations associated with adult obesity. This study's purpose was; to determine if provider recommendations reflected clinical practice guidelines associated with adult obesity, to measure current levels of provider knowledge, and to improve knowledge levels through education. A survey was administered to participants to determine their knowledge levels and current practice recommendations. Following review of education, a second survey assessed for improved levels of knowledge associated with adult obesity recommendations. Completion of a *t*-test indicated with statistical significance participant knowledge levels improved following review of education. Qualitative results examining current provider recommendations highlighted interventions which were evidence-based, as well as those which were inconsistent with current guidelines. This study reinforced the idea that a provider must be aware of evidence-based recommendations to provide their obese adult patient population with quality care.

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CHAPTER I

Introduction

Obesity, as defined by the World Health Organization (WHO, 2016), is an excess of body fat which has a negative impact on an individual's health. A central cause of obesity is caloric imbalances (Arcangelo & Peterson, 2013). Within our current culture in the United States standard dietary habits tend to include poor nutritional content consumed in excess. This, coupled with lifestyle behaviors which incorporate sedentary habits over physical activity, creates an imbalance in energy consumed versus energy expended. These variables are often not the lone cause of obesity; instead disease development occurs in response to a combination of these, and other factors. Genetics, medications, behaviors, and food marketing can all be potential contributors to the development of obesity (Centers for Disease Control and Prevention, 2015).

Adult obesity is classified through the calculation of body mass index, (BMI). BMI allows an individual's weight to be categorized and compared to others, it is also a useful statistic for analyzing weight at the population level (WHO, 2016). BMI is a ratio of height and weight using the formula (kg/m^2). According to WHO, adult obesity is defined as an individual with a BMI greater than or equal to thirty. As with any screening tool BMI is not diagnostic in terms of overall health. Rather it is an index guide that has regularly demonstrated the ability to correlate closely with abnormal body fat and adverse

health outcomes. While not diagnostic, BMI has been shown to provide similar results to the more sensitive and direct methods used to measure the body fat of an individual, (Centers for Disease Control and Prevention, 2015).

Within the United States more than one third of the adult population, aged 20 and older, falls within the classification of obese as measured by BMI (Centers for Disease Control and Prevention, 2015). In 2015, the Centers for Disease Control and Prevention (CDC), published their results from the National Health and Nutrition Examination Survey. This survey presented an overview of the prevalence of obesity within the United States between 2011 and 2014. The results indicated more than thirty-six percent of adult Americans were obese. Overall, the prevalence of obesity was lower in Americans aged twenty to thirty-nine than it was in Americans aged forty and older. Prevalence of obesity was also inversely proportionate to education level. Individuals with a high school education or less had an obesity incidence of over thirty-five percent. While some states, specifically those in the south, had a higher rate of adult obesity, across all states there was a prevalence of at least twenty percent of the adult population being categorized as obese. The obesity epidemic is not confined merely to the United States, instead it is a global phenomenon. Worldwide, obesity is responsible for more deaths than undernutrition (WHO, 2016).

Comorbidities often result from or are potentiated by the presence of obesity. Obese adults are more likely to develop a greater number of serious diagnoses than individuals who are within a healthy weight range for their height. A high BMI and the diagnosis of obesity are both indicators an adult has a heightened risk for the development of further health conditions (WHO, 2016). Obese adults are at higher risk

for the development of diabetes, cardiovascular disease, osteoarthritis, and certain types of cancers. Even without the development of comorbid conditions which can result in a decreased quality of life, obesity alone may result in daily difficulties and poor health outcomes.

Apart from the health risks to the individual, the healthcare system as a whole is negatively impacted by the high cost of managing adult obesity along with other associated disorders (CDC, 2015). The financial cost of obesity management within the United States is substantial, with an estimated \$147 billion dollars spent annually on the healthcare of obese adults (Hammond & Levine, 2010). A conservative estimate suggests medical costs incurred by the obese adult may be nearly double the costs incurred by the healthy weight adult. The economic implications are even further reaching when the negative impact of obesity on both unemployment and disability is considered, raising the cost for both (Institute of Medicine, 2012).

Statement of the Problem

Obesity is a preventable condition affecting more than ten percent of the adult population worldwide (WHO, 2016). Due to overwhelming growth of the obesity epidemic many resources have been focused towards examination of habits and behaviors which contribute to obesity development. While genetics may predispose an individual to develop obesity, research consistently identifies lifestyle behaviors as variables which create an environment where metabolic imbalances flourish (Budd & Peterson, 2014). The most effective approach in treating obesity and attaining a better quality of life is lifestyle modification of an individual. Bariatric surgery or pharmacotherapy should only be considered after, and in addition to, those changes in behavior (Burke & Wang, 2011).

Experts have agreed that the most important lifestyle modifications to cultivate within the treatment of obesity include adequate yet appropriate nutritional intake, regular physical activity, and improved levels of self-efficacy. Successful weight loss and management has been achieved and maintained when an individual successfully integrated these changes into their lifestyle (Annesi, Johnson, & McEwen, 2015).

Published in 2010, Healthy People 2020 outlined the national objectives which strive to improve America's current state of health in order to attain a better standard of health and wellness by the year 2020. As the obesity epidemic continues to grow in the United States, it is addressed within multiple objectives by Healthy People 2020. Nutrition and weight status are outlined within an objective which discussed the importance of maintaining a recommended BMI and eating a nutritious diet. The driving force behind maintaining a nutritional diet and recommended body weight is that chronic disease, like obesity, is less likely to develop. If this were the case, life expectancy would be longer, and an individual's quality of life would be higher than it would be otherwise (Healthy People 2020, 2010).

The benefits of physical activity are also described in the Healthy People 2020 objectives. Health benefits from regular physical fitness included lowering an individual's risk for disease development, as well as improving overall health and quality of life (Healthy People 2020, 2010). An obese adult's adherence to a treatment plan which included nutrition and fitness was proven successful in achieving weight loss (Burke & Wang, 2011). Both in the context of healthy dietary choices as well as consistent physical activity, a heightened level of self-efficacy proved to be an important development which led to overall improvement in lifestyle behaviors. Adult obesity is not

an issue which can be addressed through a single intervention. Instead, a more suitable approach would be one which encompassed multiple interventions which addressed lifestyle behaviors and assisted in the adoption of healthy habits (Annesi, Johnson, & McEwen, 2015).

Significance to Nursing

The obesity epidemic must be addressed through a combined effort of the government, community, healthcare providers, and the obese individual themselves. To be effective, healthy nutrition habits and consistent physical activity must be incorporated into the treatment approach (CDC, 2015). The healthcare provider should be prepared to assist the obese adult in constructing a manageable, safe, and evidence-based plan of care regarding weight loss and management. In a 2010 study, over two hundred health care providers were tested over their knowledge regarding lifestyle modifications. Study results indicated a large percentage of the providers overestimated their knowledge level (Parker, Steyn, Levitt & Lombard, 2011). In the clinical setting patients often come into contact with healthcare professionals who are ill-equipped to provide accurate information in reference to lifestyle modifications. The incidence of such an encounter taking place is most unfortunate. This is especially true when considering an individual who takes necessary guidance from a healthcare provider is more likely to successfully modify their lifestyle behaviors.

For the healthcare provider education is only the first step of many in the treatment of the obese adult. Motivating the obese individual to take action and change their behavior is a key factor in addressing the obesity epidemic one patient at a time. Another step towards success is to create an environment for the obese adult in which

their lifestyle modifications can realistically be maintained long-term (Institute of Medicine, 2012). The healthcare provider should have open lines of communication with the patient, which allows education to take place in a constructive way. Discussions associated with motivation must be a priority, and steps should be taken to create an environment in which the patient can be successful. As a provider, it will be imperative to be well-equipped to care for the obese patient population. Inadequate management of the chronic condition can lead to disability, disease, and ultimately death. Lifestyle modifications such as adequate nutrition and regular fitness can address the energy imbalance with which so many obese individuals struggle. Certain behaviors which lead to obesity may not be easily modifiable, but if the healthcare provider and patient work together they can take steps towards effective weight management.

Specific Aims/Purpose

The specific aim of this scholarly project was to assess current recommendations and levels of provider knowledge within the clinical setting and enhance that knowledge level through exposure to pre-existing clinical practice guidelines. An educational resource was developed which reflected current recommendations associated with adult obesity as described by relevant clinical practice guideline. The focus of this study surrounded lifestyle interventions such as dietary habits, physical activity regularity, and optimal behaviors contributing to effective weight loss and management.

An educational resource which reflected clinical practice guidelines and research was developed and reviewed by healthcare providers. The presented information represented current, evidence-based, recommendations and translated that information into clearly stated lifestyle interventions. The educational resource served as a review of

recommended obesity management practices. A concise, realistic educational session can also be completed with a patient by walking them through the patient portion of the educational resource. The resource could provide a patient with evidence-based guidelines which are translated into realistic goals. The finalized educational resource was reviewed by a Doctor of Nursing Practice who regularly managed the care of obese adults within their practice.

The specific aims of this study were closely aligned with the material found within *The Guideline for the Management of Overweight and Obesity in Adults* (2014), completed by the American Heart Association, American College of Cardiology, and The Obesity Society (AHA/ACC/TOS), and published in, "*The Journal of the American College of Cardiology*". The recommendations within the guideline placed an emphasis on interventions associated with nutrition, physical activity, self-efficacy, and lifestyle habits. The authors of this guideline noted the importance of a holistic approach to the management of adult obesity. They addressed a multitude of influencing factors in a way which aligned with guideline recommendations proven to be effective in their approach to adult obesity management. There were a number of strategies within the guideline which contributed to effective, realistic methods of obesity management.

The purpose of this study was to assess current levels of provider knowledge within the clinical setting and enhance that knowledge level through the utilization of pre-existing, evidence-based, clinical practice guidelines. In order to accomplish the study's purpose an assessment was completed of current provider knowledge levels and practices within the clinical setting associated with adult obesity recommendations. Then provider knowledge levels were enhanced through the utilization of pre-existing clinical

practice guidelines represented within an educational resource. As a result of this study participants were left with a resource which could be easily integrated into the care of their obese adult patient population. Use of the educational resource in the practice setting would ensure that up-to-date education which aligned with evidence-based recommendations, was integrated into patient care.

Theoretical Framework

This project was grounded in Pender's Health Promotion Model which examines the behaviors and attitudes contributing to health and wellness in an individual (Alligood, 2014). The Health Promotion Model depicts a framework for research that identifies healthy lifestyle behaviors and the interventions necessary to effectively integrate them into one's life (Pender, Murdaugh, & Parsons, 2011). First developed in 1982, the Model has been revised since to reflect current perspectives and findings. The focus of the Model is identification of components within an individual, their environment, and health, which can contribute to the application of healthy behaviors. This focus is further highlighted by the seven specific assumptions outlined within the Health Promotion Model.

1. Persons seek to create conditions of living through which they can express their unique human health potential.
2. Persons have the capacity for reflective self-awareness, including assessment of their own competencies.
3. Persons value growth in directions viewed as positive and attempt to achieve a personally acceptable balance between change and stability.
4. Individuals seek to actively regulate their own behavior.

5. Individuals in all their biopsychosocial complexity interact with the environment, progressively transforming the environment and being transformed over time.
6. Health professionals constitute a part of the interpersonal environment, which exerts influence on persons throughout their lifespan.
7. Self-initiated reconfiguration of person-environment interactive patterns is essential to behavior change.

The Health Promotion Model states fourteen theoretical propositions which provide an explanation regarding the process of individual and health evolution through interaction with their environment (Allgood, 2014).

1. Prior behavior and inherited and acquired characteristics influence beliefs, affect, and enactment of health-promoting behavior.
2. Persons commit to engaging in behaviors from which they anticipate deriving personally valued benefits.
3. Perceived barriers can constrain commitment to action, a mediator of behavior as well as actual behavior.
4. Perceived competence or self-efficacy to execute a given behavior increases the likelihood of commitment to action and actual performance of the behavior.
5. Greater perceived self-efficacy results in fewer perceived barriers to a specific health behavior.
6. Positive affect toward a behavior results in greater perceived self-efficacy.
7. When positive emotions or affects are associated with a behavior, the probability of commitment and action is increased.

8. Persons are more likely to commit and engage in health-promoting behaviors when significant others model the behavior, expect the behavior to occur, and provide assistance and support to enable the behavior.
9. Families, peers, and health care providers are important sources of interpersonal influence that can increase or decrease commitment to and engagement in health-promoting behavior.
10. Situational influences in the external environment can increase or decrease commitment to or participation in health-promoting behavior.
11. The greater the commitment to a specific plan of action, the more likely health-promoting behaviors are to be maintained over time.
12. Commitment to a plan of action is less likely to result in the desired behavior when competing demands over which persons have little control require immediate attention.
13. Commitment to a plan of action is less likely to result in the desired behavior when other actions are more attractive and thus preferred over the target behavior.
14. Persons can modify cognitions, affect, interpersonal influences, and situational influences to create incentives for health promoting behavior (Pender, Murdaugh, & Parsons, 2011).

Pender's model recognizes an individual is going to be influenced by their environment and will be more likely to maintain behavioral modifications if they are supported and motivated to do so (Alligood, 2014). Applying this theory in the context of obesity required an understanding of internal and external influences affecting the individual's food and activity choices as well as other lifestyle factors. Strategies outlined

within the theory can contribute to overcoming barriers which negatively impact the health and wellness of an obese individual. The theory states that while an individuals' past choices do affect them, they also have the ability to act in a way that will move them towards achieving their health goals (Alligood, 2014). Behavior modification, self-regulation and self-efficacy were all key concepts of both the Health Promotion Model and this scholarly project. These concepts created a framework to follow when identifying evidence-based research to be included within the educational resource. Throughout this scholarly project Pender's Health Promotion Model served as a guide by which to achieve the desired outcome of healthy lifestyle behaviors.

Research Questions

1. What is the current level of provider knowledge associated with adult obesity?
2. Will there be an increase in the knowledge level of healthcare providers associated with adult obesity recommendations following exposure to a clinical practice guideline based educational resource?
3. Do healthcare provider's patient recommendations closely align with clinical practice guidelines in regard to adult obesity?

Definition of Key Terms and Variables

The following definitions were relevant to this scholarly project and contributed background information associated with the purpose of this study.

1. Body Mass Index (BMI): the formula used to determine a BMI utilizes the height and weight of an individual, calculating the individual's weight in kilograms and then dividing the value by the square of their height in meters, (kg/m^2), (World Health Organization, 2016). This screening tool is not diagnostic in terms of

overall health, rather it is an index guide that has regularly demonstrated the ability to correlate closely with abnormal body fat and adverse health outcomes. While not diagnostic, the BMI has shown to provide similar results to the more sensitive and direct methods used to measure the body fat of an individual, (Centers for Disease Control and Prevention, 2015).

2. Obesity: an excess of body fat which may negatively impact an individual's health (World Health Organization, 2016). Adult obesity classification is determined through the measurement of an individual's body mass index, (BMI). Adult obesity is defined as an individual with a BMI greater than or equal to thirty.
3. Behavioral Modification: application of principles of learning to substitute desirable responses and behavior patterns for undesirable ones (Merriam-Webster Dictionary, 2017).
4. Self-Efficacy: efficacy is defined as the power to achieve a specific result or effect. It is often synonymous with such terms as: effectiveness, efficiency, and productiveness (Merriam-Webster Dictionary, 2017). Albert Bandura built upon this definition when he described the attributes of self-efficacy. He defined self-efficacy as the ability a person has to believe and have faith that they are capable of achieving a certain effort. He described it as having a certain level of influence over a situation in order to determine the outcome, (Bandura, 1994).
5. Clinical Practice Guidelines: a guideline based upon a systematic review of the evidence that assesses both the potential harms and benefits of the recommended care and alternative options for care (National Guideline Clearinghouse, 2011).

Logic Model

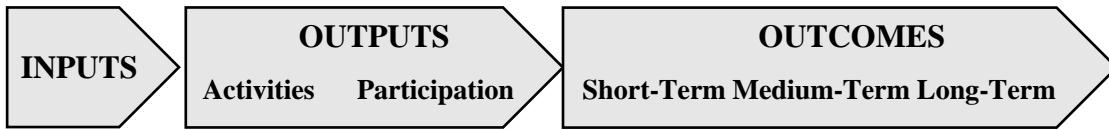
A logic model can accurately depict the project as well as the processes that are completed through the project's efforts. For this scholarly project, a logic model was developed to demonstrate the associations between the inputs, activities and participations, and the outcomes. The outcomes were further separated to show the short-term, medium-term, and long-term effects of the intervention. The first of two short-term outcomes of this scholarly project was an evaluation of current provider recommendations within the clinical practice setting. The second short-term outcome was determining the level of provider knowledge regarding adult obesity and lifestyle interventions associated with obesity. The medium-term outcome of this scholarly project was to determine if an evidence-based educational resource could increase the level of provider knowledge associated with evidence-based practice guidelines and adult obesity recommendations. The long-term outcome of this scholarly project was creating the potential for utilization of the educational resource within the context of provider-review of recommendations, and incorporation into patient education within the clinical setting.

The project's purpose and context were also included within the logic model so that influencing factors were easily identifiable. The project's purpose was to: assess what recommendations were currently being used by primary care providers, measure knowledge levels regarding evidence-based recommendations associated with adult obesity and improve provider knowledge levels through integration of an educational resource. The context detailed the target audience as the educational resource was directed towards primary care providers and, subsequently, any patients with which they completed educational sessions.

The current state of adult obesity within the United States calls for interventions throughout the healthcare system with a high priority placed within the primary care setting. This study was designed to contribute to the primary care provider's knowledge base and enhance their quality of care. Recommendations were included in order to encourage the implementation of effective interventions within the obese adult population. Anticipated outcomes included enhancement of provider knowledge and supplementation of patient education with effective, evidence-based lifestyle changes.

Figure One:

Adult Obesity Logic Model



<p>Research</p> <p>Clinical Practice Guidelines</p> <p>Time</p> <p>Advisory Council</p> <p>Pittsburg State University School of Nursing</p> <p>Writing Center</p>	<p>Review of Literature</p> <p>Review of Clinical Practice Guideline</p> <p>Analysis of current provider recommendations</p> <p>Implementation of educational resource</p> <p>Evaluation provider knowledge level post-exposure to educational resource</p>	<p>Healthcare Providers</p> <p>Nursing Educators</p> <p>Students</p>	<p>Evaluate current provider recommendations within the clinical practice setting</p> <p>Determine the level of provider knowledge regarding adult obesity and lifestyle interventions associated with obesity</p>	<p>Determine if an evidence-based educational resource can increase the level of provider knowledge associated with evidence-based practice guidelines and current adult obesity recommendations</p>	<p>Healthcare providers will be able to use the resource to review recommendations and also incorporate the information into patient education within the clinical setting</p>
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PURPOSE

- Assessment of recommendations currently being used by primary care providers.
- Measure provider knowledge levels regarding evidence-based recommendations associated with adult obesity.
- Supplement provider knowledge level with an educational resource.

CONTEXT

- Educational resource directed towards healthcare providers.
- Implement effective interventions, increase provider knowledge, and supplement patient education with effective, evidence-based lifestyle changes.

Summary

The answer to the obesity epidemic is not a short-term management approach, instead the focus should be on a new lifestyle altogether. Lifestyle interventions should not only address dietary habits, but also physical activity. An environment must be developed where behaviors can be modified, and the individual can successfully maintain lifestyle changes. In order to effectively manage adult obesity, the patient needs to be able to reduce excess weight and control their body weight consistently. Experts agree a multi-factorial treatment approach is the most appropriate choice as it addresses numerous factors contributing to adult obesity. As providers, we must be well-equipped to address factors contributing to the condition of obesity and provide the patient with the education and treatment interventions needed to be successful.

CHAPTER II

Literature Review

A systematic review of the literature was conducted in order to gain a comprehensive understanding of adult obesity. A search was completed using the following online databases:

- CINAHL
- ProQuest Nursing and Allied Health Journals
- UpToDate
- PubMed

Websites of major health organizations, such as the Centers for Disease Control and Prevention (CDC), and relevant course textbooks were also reviewed to gather perspective on the current state of literature and available data. The inclusion of older materials such as manuals and original articles was based on their merits and the value they contributed to this scholarly project. The results of the review of available research consisted of peer-reviewed journal articles and clinical practice guidelines which examined topics associated with adult obesity.

Research covering the concepts of nutrition, physical activity, and self-efficacy were the sub-categories of focus when the search was narrowed and further examined.

The keywords searched in order to gain detailed information regarding the previously mentioned topics and associated supplemental information were:

- Adult Obesity
- Behavior Modification
- Nutrition
- Physical Activity
- Self-Efficacy
- Provider Knowledge
- Intervention
- Management
- Treatment

In order to reduce the number of potential articles those with a focus on childhood or adolescent obesity were excluded from the search results. To ensure information was both recent and relevant, only items published within the last ten years were included. Publication in English, and full text availability were two further stipulations which narrowed the body of available literature. Once the original search results were narrowed the remaining content was further reviewed to assess for relevant and valuable information to be included within this review of literature.

Obesity Prevalence and Implications

Obesity is a preventable condition affecting over ten percent of the adult population worldwide (World Health Organization, 2016). According to the National Health and Nutrition Examination Survey, within the United States more than one third of the adult population, aged 20 and older, are obese (CDC, 2015). Across all states, there

was a prevalence of at least twenty percent of the adult population being categorized as obese. The US adult obesity rate has remained fairly stable over the past ten years. However, because the rate has not declined, effective interventions are still needed for the alarmingly high rate of obesity (Ogden, Carroll, Kit, Fleagal, 2014).

A high BMI and the diagnosis of obesity are both indicators an adult has a heightened risk for the development of further health conditions (WHO, 2016). Obese adults are more likely to develop a number of serious diagnoses than individuals in a healthy weight range. Obesity heightens the risk of disease development in many cases including; diabetes, cardiovascular disease, osteoarthritis, and certain types of cancers.

While genetics may predispose an individual to develop obesity, the research consistently identifies an individuals' lifestyle behaviors which interact and create an environment where metabolic imbalances flourish (Budd & Peterson, 2014). The most effective approach to managing obesity and attaining a better quality of life is to modify the lifestyle of an individual (Burke & Wang, 2011). Experts agree the most important lifestyle modifications to cultivate within the treatment of obesity include adequate yet appropriate nutritional intake, regular physical activity, and improved levels of self-efficacy (Annesi, Johnson, & McEwen, 2015).

Nutrition and How It Relates to Obesity

The majority of the research reviewed for this study regarding nutrition and obesity was quantitative in nature and focused on dietary guidelines and reduced caloric intake. By reducing total consumed calories, the obese individual can place themselves in a caloric deficit which will result in weight loss (Annesi et al., 2015). The dietary guidelines referenced throughout the literature and by Healthy People 2020 (2010), were

established through governmental research and policy (Dietary Guidelines, 2015). These guidelines encouraged nutrient dense foods like vegetables, fruits, nuts, whole grains, and lean meats. Sugar and fat are limited within a healthy eating pattern, and it is recommended that each of these two components make up less than ten percent of daily caloric intake (Dietary Guidelines, 2015).

In 2008, a research study examined the impact of a 12-week wellness program on the health of over one hundred participants. Dietary recommendations were implemented into the program and the alterations in nutritional intake proved to contribute to weight loss, (Turner, Thomas, Wagner & Moseley, 2008). In fact, the literature showed that the particular diet did not matter, whether it was low-carbohydrate, low-fat, or specialized. As long as the general dietary guidelines were adhered to, and the individual's eating habits were improved upon, successful weight loss was achieved.

Primary care practitioners often interact with an obese adult patient population, discussing weight status and lifestyle interventions such as altering their dietary habits. In 2013, McClinchy, Dickinson, Barron, and Thomas conducted a qualitative study which examined practitioner and patient experiences with obesity and nutritional information in primary care. Both patient and practitioner participants took part in interviews and discussed personal accounts of nutrition topics covered by providers during consultations, as well as experiences when giving or receiving nutritional advice (McClinchy et al, 2013). The study portrayed significant themes within both patient and provider experiences with obesity treatment. A major theme within the patient discussions surrounded the frustrations of weight management, despite receiving education from their providers regarding recommended weight loss interventions. The providers included

within the study focused on their concerns regarding the patient's willingness to adhere to their dietary advice and highlighted their frustrations with patients who appeared to not be making an effort to adopt healthier lifestyles. The complexity of a disease like obesity is evident and makes the development of effective interventions difficult. The information gained through this study highlighted the viewpoint of both sides and identified major issues in an attempt to develop interventions which can more effectively address obesity.

The literature indicates there is more to proper nutrition than basic knowledge of the nutritional value of your diet. In 2014, Annesi and Mareno demonstrated the need to place emphasis on self-regulation skills and self-efficacy levels in order to effectively change nutritional habits. A 6-month, randomized field investigation was conducted in an attempt to assess psychosocial predictors on increased fruit and vegetable intake in adults with severe obesity (Annesi & Mareno, 2014). Within one group a standard nutritional program was implemented and within the other group a nutritional program integrated appropriate dietary choices as well as behavioral modifications. The findings indicated improvements in fruit and vegetable intake, physical activity, self-regulation, mood, and self-efficacy were significantly greater in the participants within the behavioral modification group.

Building upon the results of the previously mentioned study, Annesi, Johnson, and McEwen (2015), conducted a quantitative study that examined the barriers in place restricting an obese adult from successful maintenance of an adequately nutritional dietary intake. The evidence suggested if behavioral modifications, such as cognitive restructuring, were integrated into the treatment of an obese adult, it would equip them

with the ability to control their self-regulatory power. This positively affected their ability to resist overeating, which would have previously been allowed, due to rationalization of their actions (Annesi et al., 2015). The development of self-regulation was important to ensure lifestyle modifications were appropriately maintained. Specifically, in the area of nutrition, once self-regulation was integrated into an individual's behavior, they were able to demonstrate control over their nutritional decisions.

Physical Activity and How It Relates to Obesity

Physical activity plays an important role in maintaining balance between an individuals' energy intake versus their energy expenditure. The numerous health benefits resulting from regular physical activity are made evident throughout literature. A majority of obese adults live a sedentary lifestyle that does not include consistent physical activity.

In one quantitative study researchers designed a randomized control trial which used multiple physical activity interventions to determine whether obese adults could successfully integrate activity into their lifestyles (Schlenk, Lias, Sereika, Dunbar-Jacob, & Kwoh, 2011). Activities, like walking more than two hours per week, and interventions, like a daily physical activity log, proved successful in improving obese individuals' physical activity level and exercise regularity. Tracking the progress of physical activity levels demonstrated overall improvement not only in physical activity but also the perceived ability to regularly exercise.

Alternatively, a quantitative study completed by Lee, Kuo, Fanaw, Perng & Juang, (2012), used an experimental design to determine if the implementation of ten minutes of aerobic activity daily would affect both an individual's perceived ability to

exercise, and their endurance capacity. Over the course of the twelve-week study, the results indicated that ten minutes of daily aerobic activity were unsuccessful in increasing the self-efficacy level or endurance capacity of an individual. There were several limitations noted within the study itself which could have contributed to the unsuccessful outcome. These included a short period of intervention time and conduction of the research in a university environment. One variable noted throughout the literature, but found lacking in this particular study, was integration of the recommended amount of physical activity into the interventions. The World Health Organization (2016) recommends two and a half hours of regular physical activity spread over the course of a week for an adult, which was more than double the amount of time implemented by the above study. While the study successfully demonstrated the importance of physical activity and the health benefits that it provides, it was unable to provide factual data validating the effectiveness of their chosen intervention.

A similar quantitative study was conducted by Annesi, Johnsen and McEwen (2015). However, this study included an intervention which implemented the standard recommendation of two and a half hours of weekly physical activity. Participants adhered to the recommended level of physical activity for a period of six months, and the results reinforced the importance of physical fitness. By the conclusion of the study, participants demonstrated increased perceived ability to engage in physical activity and the ability to utilize physical activity to manage their weight loss (Annesi et al., 2015).

Two relevant qualitative studies were identified in regard to physical activity and obesity. The first qualitative study examined obese adults' perspective regarding physical activity through a phenomenographic approach (Wiklund, Olsén & Willén, 2011). Obese

patients scheduled for bariatric surgery were interviewed and questioned regarding their experiences with physical activity and the perceived prohibitive barriers to being physically active. The participants acknowledged their understanding that regular physical activity would lead to weight loss, health benefits, and a feeling of well-being. Participants discussed the belief that their weight was an obstacle which kept them from being physically active. They stated their reasoning behind this belief was discomfort with others' perceived thoughts about them being active. While participants noted they were inspired by those around them engaging in physical activity, they also indicated that not living up to others' expectations could be a barrier at times. The results of the study gave insight into the experiences of the obese adult. While the participants viewed physical activity as a positive intervention, they voiced concerns associated with perceived barriers which discouraged them from regularly engaging in activity. The study demonstrated the need for physical activity interventions to be tailored to the obese adult's individual needs. An environment conducive to the individual should be a priority in order to see successful outcomes.

The second qualitative study did not have obese adults as the participants; instead, it examined nurse practitioners' perceived barriers to treating obesity with physical activity recommendations (Buchholz, Purath & Rittenmeyer, 2009). Focus groups were created, and the topics discussed pertained to the nurse practitioners' perceived ability to counsel and educate patients in regard to physical activity. Nurse practitioners confirmed integration of physical activity recommendations into their standard treatment plan. They also stated the value of the health benefits which were a result of appropriate physical activity. Though the participants regarded themselves as creative, they also admitted to

experiencing failure when attempting to overcome barriers to patients' physical activity. Such barriers were noted as lack of time or lack of the patients' will or desire to be active. An overall consensus throughout the study was that the incorporation of physical activity assessment was necessary if the nurse practitioners' intentions were to provide holistic care. The strategy described as most effective in overcoming barriers to the implementation of physical activity into a patients' lifestyle was creating a routine tailored to individual needs, taking into consideration any specifics that may need to be addressed.

Frequently an emphasis on physical activity can be overlooked during recommendations for adult obesity interventions. The hesitation is often related to the viewpoint that all of the available management abilities and motivational skills should be directed towards appropriate nutritional alterations. Annesi and Marti (2011) discouraged this approach of deferring physical activity to caloric reduction. Their rationale was that self-regulation and self-efficacy levels were heightened when physical activity was emphasized alongside nutrition. To initiate nutritional interventions most effectively, integration of physical activity was an important component for success. They suggested an emphasis initially be placed both on the areas of nutrition and physical activity when recommending lifestyle interventions for the obese adult (Annesi & Marti, 2011).

Behavioral Factors

Behavioral factors have been identified by researchers as important indicators of successful treatment of adult obesity. Annesi and Tennant (2013) examined the influence behavioral factors had on adults attempting to treat their obesity with physical activity and nutritional interventions. Typical educational practices were contrasted and compared

to education that included development of behavioral factors such as self-regulation and self-efficacy. The group of participants who worked on cultivating behavioral factors while integrating lifestyle changes experienced heightened self-regulation, increased physical activity volume, and increased fruit and vegetable intake. An emphasis on the development and growth of an obese adult's self-regulation and self-efficacy resulted in more effective treatment outcomes. Heightened levels of self-regulation and self-efficacy were found to contribute to improved outcomes, like increased amounts of physical activity and more appropriate dietary choices (Annesi & Tennant, 2013).

Experts agree an obese adult's perceived ability to accomplish a goal, like weight loss, plays an important role in their actual potential to do so. Tigay, Thompson, Sutton, and Lesley (2016) conducted a pilot study to determine participants' level of motivation and associated weight loss. Their perceived self-regulation was determined based on the results of a questionnaire administered before and after the twelve-week study. The results demonstrated that high levels of self-motivation correlated with successful weight loss, indicating motivational tools could be valuable resources when developing treatment plans for the obese adult.

A Multi-Factorial Treatment Approach

Lifestyle modifications have a poor chance of being effectively implemented without validating the existence of self-efficacy in the obese adult (Annesi et al., 2015). If the obese adult perceives they have the ability to maintain adequate nutritional standards and regularly engage in physical activity, their chance of effectively implementing behavioral changes is increased. These statements were evidenced through a quantitative study conducted by Annesi, Johnson and McEwen (2015) examining the behaviors of

obese adults over a six-month period. Participants perceived levels of self-efficacy, regularity of physical activity, and self-regulation of eating behaviors were documented and examined over the course of the study. They were also subjected to treatment sessions which provided education and accountability regarding these areas. The results of the study suggested advances were made in all three areas of activity, nutrition, and self-efficacy. Data also indicated the higher the participants level of reported activity and perceived self-efficacy, the higher their effectiveness was in self-regulating their nutritional intake.

Another quantitative study examining the effectiveness of a wellness program was conducted by Turner, Thomas, Wagner, and Moseley (2008). The program utilized within this study gave participants access to behavioral modification strategies, dietary plans, group fitness activities, and group discussions. The results of the study outlined the success of the participants who took part in all available opportunities. The standard model of a wellness program, or a multi-faceted approach to weight loss for the obese adult, demonstrated effectiveness through this study design (Turner et al., 2008).

Primary care providers may feel overwhelmed when attempting to select effective interventions for the obese adult. Pace et al. (2013), examined the difference in outcomes of obesity interventions by comparing an educational tool which incorporated the development of motivational interviewing to a more standard approach which included traditional practices already used within the clinical settings. There was not a significant difference in participant outcomes depending on which approach they received; instead, the results suggested that commitment and attendance over the ten-month study was the common variable that resulted in weight loss. The study outcome suggested commitment

to healthy lifestyle changes was a positive indicator over time, regardless of the specific methods utilized within the practice setting to implement those changes (Pace et al., 2013).

Often lifestyle modifications alone are unsuccessful in treating weight loss in the obese individual. When met with failure, obese individuals look to their healthcare provider and request information regarding pharmacotherapy. Harden, Cowan, Velasquez-Mieyer and Patton, (2007) examined the addition of pharmacotherapy in conjunction with lifestyle modifications to address weight loss in the obese individual. Participants were divided into two groups, one only implementing lifestyle interventions and the other implementing lifestyle interventions and prescribed medication indicated for weight loss. The results of the treatment indicated the lifestyle interventions alone were not as effective as the combination of lifestyle factors and pharmacotherapy. When lifestyle modifications alone are unsuccessful, other treatment options like pharmacotherapy should be considered in conjunction with nutrition, physical activity, and behavioral modification.

Healthcare Provider Knowledge

Even if obese adult patients have the best of intentions to alter their lifestyle habits, they can experience barriers to success. One such barrier is healthcare providers who are not prepared to provide effective recommendations through education. Parker, Steyn, Levitt, and Lombard (2011) aimed to evaluate this concept further by assessing the knowledge levels of healthcare providers within the primary care setting. Knowledge associated with lifestyle modifications like physical activity and nutrition was assessed and the results demonstrated large variances in degree of knowledge existing among the

healthcare providers. There were also specific knowledge areas which showed greater rates of misinformation; for instance, many of the participants were able to accurately identify concepts of lifestyle modifications but were unsuccessful in the interpretation of those concepts into practical patient advice. The overall consensus of the study was a need for continuing education associated with lifestyle modification education in order to update healthcare providers' knowledge bases (Parker et al., 2011).

What does an interaction between an obese adult patient and their healthcare provider look like? In an effort to answer this question, Kirk et al (2014) designed a qualitative study in which providers were interviewed regarding their interactions with obese adult patients. A sample interview question which provided very informative responses was, "what do you talk about with obese patients?". Answers to this question included behavior changes and both environmental and social factors which influenced obesity. They reported often discussing unrealistic expectations on the part of the obese adult who wanted to fix their health issues immediately. The healthcare providers reported dealing with patient frustration associated with the complex issue of obesity, and the lack of one clear solution to their weight status. They recognized lack of expertise and available time as reasons why they may be unsuccessful in addressing the obese adult's needs. Throughout the study the optimal approach to addressing obesity was described as supportive, individualized, patient-centered care to effectively initiate and maintain lifestyle interventions (Kirk et al, 2014).

Clinical Practice Guideline Selection

Within healthcare, there is a need for clinical practice guidelines in order to direct treatment and create a framework for quality care and successful patient outcomes.

Topics which should be prioritized include; addressing the patients' nutrition, physical activity, lifestyle habits, and behavioral modifications. The purpose being to identify a holistic guideline which can provide insight into a more effective approach to obesity management. Within the context of this scholarly project a guideline was sought after that allowed the obese patient to identify influential factors and address them with the guidance of health care providers and team members, (physicians, advanced practice registered nurses, physical therapists, nutritionists, counselors). An assumption made based on evidence and relevant literature was that a guideline which contained the above-mentioned characteristics had the potential to effectively improve provider knowledge and better facilitate patient education.

The National Guidelines Clearinghouse database was utilized to search for a relevant clinical practice guideline. One guideline fit the criteria listed above and was an accurate representation of the ideas and characteristics which had been envisioned. *The Guideline for the Management of Overweight and Obesity in Adults* (2014), completed by the American Heart Association, American College of Cardiology, and The Obesity Society (AHA/ACC/TOS), was chosen for this project. This source contained highly rated, evidence-based recommendations, which were found to be applicable within the primary care setting.

The AGREE II instrument was used to evaluate the content within the guideline and appraise the value it held (AGREE Next Steps Consortium, 2009). The guideline categorized seventeen recommendations into five critical questions or primary recommendations. The critical questions each had a broad focus as well as further specific and detailed recommendations. Six of these specific recommendations were

selected and practice change recommendations were developed as a result. With the use of the AGREE II tool the guideline evaluation highlighted both strengths and weaknesses. The AGREE II tool was categorized into six domains: 1) Scope and Purpose, 2) Stakeholder Involvement, 3) Rigor of Development, 4) Clarity of Presentation, 5) Applicability, and 6) Editorial Independence. With the use of a Likert-type scoring scale each domain was applied to the guideline and the results were recorded.

While the guideline had strengths differing in degree within every domain it demonstrated a high quality of strength within domains three and four. Domain three, “Rigor of Development,” displayed the efforts that contributed to the development of the body of evidence and the recommendations which evolved as a result. The recommendations were thorough and descriptive, as they outlined the benefits, risks, and effects of the interventions. There was substantial evidence of high-quality strength to corroborate the recommendations’ statements. Along those same lines domain four, “Clarity of Presentation,” highlighted the recommendations as easily identifiable, specific, descriptive in nature, and comprehensive in relation to health management options.

Domains five and six focused on areas of weakness when applied to the guideline. Domain five, “Applicability,” focused on potential cost implications and supportive resources that the guideline reviewed. There was insufficient material included within *The Guideline for the Management of Overweight and Obesity in Adults* (2014), to identify possible needs once the guideline was implemented in the clinical setting. Domain 6, “Editorial Independence,” identified a lack of information detailing the

funding body of this guideline. There was no statement of editorial independence or description of the process established to avoid being influenced through funding. It is unfortunate these weaknesses were identified within the guideline as the content within the recommendations are quality in nature. Overall, the guideline demonstrated that it had value and potential to contribute to positive health outcomes of the overweight and obese.

Summary of Strengths and Weaknesses

Strengths:

- Objectives were presented in a clear manner that created context for guideline scope (Domain 1)
- Relevant questions provided context, stated the intervention and intended outcome (Domain 1)
- A clearly defined target population indicated the guidelines intended use (Domain 1)
- Professionals and experts were sought from various relevant fields (Domain 2)
- Primary healthcare providers were clearly defined as target users (Domain 2)
- Methodology for selecting evidence was an exhaustive effort (Domain 3)
- Standardized methods were utilized to rate quality and strength of evidence (Domain 3)
- Health risks and benefits were key topics presented and supported by evidence (Domain 3)
- The document established the relationship between the evidence and each recommendation (Domain 3)
- Recommendations were accurate, comprehensive statements (Domain 4)
- Appropriate and effective options for health management were identified (Domain 4)
- Recommendations had clear and specific descriptions (Domain 4)
- Details were provided to enable adherence to certain recommendations (Domain 5)

- Guideline development group members disclosed any potential conflicts of interest (Domain 6)

Weaknesses:

- No established method ensured target population was consulted during development process (Domain 2)
- Insufficient information detailing the systematic search for evidence (Domain 3)
- The process of deciding which updated recommendations to develop was not addressed (Domain 3)
- The document in its entirety was not reviewed by external experts prior to publication (Domain 3)
- Strategic methods to determine update procedures were not available (Domain 3)
- Details addressing barriers and facilitators were insufficient (Domain 5)
- There was little information focused on resources that may assist in the dissemination (Domain 5)
- Application of the recommendations and anticipated resource implications were not identified (Domain 5)
- Financial contributions and funding disclosures were not addressed (Domain 6)

Practice Change Recommendations

The recommendations within the selected clinical practice guideline were designed to address the clinical problem of obesity. *The Guideline for the Management of Overweight and Obesity in Adults* (2014) served as the framework from which the clinical practice change bundle was derived. It was chosen based on its vision to create realistic, attainable recommendations which could be achieved through the participation of the patient as well as the healthcare team. Members of the healthcare team identified within the selected guideline included: providers, nutrition professionals, trained interventionists, counselors, certified trainers, and nursing staff (Jensen et al, 2013). The holistic approach adopted by this guideline attempted to create an atmosphere of success.

The guideline included five critical questions each with their prospective recommendations. Out of the seventeen recommendations included within the guideline, six were chosen to be included within this implementation plan as a clinical practice change bundle.

The following recommendations have been reproduced from, *The AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults*, published by the Journal of the American College of Cardiology, 2014.

Table 1:

Summary of Recommendations for Adult Obesity Management

<p>Matching Treatment Benefits with Risk Profiles</p> <p>(Reduction in Body Weight Effect on Risk Factors for CVD, Events, Morbidity and Mortality)</p>	<p>Recommendation-1</p> <p>Counsel overweight and obese adults with cardiovascular risk factors (high BP, hyperlipidemia, and hyperglycemia) that lifestyle changes that produce even modest, sustained weight loss of 3%–5% produce clinically meaningful health benefits, and greater weight losses produce greater benefits. (Strength of Recommendation-Strong) (Quality Rating of the Strength of Evidence-High)</p>
<p>Diets for Weight Loss</p> <p>(Dietary Strategies for Weight Loss)</p>	<p>Recommendation-2</p> <p>Prescribe a calorie-restricted diet, for obese and overweight individuals who would benefit from weight loss, based on the patient’s preferences and health status, and preferably refer to a nutrition professional. (Strength of Recommendation-Strong) (Quality Rating of the Strength of Evidence-High)</p>
<p>Lifestyle Intervention and</p>	<p>Recommendation-3</p> <p>Advise overweight and obese individuals who would benefit from weight loss to participate for 16 months in a</p>

<p>Counseling (Comprehensive Lifestyle Intervention)</p>	<p>comprehensive lifestyle program that assists participants in adhering to a lower-calorie diet and in increasing physical activity through the use of behavioral strategies. (Strength of Recommendation-Strong) (Quality Rating of the Strength of Evidence-High)</p>
<p>Lifestyle Intervention and Counseling (Comprehensive Lifestyle Intervention)</p>	<p>Recommendation-4 Some commercial-based programs that provide a comprehensive lifestyle intervention can be prescribed as an option for weight loss, provided there is peer- reviewed published evidence of their safety and efficacy. (Strength of Recommendation-Strong) (Quality Rating of the Strength of Evidence-Moderate)</p>
<p>Lifestyle Intervention and Counseling (Comprehensive Lifestyle Intervention)</p>	<p>Recommendation-5 Use a very-low-calorie diet (defined as <800 kcal/d) only in limited circumstances and only when provided by trained practitioners in a medical care setting where medical monitoring and high-intensity lifestyle intervention can be provided. Medical supervision is required because of the rapid rate of weight loss and potential for health complications. (Strength of Recommendation-Strong) (Quality Rating of the Strength of Evidence-High)</p>
<p>Lifestyle Intervention and Counseling (Comprehensive Lifestyle Intervention)</p>	<p>Recommendation-6 For weight loss maintenance, prescribe face-to-face or telephone-delivered weight loss maintenance programs that provide regular contact (monthly or more frequently) with a trained interventionist who helps participants engage in high levels of physical activity (i.e., 200–300 min/wk.), monitor body weight regularly (i.e., weekly or more frequently), and consume a reduced-calorie diet (needed to maintain lower body weight). (Strength of Recommendation-Strong) (Quality Rating of the Strength of Evidence-High)</p>

(Reproduced from *Jensen et al.*, 2014)

Treatment Algorithm

The Guideline for the Management of Overweight and Obesity in Adults (2014) included a treatment algorithm to guide primary care practitioners in their management of adult obesity. The guideline recommendations are incorporated throughout the algorithm and constructed in such a way that they create a comprehensive approach to treatment. The algorithm begins during the screening and identification of obese adults and continues through the decision-making process as interventions are integrated into the patient's treatment plan. Throughout the algorithm it is emphasized that the patient must be committed to interventions, working alongside providers in order to successfully manage their condition. The algorithm was designed to equip both the patient and the provider with the tools necessary to effectively manage obesity and achieve weight loss (Jensen et al, 2013).

Summary

Throughout the literature there is a focus on the many factors contributing to obesity and the development of an optimal approach for effective intervention and management of the disease. Nutrition and fitness are key lifestyle modifications which can effectively help the obese individual lose weight and regain their health. Since obesity is such a multi-faceted issue the optimal approach to disease management needs to be holistic in nature. A review of research indicated a holistic approach has the ability to equip the obese individual with the tools necessary to succeed. Apart from lifestyle modifications the obese individual also must create an environment in which they have the ability to integrate and maintain new habits. This means having accountability through knowledgeable healthcare providers, and stability within their surrounding

environment. The topic of weight loss is often associated with obstacles which must be overcome by the obese individual. In order to overcome perceived barriers, and successfully lose weight, the obese individual needs a high motivational level and the ability to modify behaviors associated with nutrition and physical activity. Health care professionals must ensure they are well-versed in nutrition and physical activity recommendations, and be able to integrate appropriate, effective lifestyle interventions into their treatment of the obese patient.

Conclusion

The review of literature revealed adequate content regarding the obesity epidemic. Though there was ample information regarding nutrition and physical activity it often was associated with research which targeted both the overweight and the obese, increasing the target population included within the study. Studies focused solely on obesity also frequently targeted a younger age group, making it difficult to find adequate data focused on the obese adult. There was an evident focus on the younger population as researchers find it a priority to attempt to identify ways to prevent the occurrence of obesity at a young age. The importance of addressing childhood obesity was clearly outlined within the review of research. An imbalance was identified in the literature when examining the ages of the obese patient population being studied. Research regarding children and adolescents seemed abundant, though it was difficult at times to identify substantial amounts of research focused on the obese adult population. The overwhelming growth of the obesity epidemic is evident, so it seems of utmost importance to address all ages affected. Moreover, if an adult is able to modify their

lifestyle and implement appropriate nutrition and regular physical activity, then any child in their care could hypothetically benefit from the changes as a result.

CHAPTER III

Project Design

Chapter three examines project design and methods which were utilized to create the framework for this study. The study's target population, procedural steps, data analysis, and evaluation are also discussed within this section. The project was designed to evaluate current provider recommendations within the clinical practice setting and determine if providers were aware of clinical practice guidelines. The study compared healthcare providers' knowledge regarding adult obesity and lifestyle interventions associated with obesity. Provider knowledge was measured both prior to, and following the intervention, which was the introduction and review of an educational resource. The educational resource developed and utilized within the study included information regarding evidence-based practice guidelines and current recommendations. The resource was created for providers to review and for integration into the care of their obese patient population. Healthcare providers accessed the resource to review recommendations within the constructs of this study, and also now have the ability to incorporate the resource into future patient education.

The study had a pretest-posttest design which was quantitative in nature with the addition of a qualitative, self-report component. The quasi-experimental study, in the form of a one group pretest-posttest design, attempted to identify changes within the

sample population through data collection and analysis. Examination was completed of the relationship between participant knowledge levels associated with adult obesity recommendations, and the intervention of an educational resource containing clinical practice guidelines. A comparison of before-and-after results were analyzed in order to determine the effectiveness of an evidence-based educational resource in provider knowledge enhancement. It was hypothesized that if an increase in post-test knowledge was evident when compared to pre-test results it would be a reasonable explanation to surmise the educational resource intervention was responsible for the practice change.

The participants' current patient recommendations were collected as supplemental data in the form of a self-report component. Participants were asked to supply information regarding their current recommendations given to obese adult patients. Recommendations specific to the topics of nutrition, physical activity, and self-efficacy were requested. This information which was qualitative in nature, was gathered to provide further understanding of the quantitative results associated with the pre-test and post-test analysis. Instead of solely determining participant knowledge levels following exposure to an educational resource, the author felt it was also important to determine what previously utilized recommendations participants identified within the same content area. This portion of the project design attempted to identify any disconnect or discrepancies between participants' current practice recommendations and clinical practice guidelines.

The initial inspiration for the project design was identified when searching for information associated with common practices within the clinical setting. The specific experience in question was that of provider recommendations associated with lifestyle

interventions recommended to obese adult patients. If the obese adult patient population are experiencing a perceived lack of consistent, logical recommendations associated with lifestyle interventions is it due to provider education which lacked an evidence-based background? This project was designed in an effort to determine if provider recommendations closely aligned with clinical practice guidelines. Additionally, participants included within the study were introduced to an educational resource which could supplement their current practice recommendations being presented to the obese adult population.

Sample Population, Recruitment, and Inclusion Criteria

The sample population integrated into this study design was comprised of Nurse Practitioners currently practicing within the four-state area and students within the Doctor of Nursing Practice program at Pittsburg State University. Participants completed the pre-test survey and post-test survey, in between which they were able to review an educational resource. The Nurse Practitioner participants who elected to be a part of the study also provided a brief overview of their current practice recommendations associated with nutrition, physical activity and self-efficacy.

The participant population was selected using a convenience sampling. Any available and eligible individuals were asked to participate on a volunteer basis via email or other contact information and online forums. Age and years of experience were not included within the required information participants were asked to provide. Eligibility requirements included current enrollment in a Doctor of Nursing practice program or a valid Nurse Practitioner license. Additionally, participants were asked to confirm they had experience interacting with an obese adult patient population within the clinical

setting. The participants all reported they came into contact with obese adult patients which met the qualifications for this study design. An example of exclusion criteria would be a participant who reported working within a pediatric clinical setting. As they would not have contact with an obese adult population, they would not have been eligible to participate within this study. Partial submissions or incomplete tests were avoided through the use of software which required completion of the surveys in their entirety prior to submission. A substantial number of participants were anticipated to be Pittsburg State University students, professors, and graduates, as well as other Nurse Practitioners who were accessible through the clinical practice setting within the four-state area.

Protection of Human Subjects

Before the study design could transition into the implementation phase an application was submitted to the Pittsburg State University Institutional Review Board (IRB) for approval. This entailed evaluation of participant treatment and ensuring guidelines were adhered to in order to protect human subjects. Ethical conduct was a priority throughout the research study with all aspects of the framework being considered. The participants asked to be a part of the study agree upon a volunteer basis only. No potential for harm was anticipated within the study design, instead it offered the study participants the benefit of attaining new knowledge to be utilized within their clinical practice. The participants agreed to partake in the study design and consented to analyzation and evaluation of their provided information. The information requested from each participant did not include individual identifiers, instead it simply clarified the individual's title of either student or licensed Nurse Practitioner. No vulnerable groups were included within the sample population. The information attained as a result of this

study was not utilized in a way so as to disclose individual participant's responses or place them at risk for identification. Confidentiality was maintained regarding all information participants provided to researchers. This was accomplished through the utilization of survey software which maintained anonymity and removed potential identifiers such as e-mail addresses. Once participants submitted their results the author was notified through an e-mail from the survey software made available through Pittsburg State University (PSU). This software known as SurveyMonkey removed participant identifiers and instead coded results anonymously to then be reviewed and analyzed by the author. This process ensured that by the time the results were reviewed by the author it was not be possible to identify particular participants' data.

Instruments

The instruments used within this study design included: informed consent, instructions, pre-test, educational resource, and post-test with a self-report component. Electronically the participants were emailed a link from SurveyMonkey to the pre-test survey with instructions. The pre-test survey contained multiple-choice questions as well as a self-report component where qualitative data could be gathered. Once the pre-test was completed and submitted the researcher was notified. Participants then received an email including a file download of the educational resource, and a link to the post-test survey which contained the same multiple-choice questions as the pre-test survey. Financially, the only anticipated cost was associated with the survey software required for this study. Due to the availability of SurveyMonkey, which was made accessible through PSU's resources for graduate students, the instruments utilized within this study did not incur any significant cost on the part of the researcher.

In an attempt to minimize the participant's burden of responsibility associated with the study the instruments utilized were made to be as concise as possible. The brevity of the instrument also lowered the risk of participant fatigue and increased the possibility of meaningful data obtainment. The pretest and posttest design were similar apart from the self-report component within the pre-test. The pre-test survey contained two questions associated with study qualifications, eight multiple-choice questions, and three qualitative questions which requested a typed response, no longer than a paragraph. The post-test survey contained eight multiple-choice questions, identical to those on the pre-test. The multiple-choice questions covered adult obesity recommendations and associated lifestyle interventions. They were scored by comparing the percentage of correct questions within the pre-test to that of the post-test. This was to determine if there was an increase in correct answers following review of the educational resource.

Qualitative data was gathered through the use of a self-report component within the pre-test. This portion of the pre-test survey began with open-ended questions pertaining to the participants' current obesity recommendations regarding nutrition, physical activity, and self-efficacy. The instructions directed participants to provide information which was qualitative in nature, dedicating no more than a paragraph to each question.

The final piece of the instrument was the educational resource which outlined recommendations from the *AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults*, published in 2014. The guideline recommendations were summarized and placed in categories based on topic. Main content points were focused on recommendations regarding nutrition, physical activity, and self-efficacy. The

resource was a word document made accessible to participants through a downloadable file. The validity of the content included within the pretest, posttest, and educational resource were based on their accurate representation of the *AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults* (2014). The finalized instruments were reviewed by a Doctor of Nursing Practice who regularly manages the care of obese adults. Any comments or concerns regarding the instrument contents, organization, and outline were addressed before the instrument was utilized within this study.

Procedure

This section will provide an overview and description of the study phases. The initial step was to obtain IRB approval before the study commenced in order for an impartial review of the risks versus benefits to be assessed. To ensure ethical conduct and the protection of study participants, IRB approval was required before study progression. Once approval was obtained the study moved forward and the sample population was contacted via email requesting their participation. A description of the study was provided to potential participants, as well as an outline of their expected contribution to the design. Once an individual agreed to participate within the study they received an e-mail, delivered electronically which included instructions and a link to the pre-test survey. Once the pre-test was completed and submitted a second email was sent to participants containing the educational resource and post-test survey.

In regard to the self-report component of the pre-test survey, student participants were instructed to leave this qualitative portion unanswered as they are not yet practicing clinicians. The instructions directed Nurse Practitioner participants to record their current recommendations regarding nutrition, physical activity and self-efficacy which would be

directed towards an obese adult patient within their practice. This portion of the study was not designed to be lengthy in nature, with less than a paragraph for each topic required. Details the Nurse Practitioners were instructed to include were specific approaches to nutrition education, physical activity recommendations, and self-motivation suggestions.

In regard to the quantitative portion of the study, all participants were asked to complete both a pre-test and post-test survey. Between the two tests the participants were introduced to an educational resource which included recommendations from the *AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults*, published in 2014. The guideline provided recommendations for the treatment of the obese adult associated with nutrition, physical activity and self-efficacy. The participants had as much time as they deemed necessary to review the information within the educational resource before taking the post-test survey.

Once the post-test was completed the participant requirements were also finished as SurveyMonkey electronically submitted their results making them available to this author. The environment where the study took place was dependent upon each participant. To encourage participation and completion of all parts of the study design participants were able to take part in the study in any location of their choosing. To ensure validity the participants did not receive the educational resource or access to the post-test until completion of the pre-test was confirmed through notification by SurveyMonkey. While this created a two-step process for the study it was deemed necessary in order to ensure valid test results and prevent participants from being exposed to the educational resource during or before the pre-test survey.

Once participants completed all portions of the study the data was reviewed by this author. In order to accurately evaluate the results of the study, data analysis was completed, as well as an overall outcome evaluation. The data gathered from the participants was analyzed in an effort to address the relationship between provider knowledge levels associated with adult obesity recommendations, and the intervention of an educational resource containing clinical practice guidelines. Results of the pretest and posttest surveys were analyzed through statistical coding, utilizing Excel software. Initially, SurveyMonkey coded participant responses to prevent the author from experiencing a breach of confidentiality. Once identifiers were removed from the results an analysis was completed so results could be evaluated. The significance of the research results was interpreted within the study outcomes. The study outcomes also noted any limitations which were identified throughout the research process.

The self-report portion of the study was where providers documented their current clinical practice recommendations regarding nutrition, physical activity, and self-motivation or self-efficacy. This data was reviewed from a qualitative standpoint to provide supplemental data within the outcome evaluation of the study. Recommendations which had similar underlying concepts or content which contained closely aligned themes were identified and grouped together. The themes identified within this portion of the study were then compared to the evidence-based guideline recommendations utilized within the educational resource. Both similarities and differences in recommendations were identified and included within the study results. This was done in an attempt to highlight recommendations which were well represented within the clinical setting and those which were not often incorporated during patient education. This process allowed

the author to more clearly identify recommendations which should be prioritized for integration into clinical practice. This portion of the study also provided the participants with a comparison of how closely their current practice recommendations aligned with evidence-based recommendations within the educational resource.

Outcomes, Objectives, and Evaluation Plan

The outcomes highlighted within the logic model in chapter one of this scholarly project were utilized to evaluate the data gathered within this study. There is a need for effective education associated with lifestyle interventions for obese adult patients within the primary care setting. This study was designed to assess what recommendations were currently being used by primary care providers and then measure their knowledge levels regarding evidence-based recommendations associated with adult obesity. Through the completion of the study the intent was to supplement provider knowledge level with an educational resource to enhance patient education. Relevant, evidence-based recommendations were included within the educational resource. The resource was made available for review by participants between their pre-testing and post-testing. The recommendations within the educational resource were based on the *Guideline for the Management of Overweight and Obesity in Adults*, completed by the AHA/ACC/TOS in 2014. Utilizing a pretest-posttest design allowed for easily interpreted measurement of provider knowledge levels, before and after introduction to the educational resource.

The intervention within this study, which was exposure to the educational resource was expected to result in improved provider knowledge levels regarding evidence-based recommendations. Hypothetically, increasing provider knowledge levels associated with adult obesity management would positively impact patient education

completed within the clinical setting. The current state of the obesity epidemic within our nation calls for necessary interventions such as those within the framework of this study. The educational resource utilized within the study can also be applicable within the context of patient education, allowing providers to outline the evidence and discuss effective lifestyle changes with their obese adult population. To ensure the effectiveness of the instrument utilized, it closely represented recommendations found within recent clinical practice guidelines.

The evaluation of this study was based on a variety of factors which all influenced the study outcomes. First, the self-report portion of the study was examined to gain a better understanding of current practices within the clinical setting. Next, participant knowledge levels associated with clinical practice guideline recommendations were assessed to establish a baseline knowledge level. Proceeding on, participants then reviewed the educational resource and studied evidence-based recommendations regarding lifestyle interventions for the obese adult. Lastly, participants took a post-test survey to determine if their knowledge level had increased due to review of the educational resource. Upon the completion of this project there was an educational resource which reflected current clinical practice guidelines and relayed information in an understandable, realistic, and concise manner. Ideally participants who were exposed to this resource expanded their knowledge bases regarding lifestyle interventions for the obese adult.

Plan for Sustainability

If proven effective by meeting the study outcomes, this design would have the potential to be influential and reproducible. A positive impact could be experienced if the

educational resource utilized within this study framework is identified as an effective educational tool. The resource design ensured it was based off of pre-existing evidence-based recommendations. This meant it would have the ability to represent lifestyle interventions proven to effectively address obesity within the adult patient population. Throughout the planning and design of this study the only potential for financial costs included revision, reproduction, and distribution of the educational resource. There was a lack of controversy, or potential for negative impact, surrounding the study design as it focused on issues which are of concern to a majority of the nation, and presented solutions which were evidence-based and categorized as lifestyle changes instead of medical treatments.

Summary

The management of adult obesity is a major priority within the clinical setting though it is not an issue which can be addressed through one answer. Instead, a more suitable approach would be one which encompassed multiple interventions, all addressing the individuals' current lifestyle behaviors and assisting them in the adoption of healthy habits. The healthcare provider should be prepared to assist the obese adult in constructing a manageable, safe, and evidence-based plan of care regarding weight loss and management. Providers must be well-versed in recommendations which are evidence-based and have proven effective in aiding the obese adult patient to be successful. The intent behind the design of this study was to assess current levels of provider knowledge within the clinical setting and enhance that knowledge level through the utilization of pre-existing, evidence-based, clinical practice guidelines.

CHAPTER IV

Evaluation of Results

The data in this study was collected to determine levels of provider knowledge associated with adult obesity. A goal of the study was to enhance provider knowledge levels through exposure to pre-existing clinical practice guidelines (CPG). The study aimed to determine if healthcare provider recommendations reflected clinical practice guidelines associated with adult obesity. Level of provider knowledge was assessed, both before and after review of a CPG-based educational resource. This step was completed to evaluate if there could be an increase in provider knowledge level associated with adult obesity recommendations following exposure to a CPG-based, educational resource.

The intent of the study was to supplement provider knowledge levels with an educational resource containing information associated with current adult obesity recommendations. Lifestyle interventions covered within the resource included dietary habits, physical activity regularity, and optimal behaviors contributing to effective weight loss and management. Healthcare providers who participated within the study can continue to utilize the resource both to review recommended obesity management practices, and to educate their patients.

Demographic Data

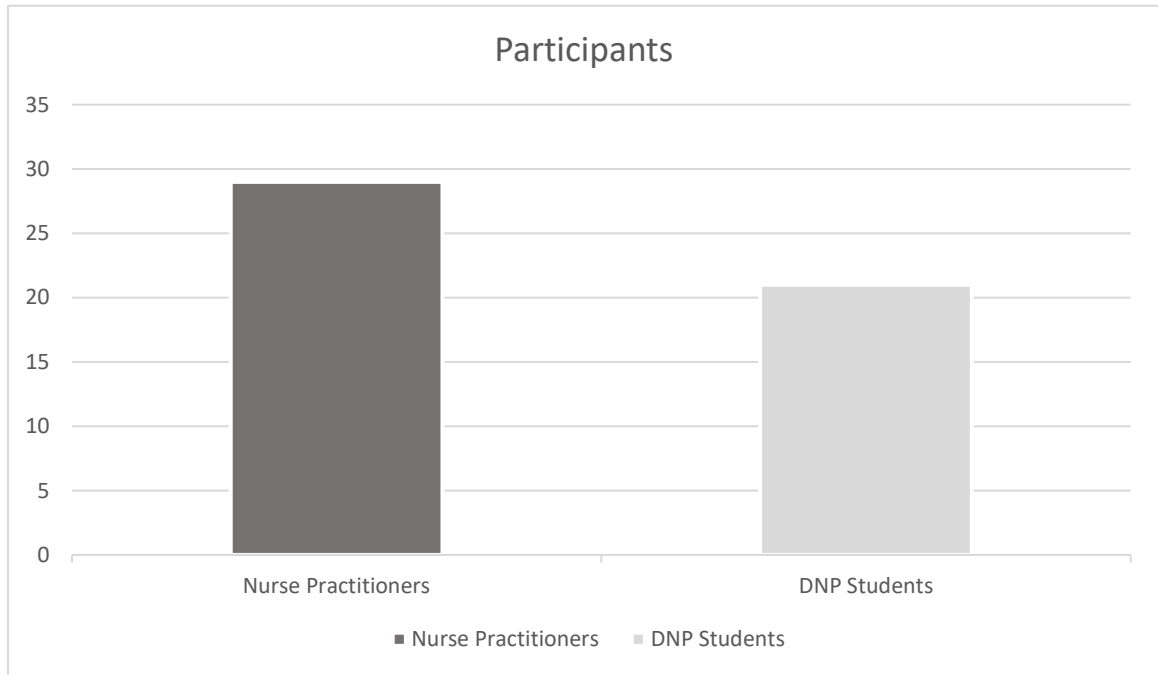
Data collection began on January 22, 2019 and concluded on February 22, 2019. The participants emails were collected by contact through professional groups and online forums. The pre-test, post-test and educational resource were sent to the participant's email addresses using online survey software and they were able to submit their surveys at any point during the month of data collection. The sample population included a total number of fifty participants. This included nurse practitioners currently practicing within the within the four-state area and students currently enrolled in a Doctor of Nursing Practice (DNP) program with the intent to become licensed as Family Nurse Practitioners (FNP).

Participation within the study entailed completion of a pre-test survey, after which access was given to the educational resource as well as the post-test survey. The study was conducted online, through utilization of survey software that was made accessible through the researcher's graduate school resources. Out of the fifty participants 58%, (n = 29) were nurse practitioners with a valid NP license and 42%, (n = 21) were students within a Doctor of Nursing practice program. These participants were all logging clinical hours within a family practice clinical setting during the time research was being collected. The students were included within this study as they were familiar with a patient population which included obese adult patients within the primary care setting. They also had completed course work with a focus of primary care prior to taking part within this study.

Demographic information presented in table below (Table 2).

Table 2:

Demographic Information



To qualify for inclusion within the study nurse practitioner participants were asked to identify themselves as an advanced practice registered nurse (APRN) with a current valid nurse practitioner license. They were not asked to clarify their degree, such as differentiation between a masters or doctorate, but only to verify that they were a licensed nurse practitioner. They also had to confirm regular interaction with an obese adult population within their practice in the clinical setting. This allowed for the exclusion of certain specialty providers, for example a pediatric nurse practitioner would be excluded from the study based on their answer to this qualifier. The only personal identifier requested was attestation of a current NP license to differentiate between students and nurse practitioners.

All students included within this study were enrolled within one Doctor of Nursing Practice (DNP) program which prepared them for family nurse practitioner (FNP) licensure. Selection was based on accessibility rather than solely preference, as gaining access to students from other nurse practitioner programs was unattainable either due to feasibility or geographical location. The student sample population were all enrolled within the DNP program at Pittsburg State University and had all either passed an FNP licensure exam or were studying to do so within the course of their program. These students were required to log clinical time within various family practice clinics in the surrounding areas of Kansas and Missouri. While a small percentage of their clinical hours over the course of their program was spent within specialty areas the overwhelming majority of their time was dedicated to family practice. Within the primary care clinics in which they logged clinical hours they experienced frequent interactions with an obese adult patient population.

Pre-Test, Educational Resource and Post-Test

The CPG chosen to be used within this study was the American Heart Association, American College of Cardiology, and The Obesity Society's (AHA/ACC/TOS) Guideline for the Management of Overweight and Obesity in Adults, published in 2014 by *The Journal of the American College of Cardiology*. The information within this CPG was utilized within the educational resource which included both patient and provider recommendations associated with adult obesity. The surveys created to be used as the pre-test and post-test contained questions which reflected the CPG recommendations.

The pre-test contained thirteen questions. Two of these questions contained inclusion criteria which provided qualifying information allowing the participants responses to be included within this study. These questions clarified the participants current NP licensure or status as a DNP student and confirmed their regular clinical interaction with an obese adult population. Eight of the remaining questions represented CPG guidelines and were formatted as multiple-choice options with one correct answer. The remaining three questions on the pre-test requested information which was qualitative in nature. These questions allowed for participants to provide, in their own words, their most frequently used patient recommendations associated with adult obesity and nutrition, physical activity, and self-efficacy. The justification for these three qualitative questions was to determine how closely the participants' current practice recommendations aligned with CPG recommendations. As students were not currently practicing within the clinical setting it was outlined within the pre-test instructions that they could respond to each of these questions with the words, "not applicable or n/a". All of the nurse practitioners who took part in the study provided answers within the qualitative portion of the pre-test.

Once the pre-test was submitted, and prior to taking the post-test, the participants gained access to the educational resource. A notification was sent to the researcher by the survey software once a participant submitted their pre-test. The notification confirmed submission of the pre-test but did not display the individual's results. This anonymous submission meant the participant's answers were kept confidential and validity was ensured. Once a notification was received the participant would then be sent an email containing the educational resource, as well as a link to take the post-test survey.

Participants were instructed to utilize the resource as a reference while taking the post-test survey. The educational resource was concise, with one page of text dedicated to patient recommendations and one page of text containing provider recommendations. Not only was this intended to reduce participation fatigue within the construct of this study, but also to encourage the use of the educational resource within the clinical setting as a reference for patient education.

The post-test was formatted similarly to the pre-test, with the differentiating factor being it only contained the eight questions from the pre-test which reflected CPG recommendations. These same eight multiple-choice questions were included within both the pre-test and post-test surveys. The researcher hypothesized that higher survey scores would be obtained on the post-test once the participants had the educational resource to reference and were familiarized with CPG recommendations. When the post-test survey was submitted the participants had completed all requirements of the study. There was no compensation, financial or otherwise for completing the study.

Project Questions and Study Results

Out of the thirteen questions on the pre-test, eight were scored. Three of the remaining questions were qualitative in nature and the remaining two were associated with demographics and inclusion criteria. The overall range of scores on the pre-test survey was found to be between four and eight correct answers. The mean score for participants ($n = 50$) on the pre-test was 6.2 (78%) with a standard deviation of 1.2, (15%). The pre-test scores were examined to answer the research question, “what is the current level of provider knowledge associated with adult obesity recommendations?”. The results of the pre-test showed that nine participants within the study, approximately

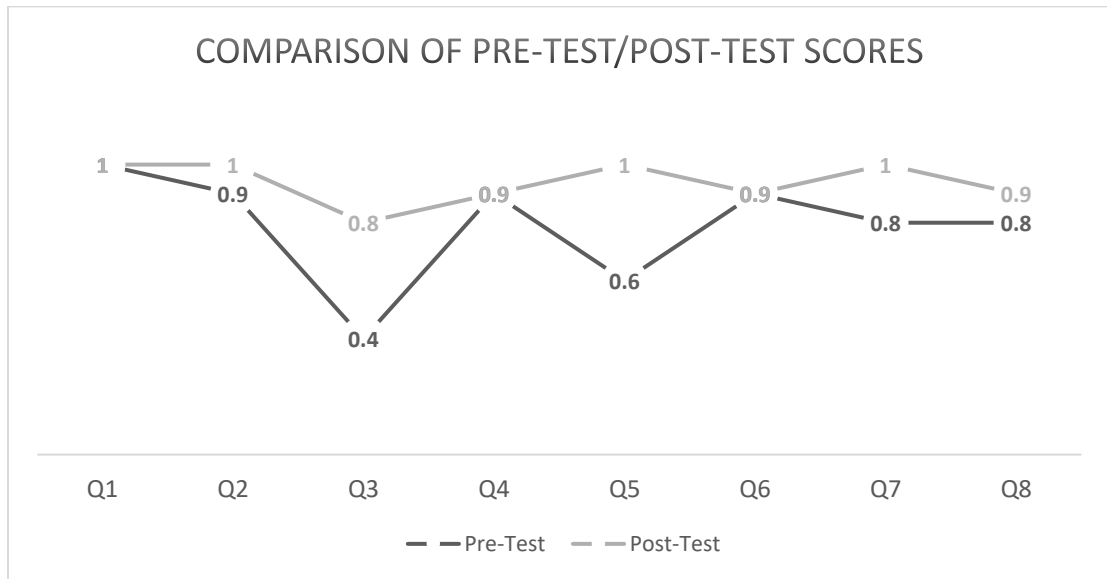
18% of subjects, were able to score a 91% or higher on questions associated with adult obesity recommendations. The content within the questions was associated with recommendations which were CPG-based, and covered lifestyle interventions like nutrition, physical activity, and self-efficacy.

To answer the next research question addressed through the study results the researcher determined if there was an increase in the knowledge level of providers associated with adult obesity recommendations following exposure to the CPG-based educational resource. Out of the fifty participants within this study, twenty-four completed the post-test survey. While the mean score on the pre-test was 6.2 (78%) with a standard deviation of 1.2, (15%), the mean scored by participants (n = 24) on the post-test was found to be 7.5 (93%) with a standard deviation of 0.88 (11%). Following review of the educational resource, scores indicated improvement in the participants' abilities to correctly answer questions associated with adult obesity recommendations. Overall, the review of study results concluded with statistical significance ($p < 0.05$) that there was an increase in the knowledge level of providers associated with adult obesity recommendations following exposure to the CPG-based educational resource.

A comparison of the pre-test results and post-test results is presented in the table below (Table 3).

Table 3:

Comparison of Pre-Test/Post-Test Scores



There were three main lifestyle interventions included within the pre-test, post-test, and the educational resource. These three topics were nutrition, physical activity, and self-efficacy. The educational resource’s potential educational capabilities were determined through evaluation of its ability to effectively improve participants’ scores within each of the three topic areas. In relation to questions associated with nutrition, the participants showed an increase in scores when comparing the pre-test results of 88% and post-test results at 92%. When questions associated with physical activity were examined the participants showed an extreme increase in scores when comparing the pre-test results of 56% with the post-test results of 96%. Lastly, questions associated with self-efficacy displayed an increase in the participants’ scores when comparing the pre-test results of 80% with the post-test results at 96%. Out of the three topic areas associated with adult

obesity physical activity was associated with the highest rate of incorrect answers on the pre-test, suggesting that providers were unfamiliar with current CPG recommendations associated with this area.

Questions within the study which were answered incorrectly often were examined to assess for patterns among the participants' results. Incorrectly answered questions were analyzed so the content areas could be prioritized for future educational opportunities. The question with the highest rate of incorrect answers on the pre-test was associated with patient education and stated, "What would be considered successful weight reduction in the obese adult, resulting in decreased risk of cardiovascular disease?". Answers included, "5%-10% of initial weight, 15%-18% of initial weight, 10% of the individual's body mass index (BMI), and 15% of the individual's BMI". The correct answer, both present within the educational resource and according to CPG guidelines, was, "5%-10% of initial weight". The average score for this question on the pre-test was 40%, with improvement on the post-test average, which was 83%. This question was answered incorrectly at a higher rate than all other questions on both the pre-test and post-test. The content within this question was a topic outlined within CPG recommendations, as it not only referred to patient education but also involved the concept of self-efficacy. A method commonly used by individuals who display high levels of self-efficacy is the setting of goals which they intend to achieve. Within the context of this topic the recommended goal was to successfully achieve weight loss equivalent to 5%-10% of initial weight, while subsequently lowering risk of cardiovascular disease.

Additional Statistical Analysis

Additional statistical analysis was conducted to determine significance of the mean comparison between pre-test scores and post-test scores. Data was tabulated by the researcher and analyzed through excel software. Selection of *t*-test was based on its' ability to determine the statistical significance between the means in two groups which are different in size, making them independent of one another. An independent two-sample *t*-test was utilized to test the hypothesis that the post-test survey would demonstrate higher scores overall than the pre-test survey (independent two-sample *t*-test with $H_a: \mu_{\text{post-test}} > \mu_{\text{pre-test}}$). The null hypothesis being that there was no difference between the mean scores of the post-test and pre-test surveys (independent two-sample *t*-test with $H_0: \mu_{\text{post-test}} = \mu_{\text{pre-test}}$).

In order to be statistically significant an acceptable probability level was a p-value of <0.05. Statistical analysis did indicate the results of the post-test survey (M = 7.42, SD = 0.88, n =24) were higher than that of the pre-test survey (M =6.24, SD =1.20, n =50).

The difference is presented in Table 4 and was found to be statistically significant ($p = 0.00$).

Table 4:

t-test results

	<i>Pre-Test</i>	<i>Post-Test</i>
Mean	6.24	7.42
Variance	1.45	0.78
Observations	50.00	24.00
Pooled Variance	1.24	
Hypothesized Mean Difference	0.00	
df	72.00	
t Stat	-4.26	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.67	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.99	

Qualitative Results

Through the completion of this research study it was determined there was an opportunity to gather both quantitative and qualitative data from the participants. The final research question, constructed as a result of this realization was, “Do providers’ patient recommendations closely align with clinical practice guidelines associated with adult obesity?”. In order to answer this question, the pre-test survey requested information from participants regarding their currently used practice recommendations associated with adult obesity. This was explained as participants’ current recommendations for obese adult patients which would have been integrated into the educational portion of a standard appointment. There were three qualitative questions on the pre-test survey, each focused on one of three lifestyle interventions. Nutrition, physical activity and self-efficacy were the three lifestyle interventions chosen as they

were the focus of a majority of CPG recommendations. A text-box was available under each question and providers were instructed to write no more than a paragraph for each topic. Participants described their current recommendations when educating patients on lifestyle interventions associated with adult obesity. All of the twenty-nine providers who completed the pre-test survey provided answers within this qualitative portion of the survey. Students were asked to not respond to these three questions, instead they were instructed to simply type, “n/a”, or, “not applicable”, within the text boxes.

Nutrition Recommendations

Participants were asked to describe their current practice recommendations for obese adults associated with nutrition. This was explained within the survey as the information they would provide to their patient population during the educational portion of an appointment. Advice, guidance, and recommendations associated with the lifestyle intervention of appropriate nutrition were recorded. The survey clarified that no more than a paragraph was to be dedicated to the answer. The table below (Table 5) outlines the answers provided.

Table 5:

Qualitative Data associated with nutrition recommendations

Participant Recommendations for Obese Adults Associated with Nutrition
<p><u>Category: Caloric reduction, decrease in sugar intake</u></p> <ul style="list-style-type: none"> • Appropriate food choices. Low carbohydrate, high protein diet. • Avoid sugary foods. • Appropriate portion sizes. • Discuss benefit of 5% weight loss. Decrease carbohydrate and sugar intake. • Decrease simple carbohydrates and processed foods. • Reduce caloric intake. • Low carbohydrate, no beverages with calories with the exception of skim milk.

- Decreasing dietary calories and cutting back on foods high in carbohydrates such as breads, pastas, fried foods, and high sweets.
- Reduce calories.
- Low Carbohydrates, 4-5 servings of vegetables.
- No high carbohydrate liquid drinks.
- Portion control, add fresh fruit and vegetables, cutting processed carbohydrates.
- Cut carbohydrates quite a bit but include healthy ones. Reduce saturated fats.
- Avoid too many empty calories like soda.
- Serving size reduction.
- Ask for small change that can reduce calories like beverage choices.
- Calorie reduction of 500-750 calories per day.
- Decrease caloric intake.
- Avoid low fat or no fat foods.
- Decrease caloric intake.
- Decrease caloric intake by 500 calories daily.
- Attempt to add more raw food into diet and decrease processed foods.
- Stress smaller portion sizes, limit complex carbs such as pasta, breads, and sweets.
- No drinks with carbohydrates and monitoring portion sizes.
- Decrease simple carbohydrate intake and replace with fruits, vegetables, and lean protein.
- Increase activity and decrease caloric intake.

Category: Referral to counselor, dietician, nutritionist

- Nutritionist consultation and support of the recommendations provided by them.
- Referral to dietician and a written meal plan consisting of low carbohydrate options.
- Referral to dietitian.
- Refer patient to dietician.
- Offer nutritional consult if interested.

Category: Utilization of food journal, mobile phone application

- Food diary or utilization of the my fitness pal application.
- Both individual and group wellness classes.
- Weekly weight and physical exam.
- Have patient track everything they eat.
- Food journaling.
- Log calories in a smart phone application.
- Keep a food diary of everything you eat.
- Count carbohydrate intake for one month by keeping a food diary.

Category: Miscellaneous

- Teach the “Always Hungry Diet”, by Dr. Ludwig.

- If BMI is greater than 30, recommend dietary changes including 12-16 hour fasting.
- Consider Weight Watchers or another diet plan.
- Specific diet recommendation such as keto, low carb, or low fat.
- Low salt diet < 2000 mg daily.
- Mediterranean diet.
- Water intake >64 oz/day.
- Stop majority of pop and fast food.
- Change of diet, increase in exercise, and appropriate willingness to change.
- Cut out or reduce intake of pop and fast food.
- Phentermine with monthly weight check in and refills.
- Diet medication if desired with the exception of phentermine.

Participants frequently identified recommendations which aligned closely or exactly to both the CPG and educational resource. Reduction of caloric intake, avoidance of sugar, and keeping a food diary were all recommendations noted throughout the qualitative data. Referral to a dietician, nutritionist, or counselor were also interventions which participants utilized within their clinical practice. There were a few contradictory responses noted within the qualitative data. Some participants recommended the use of phentermine while others discouraged it. There were also differing recommendations associated with fat in the diet, while some participants recommended avoidance of low-fat diets others were in favor of this approach. A few participants admitted to being unfamiliar with current CPG guidelines, or admitted to recommending very specific diets, (i.e. keto, always hungry diet by Dr. Ludwig). Many of the themes drawn from participant answers echoed the recommendations seen within the CPG and educational resource.

Physical Activity Recommendations

Participants next described their recommendations associated with the lifestyle intervention of physical activity. The context was similar to that of the first topic, in

which they were to report commonly used information and advice they would provide to their obese adult patient population. The table below (Table 6) highlights themes which were identified within this portion of the study.

Table 6:

Qualitative Data associated with physical activity recommendations

Participant Recommendations for Obese Adults Associated with Physical Activity
<p><u>Category: Time interval associated with physical activity</u></p> <ul style="list-style-type: none"> • 30-45 minutes of physical activity 4-5 days a week. • Increase activity slowly with a goal of 150 minutes a week. • 10 minutes of activity three times a day. • Start slow and work up to 30 mins per day of low to moderate activity. • Walking at least 20-30 minutes a day at least 4-5 days a week. • 20-30 minutes of aerobic exercise daily. • 30 minutes minimum daily. • Start slow, work up to 30 minutes daily. • 30 minutes of moderate activity at least 5 days per week. • 30 minutes of walking daily and lifting free weights 3 times a week. • 20 minutes of activity a day. • Exercise 5 days a week, varying activity. • At least 60 minutes of aerobic activity 4-5 times per week. • 30 minutes of activity per day. • 150 minutes of activity over the course of a week, avoiding missing two consecutive days. • Start with 30 minutes, three times a week and increase as tolerated. • Move at least 5-10 minutes a day and monitor how they are feeling. Increase activity level to 20-30 minutes a day when possible. • 30 minutes of physical activity 5 times per week not including normal day to day activities. • Increase physical activity 30 minutes a day at least 3 times weekly. • 40-60 minutes a day of aerobic activity, 5 days a week. • No more than 2 days of inactivity. • 150 minutes of physical activity per week or 30 minutes on most days of the week. • 30-60 minutes of aerobic activity a day. • Walk 20 minutes most days of the week. • Walking 4-5 times daily to increase heart rate for 20 minutes. <p><u>Category: Type of physical activity</u></p>

- Walk 5 minutes twice a day for one week with gradual increase.
- Swim if access to pool.
- Start slow but increase steadily to walking 20 minutes daily.
- Walk.
- When walking becomes easier, try increasing time or speed of walking.
- Walking daily and lifting free weights.
- Walk 4-5 times weekly or other aerobic exercise as well as weights.
- Walking, going to the gym, swim, yoga, strengthening exercises or any sport they enjoy.
- Stretching, yoga, water aerobics, or bicycling for chronic pain.
- Encourage patients to start walking daily to increase heart rate.

Category: Individualization

- Increase physical activity, customized to each patient's needs.
- Individual for the patient.
- Depends upon their willingness.
- Ask patients to start moving, then get them to list three activities they are willing to do.
- Have patient keep track of activity and time.
- The best recommendation is the one the patient will implement.
- Begin an exercise plan.
- Exercise moderately.
- Get an accountability partner for exercise.
- Use a step counter.
- Some patients start by parking at the far end of the parking lot in order to walk, others I encourage to walk at least 5 days a week.
- Whatever their condition I recommend moving more, even if this means sitting and doing curls several times a day with soup cans.
- Keep a log of exercise to bring with them to follow-up appointments.

Participants frequently recommended specific types of physical activity, as well as the frequency of a patient's participation in physical activity. While time domains varied there were participants who acknowledged CPG recommendations of physical activity performed at 150 minutes/week or greater. This was often referred to in the form of, "30 minutes of physical activity per day". Recommended activities included walking, biking, swimming, or other aerobic based exercise. While aerobic physical activity is

beneficial both the educational resource and CPG highlight the importance of combining aerobic activity with muscle-strengthening exercises. One major theme noted throughout the participants' answers was the importance of individualization when it came to physical activity. This was further described as starting with an individualized activity level for the patient and increasing as tolerated. Most participants expressed their desire to recommend realistic, manageable physical activity interventions which could be attainable for their patient population.

Self-Efficacy Recommendations

The last topic participants provided information for was that of self-efficacy, or behavioral strategies for the obese adult patient. This topic was found to have responses which varied greatly, both in specific recommendations and overall themes. While some participants related the idea of self-efficacy to either nutrition or physical activity, others addressed it as a concept separate from other topics which had been referenced earlier within the survey. The table below (Table 7) outlines individual participant responses as well as any underlying themes which were identified within review of the data.

Table 7:

Qualitative Data associated with self-efficacy recommendations

Participant Recommendations for Obese Adults Associated with Self-Efficacy
<p><u>Category: Accountability</u></p> <ul style="list-style-type: none"> • Find a buddy. • Suggest buddy system of weight loss for support at home. • Provide support when a patient is ready to start making modifications to their diet and exercise. • Education associated with lifestyle modifications and improvement in health status. • Setting an example through my own health status, losing weight myself. • It is important for obese people to understand their risk in a very clear and matter of fact way. It is also important for frequent follow up and encouragement.

- Close follow up to help keep patient accountable. Follow up in 2 weeks and then monthly.
- Keep a food log and activity log. Read nutrition labels (I teach them how if they do not know).
- Keep a food log. Report and take credit for dietary actions, both positive and negative.
- Work on being more active and join a support system.

Category: Resources and tools

- Monitor stress-induced eating and change the behavior by substituting walking, reading, or yoga to relieve stress.
- Keep a food journal or use phone app to track calories.
- Chart or log food.
- Keep a diary of food intake. If they are technologically inclined, show them some free apps they can use, if not, tell them to simply use a notebook.
- Educate often, reassess motivation, and consider nutrition counselor.
- Keep positive, when craving food try to reward yourself but choose a healthy alternative.
- Occasionally, I recommend weight loss surgery consult for the patient who has not been successful and has co-morbidities.
- Regular counseling.
- Tracking intake, exercise, and behavior.
- I recommend the use of food log, activity log, and activity trackers.
- Frequent follow up with dietary counseling.

Category: Motivation and encouragement

- Accept when you fail and begin again.
- Review the benefits of a 5% weight loss with the patient.
- Encourage to not step on the scale every day and remind the patient that all goals are not weight related.
- Monthly weigh-in with a focus on improved health rather than a number.
- Don't focus on weighing daily.
- Encourage the patient to write down everything they eat to see where their calories are coming from. I also recommend they write down goals and positive affirmations to help be successful.
- Discuss changing poor behaviors and replacing them with healthy ones.
- Encourage slow adjustments with small achievable goals.

Participants often suggested methods of accountability to assist in development of self-efficacy, whether it was in the form of a phone application, diary, or accountability

partner. Setting an example and providing recommendations which had proven successful in personal experience were also noted within the responses. Goal-setting was a theme identified frequently, both short-term daily habits to be incorporated, as well as long-term, weight loss milestones to be achieved. A variable associated with appropriate behavioral strategies within both the educational resource and CPG was goal-setting in a realistic manner to achieve weight loss and management of adult obesity.

Summary

The purpose of this study was threefold: to determine if healthcare provider recommendations reflected CPG associated with adult obesity, to measure current levels of provider knowledge, and to enhance that knowledge level through exposure to CPG recommendations. As an extension of the study, participants were provided an educational resource containing information based on current adult obesity CPG recommendations.

Assessment of initial participant knowledge levels associated with adult obesity recommendations was completed. Following exposure to the CPG-based educational resource participants knowledge levels were reassessed. After review of the educational resource, scores indicated improvement in the participants' abilities to correctly answer questions associated with adult obesity recommendations. Overall, the review of study results concluded with statistical significance ($p < 0.05$) that there was an increase in the knowledge level of providers associated with adult obesity recommendations following exposure to the CPG-based educational resource.

Within the framework of this study there was an additional opportunity to gather data from the participants which was qualitative in nature. Participants were questioned

in regard to their patient recommendations pertaining to adult obesity. The data collected was reviewed and separated into categories based on the nature of the content. Many of the themes drawn from participant answers echoed the recommendations seen in the CPG and educational resource. Also evident was identification of misinformation or contradicting recommendations. Review of up to date CPG recommendations would be of value both to providers and their patient population in order to appropriately address adult obesity.

CHAPTER V

Discussion

This study examined provider knowledge levels and recommendations associated with adult obesity. Participant's current knowledge levels were assessed in regard to CPG-based adult obesity recommendations through the completion of a pre-test survey. Within the pre-test they were also asked to report on their own current recommendations for their obese patient population within the clinical setting. The subject matter requested from participants was associated with the specific lifestyle interventions of nutrition, physical activity, and self-efficacy. Once the pre-test was submitted participants received an educational resource and the post-test survey. They were instructed to review the educational resource which contained CPG-based adult obesity recommendations. Participants could then refer to the resource while taking the post-test survey which included the same eight multiple choice questions present within the pre-test. The post-test was designed to determine if participants had improved knowledge associated with adult obesity recommendations following exposure to CPG recommendations represented within the educational resource's content.

Outcomes: Relationship to the Research

The pre-test assessed current levels of provider knowledge and documented patient recommendations actively being used within the clinical setting. The educational

resource outlined CPG based recommendations associated with adult obesity and lifestyle interventions like nutrition, physical activity and self-efficacy. The post-test challenged participants to test their knowledge and determine if review of the educational resource improved their knowledge levels associated with adult obesity recommendations. The study focused on the following research questions:

1. What is the current level of provider knowledge associated with adult obesity?
2. Will there be an increase in the knowledge level of healthcare providers associated with adult obesity recommendations following exposure to a clinical practice guideline based educational resource?
3. Do healthcare provider's patient recommendations closely align with clinical practice guidelines in regard to adult obesity?

Current Knowledge Levels

The initial assessment of participant knowledge demonstrated a mean score of 6.2 out of 8 possible correct questions, or 78% accuracy in correctly answered questions on the pre-test. This assessment of participant knowledge was based on information representing CPG based practice recommendations associated with adult obesity. Only nine of the fifty participants attained a score of 91% or higher on the pre-test indicating a large number of the participants were unfamiliar with certain aspects of the guidelines associated with adult obesity recommendations. These findings suggested provider knowledge levels may have not adequately reflected the knowledge base needed to recommend effective adult obesity lifestyle interventions.

Experts agree with the evidence when outlining the importance of lifestyle interventions for effective management of obesity. The optimal approach to adult obesity management is modification of the individual's lifestyle (Burke & Wang, 2011). In a 2011 study, Parker et al. aimed to assess knowledge levels of healthcare providers within the primary care setting. Knowledge levels associated with lifestyle interventions, such as physical activity and nutrition, were assessed. The results demonstrated large variances in degree of knowledge existing among the healthcare providers (Parker, Steyn, Levitt, & Lombard, 2011). Within their research, Parker et al. determined healthcare providers were often able to accurately identify concepts of lifestyle modifications, but then were unsuccessful in the interpretation of those concepts into practical patient advice. The overall consensus of the study was a need for continuing education associated with adult obesity lifestyle interventions in order to improve the current knowledge levels of providers.

Knowledge Increase through CPG-Based Education

After review of the educational resource participants completed a post-test assessment to determine if their knowledge levels associated with adult obesity recommendations increased following exposure to the CPG-based educational resource. The mean scored by participants on the post-test survey was found to be 7.5 out of 8 possible correct answers. An increase in mean scores was demonstrated from 76% on the pre-test to 93% on the post-test which indicated improvement in the participants' abilities to correctly answer questions associated with adult obesity recommendations.

The educational resource focused on three main lifestyle interventions which included nutrition, physical activity, and self-efficacy. The potential value of the resource

was based on its ability to improve participants scores associated with these three topic areas. Participants showed an increase in scores related to nutrition recommendations when comparing the pre-test results of 88% and post-test results at 92%. The CPG-based questions associated with nutrition highlighted the importance of caloric reduction, avoidance of sugar, and increasing the amount of nutrient dense foods in the diet. Dietary guidelines utilized to formulate government policy echo these statements, encouraging nutrient dense foods like vegetables, fruits, nuts, whole grains, and lean meats while avoiding excess sugars (Dietary Guidelines, 2015). The majority of research regarding nutrition and obesity focuses on implementation of dietary guidelines and the reduction of caloric intake. By reducing total consumed calories, the obese individual can place themselves in a caloric deficit which will result in weight loss (Annesi, Johnson, & McEwen, 2015). A diet containing adequate caloric intake comprised of nutrient dense foods is a major contributor to the effective treatment of obesity. As a provider, the relationship between nutrition and adult obesity must be understood, as it is an integral part of the development of appropriate recommendations associated with adult obesity.

Physical activity is another key variable in the effective treatment of adult obesity. While the health benefits associated with physical activity have been made evident throughout the literature, a majority of obese adults live sedentary lifestyles and do not partake in the daily recommended amounts of physical activity. The American Heart Association, American College of Cardiology, and The Obesity Society's (AHA/ACC/TOS) Guideline for the Management of Overweight and Obesity in Adults recommends a minimum of 150 minutes/week of moderate physical activity in the form of a combination of aerobic activity and muscle-strengthening exercise (Jensen et al.,

2014). Participants within this study initially scored low on questions associated with physical activity, but they demonstrated great improvements in regard to the topic, scoring an average of 56% on the pre-test and an increase in average in the post-test results of 96%.

In a 2015 study conducted by Annesi, Johnson and McEwen, the behaviors of obese adults were examined, and it was found that their perceived ability to maintain adequate nutritional standards and regularly engage in physical activity effectively increased their likelihood of implementing behavioral changes. Lifestyle modifications have a poor chance of being effectively implemented without validating the existence of self-efficacy in the obese adult (Annesi, Johnson, & McEwen, 2015). Questions associated with behavior modifications, like improved self-efficacy, were included within this study as behavioral factors have been identified through research as important indicators of successful treatment of adult obesity. Questions associated with self-efficacy were examined and the participants displayed an increase in scores when the pre-test results of 80% were compared with the post-test results of 96%.

Clinical practice guidelines are specifically designed to direct treatment and create a framework for quality care and improved patient outcomes. Within the clinical setting providers should be aware of CPG and understand the value they hold as healthcare resources. The CPG recommendations referred to within this study and incorporated into the educational resource were constructed to create a comprehensive treatment approach to obesity (Jensen et al, 2014). Recommendations within the CPG are designed to equip both the patient and the provider with the interventions necessary to effectively manage obesity and achieve weight loss.

Reflecting CPG's within Current Practice Recommendations

Within the pre-test survey participants were asked to provide information regarding their currently used practice recommendations associated with adult obesity. This was further explained as their current recommendations for obesity management during the educational portion of a patient appointment. Nutrition, physical activity and self-efficacy were the three lifestyle interventions discussed as they were the focus of a majority of CPG recommendations. Participants frequently identified recommendations which aligned closely with both the CPG and educational resource. Reduction of caloric intake, avoidance of sugar, and keeping a food diary were all nutrition recommendations noted throughout the qualitative data.

The participants' physical activity recommendations included walking, biking, swimming, or other aerobic based exercises. While the recommended activity intervals varied, there were some participants who acknowledged the CPG recommendations of physical activity performed for 150 minutes/week or greater. A theme noted throughout the participants' answers was the importance of individualization. Most participants expressed their intent to recommend realistic, manageable physical activity interventions which would be attainable for their patient population. Participants also provided methods of accountability to assist in development of self-efficacy, whether it was in the form of a phone application, diary, or accountability partner. Goal-setting was a frequently identified theme, both in the form of short-term achievements and long-term weight loss management.

While many of the themes drawn from participant answers echoed CPG recommendations, misinformation was also identified throughout the study data. Review

of up to date CPG recommendations would be of value both to providers and their patient population in order to most effectively address adult obesity. McClinchy et al. examined both provider and patient experiences with obesity and nutritional interventions in primary care (2013). A major theme within the discussions focused on patient frustrations despite receiving education from their providers regarding weight loss interventions. The complexity of a disease like obesity is evident throughout research. In order to minimize frustration, both on the part of the patient and provider, CPG recommendations should be reviewed and implemented to best ensure optimal management. The frustrations associated with obesity management can be further understood through a study conducted by Buchholz, Purath & Rittenmeyer which investigated nurse practitioners' perceived barriers to treating obesity with physical activity recommendations (2009). Nurse practitioners were asked to discuss their perceived ability to counsel and educate their patients regarding physical activity. The strategy described as most effective in integrating recommended physical activity interventions into a patient's lifestyle was creation of an individualized physical activity plan tailored to fit the patient's needs.

Behavioral factors have been identified by researchers as important indicators of successful treatment of adult obesity. In a 2013 study, Annesi and Tennant examined behavioral interventions and their potential impact on obese adults attempting to incorporate physical activity and nutritional interventions into their lifestyles. Typical educational practices were compared to education which included development of behavioral factors such as self-efficacy. An emphasis on the development of an obese adult's self-efficacy resulted in more effective treatment outcomes. It was found that heightened levels of self-regulation and self-efficacy contributed to improved outcomes,

like increased amounts of physical activity and more appropriate dietary choices (Annesi & Tennant, 2013).

Resources containing CPG-based recommendations were utilized within this study and others before it to improve provider knowledge levels. Findings within this study resembled much of the available research associated with adult obesity. While the data drawn from participant answers often echoed CPG recommendations, misinformation was also identified throughout the study. Education can be an effective tool to combat misinformation and improve care outcomes. Provider knowledge levels associated with adult obesity recommendations vary, but there is an overall need for greater awareness of effective CPG-based treatment recommendations.

Observations

Many observations can be made based on review of the quantitative data from the pre-test and post-test as well as the qualitative pre-test data. This data can also be compared and contrasted with earlier research associated with the same topics. While other studies throughout the body of research may have different variables to be taken into consideration, like a larger sample size, there are similarities identified which make this study comparable to others. As stated by prior research (Parker, Steyn, Levitt, & Lombard, 2011), this study found not all providers were able to accurately answer questions associated with effective adult obesity interventions. In fact, only nine of the fifty participants were able to attain a score of 91% or higher on the pre-test multiple choice questions. This could be an indication that a significant number of the participants were unfamiliar with certain aspects of the guidelines associated with adult obesity recommendations.

This potential issue associated with provider awareness was further magnified when the specific intervention of physical activity was reviewed within both this study and prior research. The importance of physical activity can often be overlooked, with providers deferring physical activity recommendations and focusing only on nutrition interventions. Throughout research hesitation can be identified on the provider's part and is often related to the viewpoint that all available abilities and motivational skills should be directed towards nutrition. Annesi and Marti (2011) discouraged this approach of deferring physical activity to caloric reduction. Their rationale was that self-efficacy levels were heightened when physical activity was emphasized alongside nutrition (Annesi & Marti, 2011). To initiate nutritional interventions most effectively, integration of physical activity was an important component for success.

Within this study participants scored lower on questions associated with physical activity than any other topic, with an average of 56% on the pre-test. The *AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults* recommends a minimum of 150 minutes/week of moderate physical activity in the form of a combination of aerobic activity and muscle-strengthening exercise (Jensen et al., 2014). While aerobic physical activity is beneficial both the educational resource and CPG highlight the importance of combining aerobic activity with muscle-strengthening exercise. Prior research reinforces this blend of activities as opposed to solely relying on aerobic exercises to meet physical activity requirements. In a previously published 2012 study, aerobic exercise alone proved to be an insufficient intervention and participants were unsuccessful in achieving weight loss or improving their endurance capacity (Lee, Kuo, Fanaw, Perng & Juang, 2012). Within the qualitative data derived from this study's

results participants provided a variety of exercise options which would qualify as aerobic activities, but muscle strengthening exercise was only mentioned within two individual participant responses.

Providers should be prepared to provide patients with recommendations associated with adult obesity interventions. It is also important, however, to ensure that those recommendations have been proven both effective and evidence based. It is unfortunate when a patient is willing to implement provider recommended lifestyle interventions but then experience frustrations when the interventions prove to be ineffective. This situation highlights the importance CPG recommendations and the need to equip providers with the capability to communicate interventions effectively to their obese adult population.

Evaluation of Theoretical Framework

Nora Pender's Health Promotion Model examines behaviors which contribute to health and wellness in an individual (Alligood, 2014). The Health Promotion Model depicts a framework for research which is the identification of healthy lifestyle behaviors and the interventions necessary for their effective implementation (Pender, Murdaugh, & Parsons, 2011). Using the Health Promotion Model as a guide, an assessment of provider awareness associated with adult obesity interventions took place to identify deficits in knowledge and recommendations which did not align with the guidelines. Applying this theory in the context of obesity requires an understanding of internal and external influences affecting the individual's food and activity choices, as well as other lifestyle factors. Pender's model recognizes an individual is going to be influenced by their environment and will be more likely to maintain behavioral modifications if they are

supported and motivated to do so (Alligood, 2014). Behavior modification, self-regulation and self-efficacy are all key concepts of both the Health Promotion Model and this study. These concepts created a framework to follow when selecting a CPG and developing an educational resource. Throughout this study Pender's Health Promotion Model served as a guide through which provider knowledge levels demonstrated improvement following exposure to CPG-based recommendations.

Evaluation of Logic Model

This study assessed participants' knowledge levels associated with CPG-based lifestyle interventions for the obese adult. It also evaluated current provider recommendations within the clinical practice setting associated with adult obesity lifestyle interventions. A CPG-based educational resource was developed and utilized within the study. Positive outcomes were identified as exposure to the resource resulted in an improvement in provider knowledge levels associated with CPG-based adult obesity recommendations. This was indicated by review of the pre-test scores and post-test scores. Following completion of the study participants were able to keep the resource, ideally to review recommendations and incorporate the information into future patient education. The study results supported both the short-term and medium-term goals stated within the logic model in chapter one of this project. The long-term goal was utilization of the resource to ensure accuracy of recommendations and patient education supplementation within the clinical setting. While this goal will not be measured within the constructs of this study design, the effort taken to develop a CPG-based educational resource has resulted in its availability to all participants and hypothetically their patient populations as well.

Limitations

Some limitations noted within the study were a small sample size and a low completion rate of the post-test survey. Fifty participants took part in the initial pre-test survey. Their knowledge levels associated with adult obesity CPG recommendations were assessed, and their frequently used practice recommendations for adult obesity lifestyle interventions were provided. Only twenty-four of these participants also completed the post-test survey. The post-test was completed after review of educational resource and it intended to identify if there were improvements in the participants' abilities to correctly answer questions associated with adult obesity recommendations. Statistical analysis was conducted to determine significance of the mean comparison between pre-test scores and post-test scores. The study results concluded with statistical significance ($p < 0.05$) that there was an increase in the knowledge level of providers associated with adult obesity recommendations following exposure to the CPG-based educational resource. While the study results resemble previous research, it could have proven beneficial to have a larger sample population and have all the participants complete all portions of the study.

An attempt was made to identify underlying factors which may have contributed to the low completion rate of the post-test survey. A variety of overlapping factors could have influenced participation including: participant fatigue, lack of time, form of survey delivery, technological issues, lack of incentive, or errors in survey development. A concerted effort was made to develop a study design which included clear instructions and a concise survey, but potential errors within study creation may have contributed to a low post-test survey completion rate. The online program used to

distribute surveys and gather participant data was Survey Monkey. PSU provides their graduate students with access to the school's Survey Monkey account to be utilized for research purposes. Delivering surveys through this platform meant a participant was required to open two separate emails, one with a link to the pre-test survey, and one with a link to the post-test survey and educational resource. This was done to ensure validity but could also have contributed to participant fatigue. Another possible issue was that of electronic mail delivery. If mail was flagged as junk or spam the participants may have never received a link to the post-test survey. Though it is speculation, it is worth noting the low completion rate of the post-test survey may be addressed through an in-person delivery format. This could be completed within a professional conference or continuing education class. Providing an incentive, such as continuing education credits, may have also ensured a greater number of participants completed all parts of the study.

Another limitation to be noted was the lack of prior validation of both the survey and educational resource. While they were both created to represent information found within a CPG, they were researcher developed and had not been used in previous studies. Utilizing these resources within the study, as opposed to previously researched material, meant there was no previous data to be used for comparison purposes. Every effort was made to ensure the content within both the survey and educational resource accurately represented the guidelines. Though content validity was a high priority throughout material development the newly developed resources lacked the ability to be compared to prior research data which had utilized identical resources.

Implications for Future Research

Findings within this study suggest the need for future research associated with adult obesity, with a specific focus of lifestyle interventions. Limitations identified within the framework of this particular study can also be addressed through further research. The importance of further research associated with this topic is due in part to the state of the obesity epidemic within our nation. Another contributing implication for future research is the effectiveness of lifestyle interventions in regard to obesity management. Research continues to demonstrate that the most effective approach to treating obesity and attaining a better quality of life is to modify the lifestyle of an individual (Burke & Wang, 2011). Treatment of adult obesity relies on effective recommendations on the part of the healthcare provider. The data obtained from this study and past research suggests there is a lack of provider awareness associated with effective adult obesity recommendations. Even further beyond the narrowed scope of this study was development of a treatment plan to address the obese patient's condition. While lifestyle interventions may be a key variable of obesity management treatment of comorbidities, pharmaceutical treatment, and bariatric surgery referral may all also be a part of the treatment plan. Continued research is necessary to determine how best to equip healthcare providers with the education and resources necessary to care for their obese adult patient populations.

Implications for Practice, Education, and Policy

A priority within this study was to outline the importance of a multifactorial approach to obesity management. Research has demonstrated the need for integration of nutrition, physical activity and behavioral interventions if effective management of adult obesity is to be attained. Within the primary care setting this management style should be

implemented into the care of the obese adult population. Interventions should be developed according to CPG-based recommendations in order to provide patients with optimal conditions for successful management of their obesity. Misinformation within the context of adult obesity management can be detrimental to the potential success of an individual striving to address their condition. The utilization of information proven successful through research and represented within clinical practice guidelines is of great importance as it has the potential to alter current practice and improve patient outcomes. Providers should understand the importance of continuous self-reflection and re-assessment in order to identify gaps in knowledge and address them through the completion of education.

In 2015, the Centers for Disease Control and Prevention (CDC), published their results from the National Health and Nutrition Examination Survey. This survey presented an overview of the prevalence of obesity within the United States between 2011 and 2014. The results indicated that more than thirty-six percent of adult Americans were obese. Apart from the health risks to the individual, the healthcare system as a whole is negatively impacted by the high cost managing adult obesity (CDC, 2015). The economic implications are even further reaching when considering the negative impact obesity has on both unemployment and disability, raising the cost for both (Institute of Medicine, 2012). Policy development is an important factor in the current state of adult obesity within the United States. Focusing on preventative services within the primary care setting, as opposed to management of already established conditions, not only benefits the health of the nation but also the cost of healthcare resources. The obesity epidemic should remain a priority in order to be effectively addressed through the

combined efforts of the government, community, healthcare providers, and the individual themselves.

Conclusion

The purpose of this study was to assess current provider practice recommendations and knowledge levels. The study also attempted to improve provider knowledge levels through the review of CPG-based recommendations. Study results suggested large variances both in provider knowledge levels and practice recommendations associated with adult obesity. The data obtained through this study also indicated an improvement in knowledge levels associated with CPG-based recommendations following review of education. There is a responsibility as a healthcare provider to be readily-equipped to provide accurate patient education presented in an effective manner. Providers need to be well-versed in recommendations which are evidence-based and proven effective. The importance of effective management of adult obesity cannot be understated. Providers must be aware of evidence-based recommendations in order to provide their obese adult patient population with quality care.

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APPENDIX

Appendix A:

Provider Awareness Associated with Adult Obesity and Lifestyle Interventions

Pre-Test Part A

1. Which contributing factors should be discussed in order to better understand the obese individual's current condition?
 - A. Weight fluctuation, family history, dietary habits, physical activity, conditions and medications affecting weight. *
 - B. Weight gain in the past year and dietary habits.
 - C. Weight gain as a child, daily caloric intake and physical activity.
 - D. History of weight gain/loss and medications affecting weight.

2. Which method is a recommended strategy for weight reduction in the obese adult?
 - A. Creating an energy deficit
 - B. Caloric reduction
 - C. Physical activity
 - D. All of the above *

3. What would be considered successful weight reduction for the obese adult resulting in decreased risk of cardiovascular disease?
 - A. 15%-18% of initial weight
 - B. 5%-10% of initial weight *
 - C. 10% of the individual's BMI
 - D. 15% of the individual's BMI

4. What intervention would help the obese adult successfully achieve a recommended dietary intake?
 - A. Determine their current caloric intake and decrease that daily intake by 500-750 calories a day.
 - B. Refer a patient to a nutrition professional for counseling.
 - C. Prescribe a very-low calorie diet, (<800 kcals/day), and follow-up in one month to assess progress.
 - D. Both A & B. *

5. Which is a recommended amount of physical activity for the obese adult?
 - A. Begin physical activity if weight gain is noticed.
 - B. Engage in aerobic physical activity for greater than 150 minutes/week. *
 - C. Walking 20 minutes daily.
 - D. Engage in 60 minutes of vigorous physical activity daily.

6. Which question demonstrates an appropriate inquiry of the obese adult's readiness to make lifestyle changes?

- A. How prepared are you to eat less calories and exercise daily?
- B. Are you willing to change your current lifestyle until you have lost weight?
- C. Is it realistic for you to stop eating fast food and begin working out daily?
- D. Are you prepared to make behavior changes, alter your diet, and be more physically active? *

7. Which would be a priority for the obese adult when integrating behavior modifications into their lifestyle?

- A. Monthly monitoring of body weight.
- B. Weighing and measuring of food intake.
- C. Regular self-monitoring of food intake and physical activity three time a week.
- D. Regular self-monitoring of food intake and physical activity, weekly monitoring of body weight. *

8. When an obese adult is uninterested in weight reduction which of the following would **NOT** be included within their plan of care moving forward?

- A. Periodically reassess the patient's interest and readiness for weight loss.
- B. Counsel the patient on the importance of avoiding additional weight gain.
- C. Discuss the immediate need for drastic dietary changes and increased physical activity levels. *
- D. Treat any cardiovascular risk factors and obesity-related health conditions.

9. Are you currently practicing as a Nurse Practitioner?

YES / NO

10. Do you come interact with an obese adult patient population in the clinical setting?

YES / NO

*Questions based on *The Guideline for the Management of Overweight and Obesity in Adults*, (2014) completed by the American Heart Association, American College of Cardiology, and The Obesity Society (AHA/ACC/TOS)

Appendix B:

Provider Awareness Associated with Adult Obesity and Lifestyle Interventions

Pre-Test Part B- Current Recommendations Inquiry

IF you are a Nurse Practitioner who comes into contact with an obese adult patient population in the clinical setting please describe your most frequently utilized practice recommendations, dedicating no more than one paragraph to each topic.

1. Nutrition and the Obese Adult Patient

2. Physical Activity and the Obese Adult Patient

3. Self-Efficacy or Behavior Modification Strategies and the Obese Adult Patient

Appendix C:

Provider Awareness Associated with Adult Obesity and Lifestyle Interventions

Post-Test

1. Which contributing factors should be discussed in order to better understand the obese individual's current condition?

- A. Weight fluctuation, family history, dietary habits, physical activity, conditions and medications affecting weight. *
- B. Weight gain in the past year and dietary habits.
- C. Weight gain as a child, daily caloric intake and physical activity.
- D. History of weight gain/loss and medications affecting weight.

2. Which method is a recommended strategy for weight reduction in the obese adult?

- A. Creating an energy deficit
- B. Caloric restriction
- C. Physical activity
- D. All of the above*

3. What would be considered successful weight reduction for the obese adult resulting in decreased risk of cardiovascular disease?

- A. 15%-18% of initial weight
- B. 5%-10% of initial weight*
- C. 10% of the individual's BMI
- D. 15% of the individual's BMI

4. What intervention would help the obese adult successfully achieve a recommended dietary intake?

- A. Determine their current caloric intake and decrease that daily intake by 500-750 calories a day.
- B. Refer a patient to a nutrition professional for counseling.
- C. Prescribe a very-low calorie diet, (<800 kcals/day), and follow-up in one month to assess progress.
- D. Both A & B. *

5. Which is a recommended amount of physical activity for the obese adult?

- A. Begin physical activity if weight gain is noticed.
- B. Engage in aerobic physical activity for greater than 150 minutes/week. *
- C. Walking 20 minutes daily.
- D. Engage in 60 minutes of vigorous physical activity daily.

6. Which question demonstrates an appropriate inquiry of the obese adult's readiness to make lifestyle changes?

- A. How prepared are you to eat less calories and exercise daily?
- B. Are you willing to change your current lifestyle until you have lost weight?
- C. Is it realistic for you to stop eating fast food and begin working out daily?
- D. Are you prepared to make behavior changes, alter your diet, and be more physically active? *

7. Which would be a priority for the obese adult when integrating behavior modifications into their lifestyle?

- A. Monthly monitoring of body weight.
- B. Weighing and measuring of food intake.
- C. Regular self-monitoring of food intake and physical activity three time a week.
- D. Regular self-monitoring of food intake and physical activity, weekly monitoring of body weight. *

8. When an obese adult is uninterested in weight reduction which of the following would **NOT** be included within their plan of care moving forward?

- A. Periodically reassess the patient's interest and readiness for weight loss.
- B. Counsel the patient on the importance of avoiding additional weight gain.
- C. Discuss the immediate need for drastic dietary changes and increased physical activity levels. *
- D. Treat any cardiovascular risk factors and obesity-related health conditions.

*Questions based on *The Guideline for the Management of Overweight and Obesity in Adults*, (2014) completed by the American Heart Association, American College of Cardiology, and The Obesity Society (AHA/ACC/TOS)

Educational Resource

MAKING THE CHANGE TO A HEALTHIER LIFESTYLE

~Key Ideas for Patient Success~

NUTRITION

**Make Nutritious Food
Part of Your Daily Intake**

- ❖ Avoid processed foods
-Example: Fresher produce, less packaged foods
- ❖ Make smart choices at every meal
-Example: Vegetables, fruits, and proteins
- ❖ Avoid added expense of eating healthier
-Example: Choose frozen options with no added sodium

Base Intake on Individual Needs

- ❖ Monitor food intake
-Example: use an app on a tech device or journal
- ❖ Determine your dietary needs through an online tool
-Example: choosemyplate.gov
- ❖ Typically, an ideal dietary intake is 1,200-1,800 calories per day
-Example: Start by decreasing daily intake by 500-750 calories a day
- ❖ Prepare food in bulk and in advance so healthy meals are quick and accessible
-Example: Pack lunch for work/school

**Everyone Could Benefit
from Physical Activity**

- ❖ Avoid inactivity, focus on being as active as your body allows
-Example: Think start low, go slow
- ❖ Take part in activity relative to your current fitness level and gradually increase activity
-Example: Start with walking, progress to jogging, then running
- ❖ The benefits of physical activity outweigh the possibility of adverse outcomes
-Example: Consult your healthcare provider to determine safe, effective activities

PHYSICAL ACTIVITY

**Avoid Added Sugars
& Saturated Fats**

- ❖ Read ingredient labels
-Example: Check for added sugar and saturated fats
- ❖ Choose water more often
-Example: Swap sugary soda for water
- ❖ Eat out less & at home more
-Example: Choose restaurants wisely, avoid fast food

Adopt Healthy Eating Habits

- ❖ Small changes are still changes in the right direction
-Example: Cut out one soda a day
- ❖ Make healthy decisions more often than not in regard to your daily dietary intake
-Example: Incorporate vegetables into a meal instead of breads
- ❖ Swap usual food choices with healthier alternatives
-Example: Instead of sugary cereal try oatmeal

**Aim for 150 Minutes/Week
of Physical Activity**

- ❖ Break this time up however it works best
-Example: 50 minutes 3 times a week or 30 minutes 5 times a week
- ❖ Some physical activity is better than none
-Example: plan ahead to make time for exercise
- ❖ Track your physical activity to stay motivated
-Example: use an app, smartwatch, or daily journal to keep track of progress

**Include Both Aerobic
& Muscle-Strengthening Activities**

- ❖ Aerobic= endurance, should be performed in episodes of at least ten minutes
-Example: Brisk walking, running, biking, rowing
- ❖ Muscle strengthening= resistance, should be incorporated at least twice weekly
-Example: free weights or machines

PROVIDER INFORMATION

-Inquire about factors contributing to the obese adult's current condition, including: history of weight fluctuation over time, details of previous weight loss attempts, dietary habits, physical activity, family history of obesity, and medical conditions or medications which could cause weight gain.

-Advise the obese adult the higher their BMI and waist circumference, the higher their risk is for cardiovascular disease, type II diabetes mellitus, and all-cause mortality.

-Counsel on the importance of avoiding additional weight gain to prevent greater health risks.

-Consider successful weight reduction for the obese adult to be approximately 5%-10% of initial weight, which will result in decreased risk of cardiovascular disease and obesity-related medical conditions.

-Discuss a comprehensive lifestyle weight-loss approach with the obese adult. Recommend weight loss through key interventions such as: dietary changes caloric reductions, increased physical activity in order to create an energy deficit, and the development of behavioral strategies to facilitate adherence to diet and activity recommendations.

NUTRITION

-Recommend a nutritional deficit of >500 kcal/day of current dietary intake, typically achieved with a dietary intake of 1,200-1,500 kcal/day for women and 1,500-1,800 kcal/day for men.

-Determine current caloric intake and decrease that daily intake by 500-750 calories a day.

-Review methods to avoid further weight gain. Monitor weight loss weekly and adjust food intake accordingly.

-Consider referral to a nutrition professional for dietary counseling or enrollment in a comprehensive lifestyle intervention program if accessible.

PHYSICAL ACTIVITY

-Advise the obese adult to engage in regular physical activity, greater than 150 minutes/week.

-Recommend increased aerobic physical activity for greater than 150 minutes/week with higher levels of physical activity, approximately 200-300 minutes/week to maintain weight loss and minimize weight gain.

-Review methods to avoid further weight gain. Monitor weight loss weekly and adjust physical activity accordingly.

SELF-EFFICACY

-Assess the obese adult's readiness to make lifestyle changes. Ask, "how prepared are you to make changes in your diet, be more physically active, and use behavior change strategies such as monitoring your weight?"

-Discuss ways to increase levels of self-motivation like regular monitoring of food intake and physical activity.

-Identify obese adults who are currently unwilling or unmotivated to lose weight. Moving forward include periodic reassessment of the patient's interest in losing weight and readiness for weight loss.

-Collaborate in the development of realistic weight loss goals. A realistic goal for the overweight or obese individual would be 5%-10% of baseline weight within the first six months of integration of lifestyle intervention

*Questions based on *The Guideline for the Management of Overweight and Obesity in Adults*, (2014) completed by the American Heart Association, American College of Cardiology, and The Obesity Society (AHA/ACC/TOS) and The Office of Disease Prevention and Health Promotion (ODPHP) and the United States Department of Health and Human Services (HHS), *2015-2020 Physical Activity and Dietary Guideline*