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MANAGING ADULT OBESITY WITH PROVIDER EDUCATION

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

Krystal August

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May 2018

MANAGING ADULT OBESITY WITH PROVIDER EDUCATION

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MANAGING ADULT OBESITY WITH PROVIDER EDUCATION

An Abstract of the Project by
Krystal August MSN, FNP-C

The purpose of this study was to determine the significance of providing education over evidence-based clinical practice guidelines on managing adult obesity. This study also evaluated self-reported provider bias towards adults with overweight and obesity. This study was conducted at the 4-State Advance Practice Nurses (APN) conference in March 2018 that was held at Pittsburg State University. The participants in the study included nurse practitioners who attended the conference and volunteered their participation. The participants completed a pre-test. After the pre-test a PowerPoint presentation was provided over the evidence-based clinical practice guidelines on managing adult obesity and provider obesity bias. Following the PowerPoint a post-test was given to all participants. A six-week follow up email was sent to primary care providers who attended the conference and indicated they would continue their participation in the study. In conclusion, the study found that education over evidence-based clinical practice guidelines over adult obesity management increased providers' knowledge. Self-reported obesity bias was not identified in the group of respondents.

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Chapter I

Introduction

Statement of the Problem

Obesity is a growing epidemic in the United States. According to the Centers for Disease Control and Prevention (CDC) (2014) nearly 37.9% of adults aged 20 and over are obese and over 70% are overweight. The number of adults with obesity is a growing number. Obesity has been classified as a chronic disease (Apovian, Garvey, & Ryan, 2015). Obesity can lead to multiple health problems including physical, psychosocial, and functional (McKinney, et al., 2013). Managing adult obesity in primary care is a necessity as it is a complex diagnosis that requires long term care (McKinney, et al., 2013). Providing primary care provider education over management of adult obesity should lead to an increased use of clinical practice guidelines for managing adult obesity. Poor management of adult obesity and lack of use of clinical practice guidelines has been documented in the literature (Farran, Ellis, & Barron, 2013).

Several guidelines for the management of adult obesity have been published, although they are not always followed. A few of these guidelines include: the *American Heart Association/American Academy of Cardiology/The Obesity Society Guideline for the Management of Overweight and Obesity in Adults*, the National Institute for Health Care Excellence's *Obesity: identification, assessment and management*, and the

American Academy of Family Physicians *Diagnosis and Management of Obesity*.

Although there are several guidelines and studies that have proven that managing obesity is important, there are multiple factors that impede proper management. Some of the reasons obesity guidelines are not followed are uncertainty about interventions (McKinney, et al., 2013), providers not being up-to-date on interventions (Apovian, Garvey, & Ryan, 2015), limited time during visits, doubt about outcome of implementations, and providers' reluctance to discuss weight when they are overweight themselves (McKinney, et al., 2013). Other barriers that have been presented include lack of knowledge, lack of incentives, and social bias (Roberts, Standage, Olaoye, and Smith, 2015).

It is vitally important that obesity is diagnosed so it can be treated. Barnes, Theeke, and Mallow (2015) found that, "if obesity is left undiagnosed and untreated, the health of patients will suffer" (p. 305). One study found that only one-third of patients, who met the established criteria, are receiving an obesity diagnosis (Bleich, Pickett-Blakely, & Cooper, 2012). When the diagnosis of obesity is not made, there is minimal chance that a management plan will be put into place (Bardia, Holtan, Slezak, & Thompson, 2007). When clinical practice guidelines are followed, better patient care is given and there is an increase in management of obesity (Farran, Ellis, & Barron, 2013). Patients should be diagnosed with obesity so that the guidelines for management of obesity can be implemented.

Besides education on current practice guidelines, providers need additional education to optimally manage adult obesity. A study by Khandalavala, Rojanala, Geske, Koran-Scholl, and Guck (2014) noted that education on obesity management should

include education on obesity bias. According to Fruh et al. (2016) “providers must identify and overcome their own weight-based biases” (p. 426). Several factors have been shown to affect provider bias toward obesity, one being length of practice. One study identified that providers with a longer practice history have a greater bias than those who have not practiced as long (Khandalavala, Rojanala, Geske, Koran-Scholl, and Guck, 2014). If obesity bias is identified in oneself, it can be reduced with self-reflection and the awareness can lead to improved patient care and decreased obesity (Fruh et al., 2016).

Significance to Nursing

The number of Americans that are overweight and obese has continued to increase (McKinney et al., 2013). Preventing this number from continuing to increase is something that providers can impact. As advanced practice nurses in the provider role, this is significant to nursing because advanced practice nurses are able to diagnosis and treat obesity. The guidelines for diagnosis and treatment have been studied and published for access by providers, but studies show that there is a lack of diagnosis and management of obesity.

When obesity is not identified through diagnosis, there is lack of appropriate management (Ma, Xiao, & Stafford, 2009), potentially leading to further medical conditions. Obesity is a serious disease that can lead to multiple comorbidities, including type two diabetes mellitus, cardiovascular disease, hypertension, gastroesophageal reflux disease, increased early mortality, and various types of cancer (Lichtenstein, 2015).

When providers are educated on the guidelines there is increased diagnosis and management of obesity; this provides the best and most effective care. Farren, Ellis, and

Barron (2013) performed a study that concluded that participation in continuing education increased not only the diagnosis of obesity but also increased counseling for diet and physical activity as management strategies for obesity. There are several strategies to increase the use of clinical practice guidelines. Provider education is a simple and effective way to provide the most up-to-date information on clinical practice guidelines. With education on the guidelines there is an increased chance of application to practice that could lead to improved diagnosis and management of obesity.

The continued increase in the number of Americans that are classified as overweight or obese needs to be addressed. This can be done by educating primary care providers to use clinical practice guidelines. The increased use of the guidelines can lead to increased diagnosis and management of obesity, along with decreased provider barriers, and decreased medical cost for treatment of the obese patient.

Statement of the Purpose

The intention of this scholarly project was to evaluate if educating primary care providers on clinical practice guidelines for managing adult obesity lead to increased knowledge of managing adult obesity, including diagnosing obesity, assessing comorbidities, counseling patients on risk associated with obesity, appropriate lifestyle modifications including diet and exercise, and identifying patients appropriate for bariatric surgery. Another purpose was to assess if providers changed the way they practice at a self-reported six-week follow up.

Theoretical Framework

The model that was used for this project is Rogers Diffusion of Innovation (DOI) theory. This theory can be used to adapt new evidence-based practice such as clinical

practice guidelines. According to this model, innovations include how the practices are adopted and modified to be used (Lien & Jiang, 2016) and diffusion is how innovation is communicated. According to Lien and Jiang (2016), “the main objectives of innovative strategies are to not only provide knowledge, but ensure diffusion of the innovation and its acceptance by the population for sustained long-term effect” (p. 259). In this research, the recommendations on how to manage adult obesity are innovations (Dearing, 2009), and the method of diffusion includes clinical practice guideline publication and provider education. Rogers would identify the clinical practice guidelines as an “interrelated bundle of new ideas” (Rogers, 2003, p. 249) which would have a greater chance of being adopted all together than individually.

The use of this model looked at different types of providers or adopters of the clinical practice guidelines. Rogers identifies five types of adopters in the DOI theory: innovators, early adopters, early majority, late majority, and the laggards (Rogers, 2003). The process of adapting the clinical practice guidelines is individual as each provider learns and practices differently. Once providers adopt the clinical practice guidelines they can start incorporating them into their practice. There are five stages of adoption: awareness, interest, evaluation, trial, and adoption. The model (See Figure 1) shows these stages with the incorporation of the clinical practice guidelines.

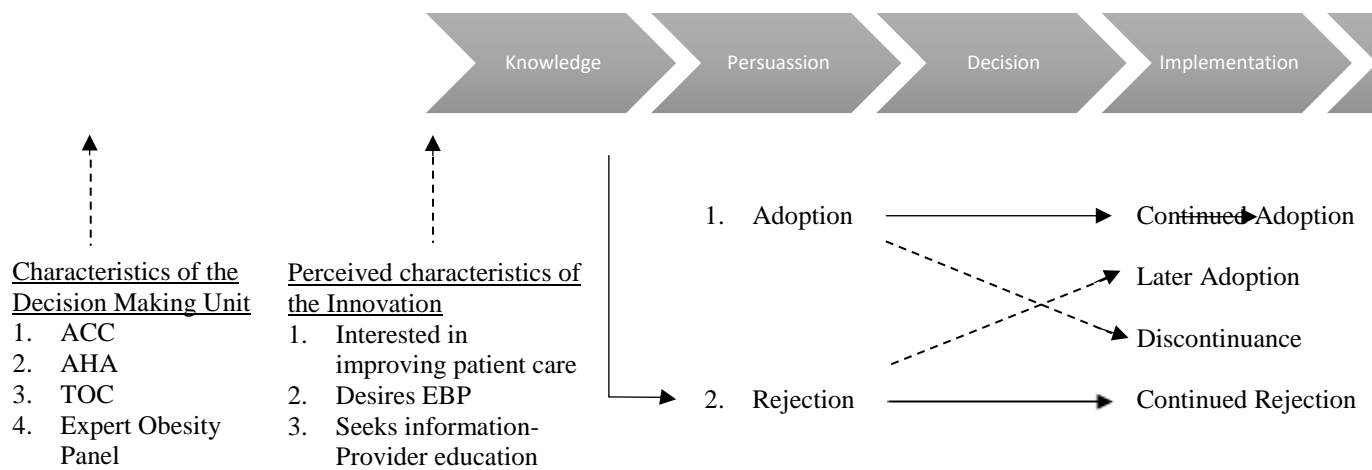
Figure 1:

Rogers' Diffusion of Innovation Theory

Adapted with modification (Rogers, 2003)

Prior Conditions

1. Current Practice
2. Obesity is on the rise
3. Need for change
4. Lack of provider management
5. Provider Obesity Bias



Project Questions

1. Will education of primary care providers increase their knowledge of clinical practice guidelines related to adult obesity?
2. Will education of primary care providers increase the accuracy for diagnosing obesity in adults?
3. Will education of primary care providers increase correct lifestyle modification recommendations in adults with obesity?
4. Will education of primary care providers increase correct identification of candidates for bariatric surgery in adults with obesity?
5. According to self-reported behavior, will providers practice differently six weeks after education about obesity clinical practice guidelines is provided?
6. Do primary care providers have self-reported obesity bias?

Definition of Key Terms/Variables

The definitions of terms used in this project are provided below.

1. Body Mass Index (BMI)- a calculation involving a patient's weight (in kilograms) divided by height (in meters squared). This number is then used to classify patients into different categories (The Obesity Society, 2016). BMI has been shown to have a correlation with mortality and comorbidities (Jensen et al., 2013).
 - a. Underweight BMI $<18.5 \text{ kg/m}^2$
 - b. Normal Weight: BMI $18.5 < 25 \text{ kg/m}^2$
 - c. Overweight: BMI $25 < 30 \text{ kg/m}^2$
 - d. Class I obese: BMI $30 < 35 \text{ kg/m}^2$
 - e. Class II obese: BMI $35 < 40 \text{ kg/m}^2$

f. Class III obese: BMI ≥ 40 kg/m²

(Jensen et al., 2013)

2. Clinical Practice Guideline- “Statements that include recommendations, intended to optimize patient care, that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options” (Institute of Medicine, 2011).
3. Algorithm- “a step-by-step procedure for solving a problem or accomplishing some end” (Merriam-Webster Dictionary, n.d.).
4. Continuing Education- “Educational activities that serve to maintain, develop, or increase knowledge and skills of providers to provide increased quality of care to patients” (Accreditation Council, n.d.).
5. Primary Care Provider- “A physician, nurse practitioner, clinical nurse specialist or physician assistant, who provides, coordinates or helps a patient access a range of health care services across the lifetime” (Healthcare.gov, n.d.).
6. Diagnosis- “identifying a disease from its signs and symptoms” (Merriam-Webster Dictionary, n.d.).
7. Self-Report- “a report about one’s behavior provided especially by the one who is a subject of research” (Merriam-Webster Dictionary, n.d.).
8. Embeddedness- “the observed tendency among...providers...to see weight as an issue within other types of medical visits rather than presenting as a discreet issue” (Asselin, Osunlana, Ogunleye, Sharma, & Campbell-Scherer, 2015).

Logic Model

The logic model (See Figure 2.) for this project shows how the effort and strategy of this project led toward provider practice change. This strategy is thought to be a good solution to the problem. The details of this logic model present clearly the steps from beginning to end while identifying short-term, medium-term, and long-term goals. This logic model took into consideration possible external constraints as well as barriers and assumptions.

Short term goals of this project included identifying self-bias towards obesity, educating primary care providers to correctly diagnose obesity, increasing screening for comorbidities associated with obesity, educating primary care providers on recommendation of appropriate lifestyle modifications, and educating primary care providers on the recommendation of candidates for bariatric surgery. The short-term goals were evaluated with pre-test and post-test after education on clinical practice guidelines for adult obesity. The medium goals of this guideline were to change provider practice when managing adult obesity after six weeks and to decrease obesity bias if it was present in initial pre-test. These goals were evaluated with a six week follow up survey that includes self-report by the providers. The long-term goals of this project were to improve management of adult obesity and lead to a decrease in the number of adults who are overweight or obese. The long-term goals of this project were not evaluated at this time due to the time frame limitations of this project.

Possible external constraints and barriers are identified below:

1. Provider bias towards obesity limits open-mindedness and acceptance of clinical practice guidelines.

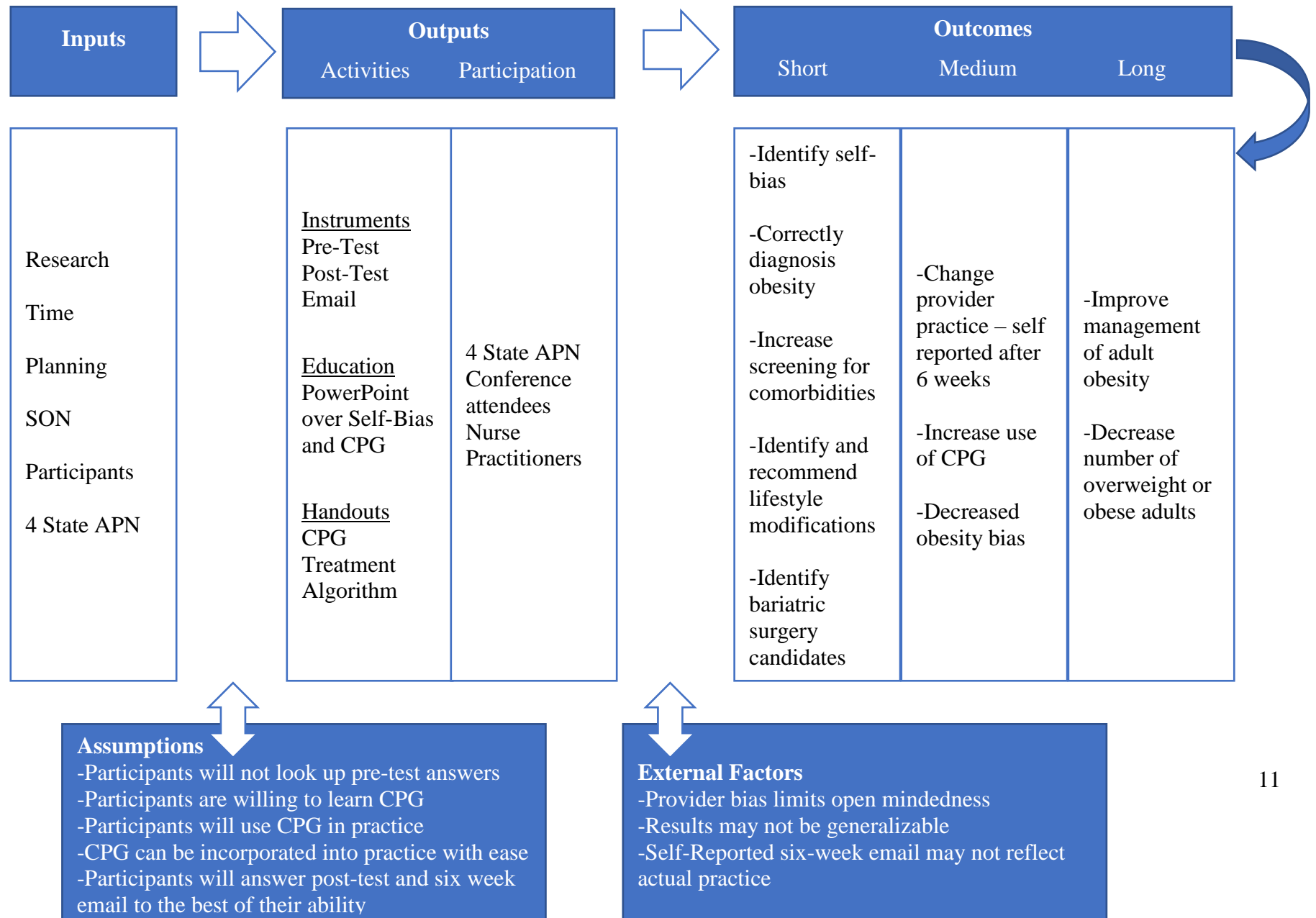
2. Results of the study may not be generalizable since the study will be completed on a group of providers in the Midwest region of the United States.
3. The six week follow up study may not be accurate since it is based on self-report and not chart review of actual practice.

Assumptions of the model include the following:

1. The pre-test questions will be answered on knowledge that providers already had without looking up the answers.
2. Providers are willing to learn the clinical practice guidelines.
3. Providers will incorporate the clinical practice guidelines after they have received the education.
4. The information is not entirely new to providers and they will be able to incorporate it into practice without difficulty.
5. Providers will answer post-test and six week follow up questions to the best of their ability.

Figure 2

Adult Obesity Guidelines Logic Model



Summary

The number of adults who have a BMI that is above normal is increasing. There are multiple studies that present this along with the lack of treatment. Primary care providers have access to clinical practice guidelines but many still do not use them. Clinical practice guidelines are easy to read and are supported by evidence. However, there are still barriers to implementing them in practice. This study aimed to eliminate some of those barriers and lead providers to have increased diagnosis and management along with changed practice.

Chapter II

Literature Review

A review of the literature was conducted to gather the most relevant up-to-date information on adult obesity and management in primary care. This literature review was conducted using online databases. The literature identified clinical practice guidelines for management of adult obesity. A significant amount of research has been done over management of adult obesity. The literature revealed lack of management of adult obesity. The literature reviewed for this project was limited to the past ten years. Restricting the review to ten years, allowed for the information to be the most up-to-date and reliable. The aim of this literature review was to identify current clinical practice guidelines and barriers to implementation. This information was utilized for this project to implement provider education relating to management of adult obesity in primary care.

The databases that were utilized for this literature review were PubMed, CINAHL, and Summon through Pittsburg State University. The initial keywords searched were: obesity, primary care, interventions, clinical practice guidelines, evidence-based practice, barriers, and management. Search phrases that were utilized include, “adult obesity management”, “primary care provider”, “knowledge of clinical practice guidelines”, “knowledge gap”, “provider bias”, and “diagnosis of obesity”. After using the stated key words and phrases, 37 articles were identified to provide a

greater understanding of the current recommendations of adult obesity in primary care.

To narrow down the articles criteria was developed. The criteria used was as follows:

- Article was published within the last 7 years
- Article did not involve childhood obesity
- Research was performed in the United States
- Main population of providers in the study were from primary care setting

After additional review, 27 of the articles met the inclusion criteria. The following literature review is a summary of the findings from the articles.

Practice Change Guidelines

Selection of clinical practice guidelines.

This study aimed to educate primary care providers on up-to-date clinical practice guidelines (CPG) for management of adult obesity. Educating primary care providers was done to ensure knowledge of up-to-date clinical practice guidelines to hopefully lead to an increase in management of adult obesity. Education for the providers was adapted from the *American Heart Association/American College of Cardiology/The Obesity Society (AHA/ACC/TOS) Guideline for the Management of Overweight and Obesity in Adults*. This study addressed whether presentation of the AHA/ACC/TOS CPG improved management of adult obesity. The information that was used for the presentation to providers was gathered from this CPG. The pre-test, post-test, and six week follow up questionnaire used the AHA/ACC/TOS CPG for the reference.

Identifying the most appropriate guidelines was completed with a separate search. The databases searched to identify these CPG included: National Guidelines Clearinghouse (NGC), Registered Nurse Association of Ontario (RNAO), National Heart,

Lung, and Blood Institute (NHLBI), and Institute for Clinical Systems Improvement (ICSI). The NGC database provided the *AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults*.

The Appraisal of Guidelines for Research and Evaluation (AGREE) II instrument was used for appraisal of the CPG. This instrument is used internationally as a tool for assessment of CPGs and has been found to be valid and reliable (AGREE Next Steps Consortium, 2009). After the 23-item AGREE II tool was completed, this researcher identified that the CPG is moderately high in quality of evidence and strong in strength of recommendation. The CPG identified five critical questions (CQs) for management of adult obesity that led to 17 total practice recommendations. The education that was provided to the providers included 13 of the practice recommendations. Although all of the recommendations are important some of them were eliminated due to time and the main focus of this project. The five CQs are:

- 1) Among overweight and obese adults, does weight loss with lifestyle affect cardiovascular disease (CVD) risk factors, morbidity and mortality?
- 2) Are the current cut-point values for overweight, obesity, and waist circumference (WC) associated with elevated cardiovascular disease (CVD)-related risk?
- 3) What is the comparative efficacy, effectiveness, health benefits, or harm of different dietary strategies for weight loss and weight maintenance?
- 4) What is the efficacy and effectiveness of a comprehensive lifestyle intervention program, and what are the characteristics of these programs that are associated with greater weight loss?

- 5) What are the efficacy, predictors of weight loss, and complications of the different bariatric surgical procedures?

Jensen et al., 2013

Practice change recommendations for implementation.

AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults published 17 practice recommendations that were formed to answer five CQs. The recommendations address screening for and diagnosing of obesity, the relationship of CVD to obesity, diet recommendations, lifestyle recommendations, and criteria for candidacy of bariatric surgery. A total of 13 recommendations, identified in Table 1, below, were used for provider education during this project. The following categories were used for the education program: Identifying patients who need to lose weight, matching treatment benefits with risk profiles, diets for weight loss, lifestyle intervention and counseling, and selecting patients for bariatric surgical treatment for obesity.

Table 1: Summary of AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults

| | |
|--|--|
| Identifying Patients Who Need to Lose Weight | <ol style="list-style-type: none"> 1. Measure height and weight and calculate BMI at annual visits or more frequently (Strength of the Evidence- Expert Opinion, Classification of Recommendation- I, and Level of Evidence- C). 2. Use the current cutpoints for overweight (BMI >25.9-29.9kg/m²) and obesity (BMI ≥ 30kg/m²) to identify adults who may be at elevated risk of CVD and the current cutpoints for obesity (BMI ≥ 30) to identify adults who may be at elevated risk of mortality from all causes (Strength of the Evidence- Strong, Classification of Recommendation- I, and Level of Evidence- B). 3. Advise overweight and obese adults that the greater the BMI, the greater risk of CVD, type 2 diabetes, and all-cause mortality (Strength of the Evidence- Strong, Classification of Recommendation- I, and Level of Evidence-B). 4. Measure waist circumference at annual visits or more frequently in overweight and obese adults (Strength of the Evidence- Expert, Classification of Recommendation- IIa, and Level of Evidence-B). |
| Matching Treatment Benefits with Risk Profiles | <ol style="list-style-type: none"> 5. Counsel overweight and obese adults with CV 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 produces great benefits (Strength of the Evidence- Strong, Classification of Recommendation- I, and Level of Evidence-A). |
| Diets for Weight Loss | <ol style="list-style-type: none"> 6. Prescribe a diet to achieve reduced calorie intake for obese or overweight individuals who would benefit from weight loss, as part of a comprehensive lifestyle intervention (Strength of the Evidence-Strong, Classification of Recommendation- I, and Level of Evidence- A). 7. 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 for counseling. A variety of dietary approaches can produce weight loss in overweight and obese adults (Strength of the Evidence-A, Classification of Recommendation- I, and Level of Evidence- A). |

| | |
|---|--|
| Lifestyle Interventions and Counseling | <ol style="list-style-type: none"> 8. Advise overweight and obese individuals who would benefit from weight loss to participate for ≥ 6 months in a 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 the Evidence- Strong, Classification of Recommendation- I, and Level of Evidence-A). 9. Prescribe on site, high-intensity comprehensive weight loss interventions provided in individual or group sessions by a trained interventionist (Strength of the Evidence- Strong, Classification of Recommendation- I, and Level of Evidence- A). 10. Use very low calorie diet (defined as $< 800\text{kcal/day}$) 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 the Evidence-Strong, Classification of Recommendation- IIa, and Level of Evidence- A). 11. Advise overweight and obese individuals who have lost weight to participate long-term (≥ 1 year) in a comprehensive weight loss maintenance program (Strength of the Evidence- Strong, Classification of Recommendation- I, and Level of Evidence- A). 12. For weight loss maintenance, prescribe face-to-face or telephone-delivered weight loss maintenance programs that provide regular contact (monthly or more frequent) with a trained interventionist who helps participants engage in high level of physical activity (20-300 minutes/week) monitor body weight regularly (weekly or more frequent) and consume a reduced-calorie diet (needed to maintain lower body weight (Strength of the Evidence- Strong, Classification of Recommendation- I, and Level of Evidence- A). |
| Selecting Patients for Bariatric Surgical Treatment for Obesity | <ol style="list-style-type: none"> 13. Advise adults with a BMI ≥ 40 or BMI ≥ 35 with obesity-related comorbid conditions who are motivated to lose weight and who have not responded to behavioral treatment with or without pharmacotherapy with sufficient weight loss to achieve targeted health outcome goal that bariatric surgery may be an appropriate option to improve health and offer referral to an experienced bariatric surgeon for consultation and evaluation (Strength of the Evidence-Strong, Classification of Recommendation- IIa , and Level of Evidence-A). |

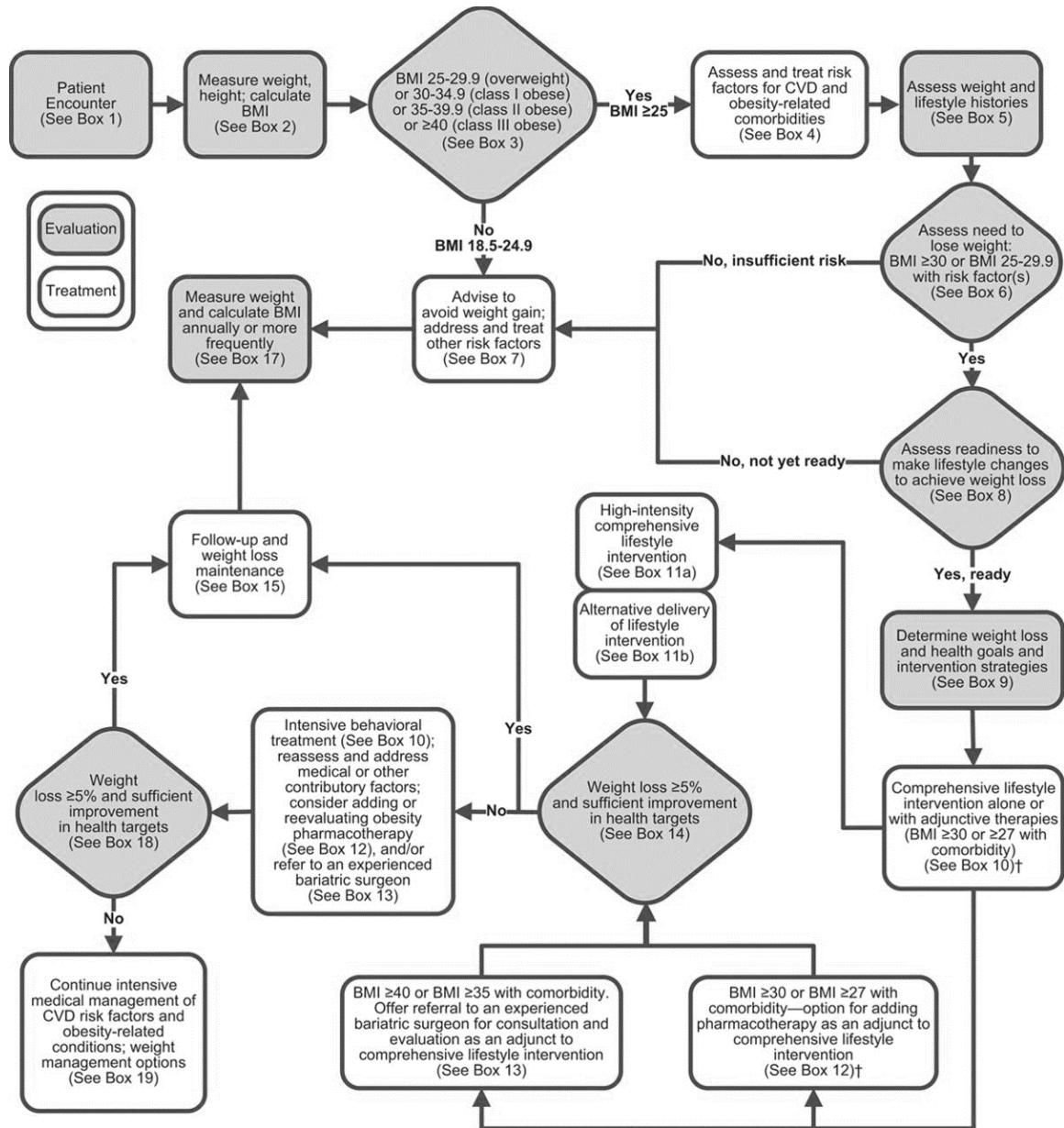
Treatment Algorithm

AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults provides a treatment algorithm. The algorithm uses the recommendations that were created from the five CQs while addressing risk for CVD. The algorithm addresses evaluation, prevention, and management of patients who are overweight and obese (Jensen et al., 2013). The algorithm is broken down into 19 boxes. Each of the 19 boxes on the algorithm have additional information that is presented in the guideline with detail of how to address adult obesity. The algorithm is basic and starts with the initial patient encounter, measuring height and weight, calculating BMI, and diagnosing weight into the right classification. The diagnosis of obesity class can identify adults who are at risk for obesity-related comorbidities and increased risk of CVD (Jensen et al., 2013). The algorithm can be used with the guideline to direct the course of actions to be completed in an appropriate order. The algorithm outlines appropriate assessment, including the patient's readiness to lose weight and make lifestyle changes, as well as appropriate provider advisement on weight management, including weight maintenance, weight loss, and weight loss goals. The algorithm goes on to recommend management of obesity with intervention strategies including comprehensive lifestyle intervention. This algorithm (Figure 3) may be used in combination with the guidelines for ease of treatment of the overweight and obese adult while managing CVD risk factors.

Figure 3:

Treatment Algorithm:

The Chronic Disease Management Model for Primary Care of Patients with Overweight and Obesity



(Jensen et al., 2013)

Provider Diagnosis

The diagnosis of overweight or obesity is often missed or ignored. Primary care providers are not focusing on obesity as an independent factor at visits (Asselin et al., 2015). Although there are multiple guidelines that recommend the use of BMI, it is not being used frequently (Farran, Ellis, & Barron, 2013). One study found that height and weight were only documented in 41% of office visits and that only 29% of the patients that were obese had the diagnosis documented (Ma, Xiao, & Stafford, 2009). A measurement of both height and weight must be documented for successful calculation of BMI either manually or electronically. Another study found that prior to provider continuing education only 23.8% of patients were being diagnosed with obesity as compared to a 35% increase after provider continuing education regarding clinical practice guidelines (Farran, Ellis, & Barron, 2013). Provider education regarding the practice guidelines was also able to improve use of BMI, correct diagnosis, and increase counseling related to diet and physical activity.

Routine screening and accurate diagnosis are the most important factors for proper treatment (Ma, Xiao, Stafford, 2009). Jensen et al. (2013) recommended that BMI be calculated at every visit and patients categorized into the right class of obesity. Classifying a patient's BMI can lead to the diagnosis of obesity. Overweight can be classified as BMI ranging from $25 < 30$, class I obese $30 < 34.9$, class II $35 < 39.9$, and class III ≥ 40 (Jensen et al., 2013). Improper identification of obesity class is being made by providers. Calculation of BMI at every visit is also recommended in the two other major obesity management guidelines from the National Institute for Health and Care

Excellence (NICE) and the American Academy of Family Physicians (AAFP). The AHA/ACA/TOS guideline recommends that waist circumference is measured annually in patients with a BMI ≤ 35 . If BMI is >35 the waist circumference does not add clinical information because it is likely largely elevated (Jensen et al., 2013, NICE, 2014).

Diagnosing overweight and obesity is important because it can lead to greater treatment of CVD risk factors and obesity related comorbidities. A diagnosis of obesity or overweight can help providers recognize that obesity is an independent disease (Farran, Ellis, and Barron, 2013). Cardiometabolic risk is five times greater in woman with a waist circumference >35 inches and in men >40 inches (Jensen et al., 2013 AAFP, 2013).

Although diagnosis and treatment of obesity as an independent disease is critical, one large randomized controlled trial identified that obesity management can be embedded in other visits. Embeddedness leads to management of adult obesity and decreased missed opportunities (Asselin et al., 2015). Although visits may be limited on time and other factors, a small comment about weight management may give insight to a patient's readiness to make lifestyle changes and weight history. These are two key factors of the Treatment Algorithm for management of adult obesity. Embeddedness works because it creates multiple starting points for weight discussion, it increases the ability to assess and wait for patient readiness, and it allows for weight to be linked to other health conditions and stages of life (Asselin et al., 2015). A cross-sectional study identified that most obese patients (66%) do not receive an obesity diagnosis and therefore do not receive weight-related counseling (80%) (Bleich, Pickett-Blakely, &

Cooper, 2011). This study also identified that preventative visits may be an important opportunity for the diagnosis and management of obesity to start.

Management of Adult Obesity

After the initial BMI calculation, it is important to assess and treat CVD risk factors and other obesity-related comorbidities. The CVD risk factors have been identified as hypertension, dyslipidemia, prediabetes, and diabetes (Jensen et al., 2013). Other obesity related comorbidities have been classified into three groups: physical, psychosocial, and functional (McKinney et al., 2013). The ACA/AHA/TOS guideline states that all associated conditions need to be managed regardless of weight loss management. Several comorbidities of obesity are leading causes of preventable death in adults including heart disease, stroke, diabetes, and some types of cancer (McKinney et al., 2013). Increased weight has been strongly associated with increased risk of CVD comorbidities as well as CVD-related death (Jensen et al., 2013).

Weight loss can decrease the risk of developing diabetes, decrease fasting blood sugars, lower hemoglobin A1c, and improve diabetic control (Jensen et al., 2013). Patients' lipid panels can have great improvement with weight loss. Greater weight loss is associated with greater improvement in lipid panel and less lipid medication use (Jensen et al., 2013). A weight loss of 5% has been associated with a reduction in systolic and diastolic blood pressure (Jensen et al., 2013). Numerous dietary approaches have been successful for patients to lose weight. The common factor between all successful diets is a reduction in energy (caloric) intake. Energy deficit can also occur through physical activity. The CPG recommends that Comprehensive Lifestyle Intervention (CLI) be offered to all patients. CLI has been identified as a foundational

part of weight loss (Jensen et al., 2013). CLI includes a reduced calorie diet, a program of increased physical activity, and behavior therapy. The CPG states that CLI should take place in person, and scheduled with more than 14 sessions in six months. If CLI in person is unavailable alternatives may include phone or other technology (Jensen et al., 2013). After CLI, patients may need additional weight management including pharmacotherapy or possible evaluation for bariatric surgery. The CPG identifies that weight loss maintenance is an essential part of weight management (Jensen et al., 2013).

Provider Practice

Management of adult obesity can be completed in a large number of settings including acute, chronic, and preventative office visits. According to Asselin et al. (2015) “primary care offers ample repeat patient visits to establish a longitudinal care relationship, beginning a conversation and reassessing progress over time within a holistic focus of overall health and wellness” (p. 331). One retrospective cross-sectional study identified that primary care providers were the most likely to implement obesity management although it is being done in only one third of visits (Mehta, Patel, Parikh, & Abughosh, 2012). Primary care providers are more than two times more likely to provide obesity management education than other providers (Mehta et al., 2012). It has been identified that 80% of adults in the United States regularly see a primary care provider (McKinney et al., 2013). One study found that patients who are told they are overweight or obese are more likely to try to make changes towards losing weight than those who are not told (Bleich, Pickett-Blakely, & Cooper, 2011). It is important to set weight loss goals (Jensen et al., 2013). The CPG recommends that a weight loss goal of 5-10% from baseline over six months is an appropriate goal (Jensen et al., 2013).

Clinical practice guidelines have been formulated to present the best most up-to-date recommendations for use in practice. Clinical practice guidelines are not meant to replace clinical judgement (Jensen et al. 2013). The process of creating clinical practice guidelines is rigorous and time consuming but the expert panels that develop clinical practice guidelines are well crafted to improve patient care. For this project, the clinical practice guideline being utilized aims to improve management of adult obesity. Farran, Ellis, and Barron (2013) found that “guideline implementation in clinical practice requires sustained efforts to promote staff familiarity with recommendations, as well as create practice structure support...to ensure translation of evidence in practice” (p. 154). One mixed methods study identified that guidelines are a key foundation in quality improvement (Abdelhamid, Howe, Stokes Qureshi, and Steel, 2014). Clinical practice guidelines that are constructive and critical and have sufficient evidence are more likely to be utilized by primary care providers (Abdelhamid et al., 2014). The ACA/AHA/TOS guidelines can be easily utilized by primary care providers and has strong evidence as proven by the AGREE II. The ACA/AHA identified a large barrier to CPG acceptance is lack of clinician knowledge of guidelines (Chan et al., 2017). Provider education regarding clinical practice guidelines can increase use in practice and lead to better patient care (Chan et al., 2017).

Provider Barriers

A great deal of research has been completed on why primary care providers do not adequately manage obesity. It has been identified that barriers to treatment exist. Barriers to treatment of adult obesity include provider bias, lack of time, lack of incentives, and lack of knowledge (Roberts, Standage, Olaoye, & Smith, 2015). Provider

bias towards adults with obesity occurs daily in practice (Fruh et al., 2016). A cross-sectional study identified that over 40% of providers identified themselves as having negative reactions towards adults with obesity (Jay et al., 2009). It is important for providers to identify their own bias towards adult patients with obesity. Identifying one's own bias can lead to self-reflection, overcoming bias, and giving the best possible care to adults with obesity (Fruh et al., 2016). The Obesity Society published a five-question questionnaire to help providers identify self-bias (see list below). It is a necessity to identify barriers and personal bias to treat obesity effectively. A cross-sectional study identified that targeted education about obesity bias can lead to better understanding of bias and decrease obesity bias (Khandalavala et al., 2014). Addressing obesity can take a significant amount of time in an office visit. Most office visits are limited to 15 to 30 minutes for the entirety of the visit, from the waiting room to the checkout. Getting the needed history on a patient's weight and lifestyle habits can be a process; not including any management of obesity, along with other reasons patients came to the office visit. The process of obesity management can become frustrating for providers (Fruh et al., 2016). Providers feel that there is not enough incentive for managing adult obesity. One study explored whether, if obesity management was compensated for in a better way, providers would spend additional time managing adult obesity (Fruh et al., 2016). The AAFP identifies that there is poor reimbursement for nutrition and weight-management counseling (McKinney et al., 2013). Lack of knowledge of treatment guidelines has also been identified as a provider barrier for obesity management (Roberts et al., 2015). Lastly, providers who are overweight or obese themselves are less likely to address

obesity (McKinney et al., 2013). Providers who successfully manage their own weight have less weight bias (Khandalavala et al., 2014).

Obesity Society Identification of Self Bias Questions

1. Do I make assumptions based only on weight regarding a person's character, intelligence, professional success, health status, or lifestyle behaviors?
2. Am I comfortable working with people of all shapes and sizes?
3. Do I give appropriate feedback to encourage healthful behavior change?
4. Am I sensitive to the needs and concerns of obese individuals?
5. Do I treat the individual or only the condition?

(Obesity Society, 2016)

Summary

Although managing adult obesity can be frustrating and burdensome, it is a necessity. Primary care providers have room to improve management of adult overweight and obesity. Although several barriers have been identified, identifying and decreasing bias can help decrease one barrier. This project aimed to defeat another barrier: lack of provider knowledge related to CPGs. Increasing provider knowledge of the guidelines aimed to improve management of adult obesity and decrease obesity related comorbidities.

Chapter III

Methodology

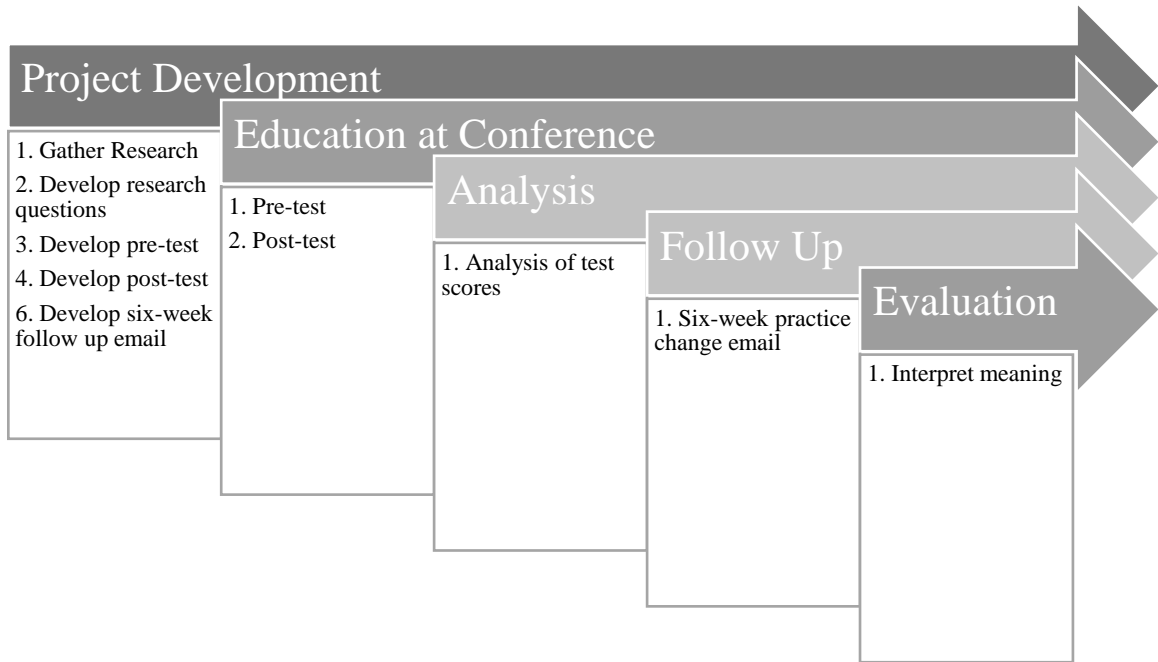
Project Design

This chapter will outline the design for this research project. It will also include discussion of the sample population, instrument used, procedure used, outcome analysis, and sustainability plan. This project used a two-part study, including a pre-test, post-test, and six-week follow-up email. This study utilized a quantitative approach with a quasi-experimental design. This type of design helped expose whether an increase in knowledge was gained by primary care providers after education over the current evidenced-based clinical practice guidelines. Knowledge was first measured with a pre-test given to providers that attend the 12th annual 4 State APN (advanced practice nurse) conference in March 2018. The pre-test allowed for this researcher to gather information on knowledge that the providers already had. Knowledge gained and maintained was measured with a post-test at the conference and six-week post-test distributed via email. The post-test allowed information to be obtained on what knowledge was gained after education was provided over evidence-based clinical practice guidelines. The six-week follow-up email also helped to determine if the provider education significantly changed provider practice.

The quasi-experimental design was utilized for this project because all of the providers received the education and they were not compared to a control or comparison group (Terry, 2015). This type of design is direct and helped to clearly identify if the education provided increased knowledge and/or changed provider practice after six-weeks. The quasi-experimental design was feasible and worked for the time constraints imposed by this project. There was no emotional involvement from the researcher, which benefited the results, especially when asking about self-bias related to adult obesity. Lastly, this type of design allowed for an objective approach to be utilized which provided statistical significance (Terry, 2015).

The pre-test included demographic data for characterization of the group, current practice, and questions over the clinical practice guideline. The post-test included the same questions over the clinical practice guidelines that the pre-test utilized, along with questions over obesity bias questions. The six-week follow-up email included questions about practice change regarding education obtained over the evidence-based clinical practice guidelines for adult obesity. A study design is depicted in Figure 4.

Figure 4:
Study Design



The educational program was given to nurse practitioners at the 2018 4 State APN Conference. This is a local conference with members from Missouri, Kansas, Oklahoma, and Arkansas. This project implemented an educational program to see if there was an increase in provider knowledge related to evidence-based clinical practice guidelines relating to adult overweight and obesity. This project also assessed if providers changed their practice six-weeks following the program education. This study focused on the following research questions:

1. Will education of primary care providers increase their knowledge of clinical practice guidelines related to adult obesity?
2. Will education of primary care providers increase the accuracy for diagnosing obesity in adults?

3. Will education of primary care providers increase correct lifestyle modification recommendations in adults with obesity?
4. Will education of primary care providers increase correct identification of candidates for bariatric surgery in adults with obesity?
5. According to self-reported behavior, will providers practice differently six weeks after education is provided?
6. Do primary care providers have self-reported obesity bias?

Sample/Target Population

Sample access/Target population.

The sample for this research project included nurse practitioners. All of the 4 State APN Conference attendees were eligible for participation in the study. These participants were readily accessible. The pre-test and post-test was given to all of the conference participants that volunteered to participate. The six-week follow-up email was only distributed to those who indicated themselves as primary care providers. Participants were required to be active nurse practitioners with valid email addresses. The pre-test evaluated the knowledge that the sample population had, prior to receiving the provider education. Pre-test evaluation could have demonstrated a lack of knowledge and identify areas for improvement. The group of providers at the conference had the opportunity to increase their knowledge for use in practice when treating adults with obesity.

Sample/Target population recruitment.

The target population was recruited through attendance at the 4 State APN Conference. This conference is held yearly for nurse practitioners to increase their

knowledge related to medications, updated practice guidelines, and state and federal policy updates. The conference is attended by non-members and members, including practicing and student nurse practitioners. The conference costs money to attend and attendees were awarded one hour of continuing education (CE) that was approved by the American Academy of Nurse Practitioners. The CE was awarded to all in attendance at the conference, regardless of full participation in the study. Participants in this project were volunteers with no compensation provided. Participation in the study was accepted by the target population with completion of the pre-test and post-test, as well as providing their email address for completion of the six-week follow up email.

Inclusion and exclusion criteria.

The criteria for inclusion to the study is minimal. It includes attendance at the 4 State APN Conference, voluntary participation in the pre-test and post-test, and ability to provide an email for follow up. Inclusion criteria for the follow-up email included being an active primary care provider. The 4 State APN Conference allows attendees from a wide variety of practice backgrounds. All practice backgrounds, including student nurse practitioners, were included in the pre-test and post-test results. All of the participants were required to be over the age of 18-years-old. No other inclusion criteria was identified.

Exclusion criteria includes medical doctors, doctors of osteopathy, clinical nurse specialists, or physician assistants. Nurse practitioners who do not identify themselves as primary care providers were excluded from the six-week follow-up email. No other exclusion criteria was identified.

Protection of human subjects.

Participants rights were protected throughout the entire course of this research project. The Pittsburg State University guidelines for Research Involving Human Subjects was reviewed. It was determined that this research project meets the criteria under the category of exempt study. Although the study was exempt from full Institutional Review Board (IRB) review per the guidelines, approval from the School of Nursing and Chairperson of IRB were obtained prior to engaging in any form of research with the participants. The subject population were nurse practitioners: they were all over the age of 18, and this research did not include prisoners, fetuses, pregnant woman or human in vitro fertilization. No deception of the participants was utilized at any time during the study. The participants were not harassed at any point during their participation. The pre-test and post-test was coded by four-digit number for protection of confidentiality. There was not any anticipated risk associated with participation in the study. The nurse practitioner's responses were used for this research project alone and were not be used against them in any way now or in the future. This study did not place participants at risk for criminal or civil liability that could be damaging to their financial standing, employability, insurability, reputation, or be stigmatizing. Participation in the study was voluntary. Consent for participation for the study was indicated through completion of the pre-test and post-test. The pre-test and post-test were administered on paper. As stated above the test was coded for confidentiality. This researcher kept the pre-test and post-test under lock and key until the completion of the project. The locked box was only accessible to the primary researcher. The email survey results came to a

password protected account. At completion of the project the pre-test and post-test were shredded and the emails were deleted.

Instrument

Operationalization includes defining how variables are measured (Terry, 2015). Operational definitions are quantitative. The following variables were defined for this project:

1. BMI – calculated number from a patient's weight (in kilograms) divided by their height (in meters squared)
 - a. Overweight: BMI $25 < 30$ kg/m²
 - b. Class I obese: BMI $30 < 35$ kg/m²
 - c. Class II obese: BMI $35 < 40$ kg/m²
 - d. Class III obese: BMI ≥ 40 kg/m²
2. Bias – identified from TOS self-bias questionnaire
3. Knowledge – information obtained from the pre-test and post-test scores

A survey tool was developed for this project since there was not one available that addressed the six research questions. The instrument was created from current evidenced-based practice guidelines and research from current literature. This study utilized three instruments to gather quantitative data. The three instruments included pre-test, post-test, and six-week follow up email (Appendix A). Both the pre-test and post-test utilized paper and pen to assess the participants' knowledge. The pre-test contained 22 questions. All of the questions on the pre-test were multiple choice questions. The initial questions gathered data about current knowledge of clinical practice guidelines. The next questions collected information on current practice. The last four questions

gathered demographic information. The post-test included the same initial questions over clinical practice guidelines, as well as 11 Likert Scale questions on bias and one open-ended blank for an email address. The email addresses were utilized to send the six-week follow-up questionnaire on practice change. The six-week follow-up questionnaire was emailed to the participants and included the same seven questions over practice. This allowed for identification of self-reported practice change after six weeks. All three instruments used closed-ended questions throughout, excluding the one blank for an email address.

The contents that were included on the instruments were validated. Initially, validation took place through review of the literature. The literature review demonstrated that there was a need for provider education on current evidenced-based clinical practice guidelines over adult obesity. The literature demonstrated that providers are not diagnosing overweight and obesity correctly, which leads to under treatment. The literature also demonstrated that providers that have bias against obese individuals are less likely to treat obesity. The three instruments were developed with these facts in mind.

The pre-test was administered to three primary care providers and feedback was gathered as a pilot test and for content validity. According to Polit and Beck (2012) three experts are sufficient for establishing content validity. The experts were asked to look at relevance, appropriateness, and adequacy. The pre-tests were scored by these experts on the content validity index (CVI). The CVI allowed each item on the pre-test to be rated 1-4 for relevance. The scale was: 1= not relevant, 2= somewhat relevant, 3= quite relevant, 4= highly relevant. After each item was scored the scores were used to

calculate a scale CVI (S-CVI). The goal was to establish .90 or higher for excellent content validity (Polit & Beck, 2012). This goal was met on all questions. There were also comments collected from each of the researchers regarding the pre-test and new post-test questions. Only new questions on the post-test instrument were administered to the expert panel because the same content was utilized for the majority of the questions. None of the six-week follow-up email were administered to the expert panel since all of the questions were the same as the pre-test questions. The S-CVIs and comments were taken into consideration. The order of the questions were adjusted due to comments. The questions were not changed due to S-CVI >0.90.

The post-test included 11 questions over obesity bias. These questions were adapted from five questions initially published by The Obesity Society (2016) for identification of self-bias towards adults with obesity. The questions were modified from yes/no questions to Likert scale ratings. The questions were broken down from five questions to 11 items, to be rated individually.

Procedure

Data was not collected prior to seeking IRB approval. The application for IRB approval was submitted. Research did not begin until IRB approval was gained. This researcher reached out to the President of the 4 State APN group to gain permission to present at the upcoming conference. The researcher worked with the group to ensure this setting would be appropriate and found that it would indeed work well. This research took place at the 4 State APN Conference. The conference attendees were the participants for this research project. This researcher did not reach out to individuals to attend the conference but instead allowed individuals to sign up independently.

The conference was held on March 2nd and 3rd 2018 at Irene Ransom Bradley School of Nursing at Pittsburg State University in Pittsburg, Kansas. The presentation for this scholarly project took place on March 3, 2018. The participants were seated in a large lecture hall. Each participant was distributed a sealed packet that included a pre-test, post-test, and treatment algorithm. The test had blanks for the participants to write in a four-digit number so that pre-test could be matched with post-test during data analysis. This researcher discussed the purpose of the study and gave instructions prior to the packet being opened. There was also an opportunity for questions prior to beginning, and all questions were answered. The participants had the opportunity to dismiss themselves at this time if they do not want to participate. The participants were given ten minutes to answer the questions on the pre-test. The pre-test included multiple-choice questions on clinical practice guidelines, current practice, and demographics. The pre-test was collected by the researcher and the scholarly project advisory. The tests were immediately placed into a sealed envelope and a locked box. After the pre-tests were collected, the researcher gave the PowerPoint presentation over the evidenced-based clinical practice guidelines for adult obesity. The PowerPoint took approximately 15 minutes. After the completion of the PowerPoint presentation, another opportunity for questions was given. The questions were answered by the researcher. After all questions were answered, the participants were instructed to take the post-test out of the envelope and complete it. The post-test included questions on clinical practice guidelines and obesity bias. Ten minutes were allotted for the completion of the post-test. The participants placed their post-test into individual envelopes. The post-test was collected by the researcher and placed into the locked box. After the conference, the researcher

sorted and matched the pre-test and post-test for the collection of data. The data was entered into SPSS Statistical software. Six weeks after the conference, the follow-up email was sent to the email address provided by the participants on the post-test. The six-week follow-up email included questions on current practice. Data was collected from the email and extracted into the SPSS Statistical software for further analysis.

The SPSS Statistical software allowed the data to be analyzed by the primary researcher and by a committee member. The pre-test and post-test remained in a locked box throughout the completion of the study. The locked box was only accessible to the primary researcher. The emails were also only accessible to the primary researcher and were password protected. After completion of the study the pre-test and post-test were shredded, and emails deleted.

Outcomes

Evaluation measures linked to objectives.

The logic model (See Figure 2.) links the evaluation measures to the objectives. This project used the 4 State APN Conference setting to present an education piece over the evidenced-based CPG on adult obesity and self-bias towards patients with obesity. The evaluation measures that were utilized include a pre-test, post-test, and six-week follow up email. The pre-test allowed the participants knowledge to be documented prior to the education piece and identify potential self-bias. The post-test revealed the participants knowledge immediately following the education of the CPG. Administering the post-test immediately following the presentation of the education led to greater accuracy of knowledge obtained from this education alone and did not allow for other knowledge gained at the conference to influence providers information. The six-week

follow-up email allowed providers to self-report practice change that has occurred. The results looked for a positive outcome evaluation by an increase in correctly diagnosing obesity, recommendation of appropriate lifestyle modifications, identification of bariatric surgery candidates, and identification of self-bias if present. Other positive outcomes that may have been indicated were increased use of CPGs, decreased obesity bias, and self-reported practice change six weeks after the presentation of the education piece. The long-term outcomes are beyond evaluation for this project. The long-term outcomes will need evaluation in several years after the compilation of data.

Outcomes are appropriate for objectives.

The outcomes that were defined for this project were appropriate. The design of this project was relatively easy to implement given the time frame for this project. Utilization of PowerPoint and handouts for the education piece allowed for appropriate teaching to be done for attendees of the 4 State APN Conference. The pre-test, post-test, and six-week follow-up email were appropriate instruments to gather data from the participants.

Instruments described and linked to measures and objectives.

This project utilized three instruments. As described previously, the instruments were the pre-test, post-test, and six-week follow-up email. There were no previous instruments identified that were specific to the research question for this project; therefore, these unique instruments were created. Testing was completed with three practicing nurse practitioners to obtain validity. The largest instrument, the post-test, includes 23 multiple-choice questions. The pre-test contains 22 questions. The post-test includes questions related to knowledge of clinical practice guidelines, questions on

obesity bias, and one question – asking for an email address. The six-week follow-up email included the same seven questions regarding current practice. The six-week follow-up email allowed for providers to self-report practice change. Table 2 displays project instruments being linked to objectives and measurements.

Methods of analysis for each measurement.

All data was gathered in a SPSS Statistical program. The data was compared using *t*-test for the pre-test and post-test questions. *T*-test were used to calculate if a difference was made after the presentation of the education material. The outcomes were assessed to be statistically significant using the probability level was $p < 0.05$. This value was selected because it ensures that 95% of the results occurred from the education provided at the conference and not by chance. A *t*-test was also conducted to compare the pre-test and post-test data. The *t*-test allowed for calculation to compare the test scores. Questions were scored as five points each. The demographic and bias questions were not scored in the same manner. The scores of the pre-test and post-test were compared to assess knowledge of management of adult obesity was increased after provider education on evidence-based clinical practice guidelines. The bias questions were analyzed through descriptive statistics using a compilation of Likert Scale responses. The six-week follow up questions were analyzed through comparison of answers that were reported in the pre-test and current reported practice.

Evaluation measures linked to objectives.

Table 2: Evaluation measures linked to objectives

| Objective | Measurement | Outcome | Analysis |
|--|---|--|---|
| Participants will identify self-bias towards patients who are overweight or obese. | Participants' bias was identified through self-identification. | Participants will identify obesity bias through TOS five questions | Descriptive statistics |
| Participants will correctly identify obesity class | Participants will have an increase in correct responses, correctly identifying BMI and obesity class | Participants will identify the correct obesity class | <i>t</i> -test pre-test/post-test |
| Participants will correctly identify appropriate lifestyle modifications | Participants will have an increase in correct responses, selecting appropriate lifestyle modifications | Participants will identify appropriate lifestyle modifications | <i>t</i> -test pre-test/post-test |
| Participants will correctly identify candidates for bariatric surgery | Participants will have an increase in correct identification of patients for bariatric surgery | Participants will correctly identify patients who are candidates for bariatric surgery | <i>t</i> -test pre-test/post-test |
| Participants will have self-reported practice change after six weeks | Participants will have an increased report of recommending lifestyle modifications and managing obesity | Participants will report a perceived increase in managing adult obesity through lifestyle modifications | <i>t</i> -test pre-test/six-week follow up email |
| Participants will have decreased obesity bias | Participants will have decreased percentages of obesity bias | Participants will report that the amount of obesity bias they have has decreased since the educational program | pre-test/post-test |

Plan for Sustainability

Sustainability of this project is a key factor to decrease the number of adults who are overweight and obese. Continued education of clinical practice guidelines related to evidenced-based guidelines is one feature that will lead to the use of clinical practice guidelines in practice. According to Abdelhamid et al (2014), “Guidelines are seen as one of the key foundations for quality improvement” (p. 719). Increased awareness of clinical practice guidelines through education of primary care providers has been found to increase use of guidelines (Abdelhamid et al., 2014). Sustainability can be improved with budgeting and timing. Strategies for timing of education can be directed at earliest possible presentation of clinical practice guidelines and timing that does not interrupt work-flow. Earliest presentation to providers will hopefully lead to a younger age of providers, younger age is found to be related to increased use of guidelines (Chan et al., 2017). Together these strategies can lead to increased use of clinical practice guidelines and decreased adults who are overweight or obese.

Summary

Adults who are overweight or obese need to have improved care from their primary care providers. If primary care providers are able to use the evidence-based clinical practice guidelines to guide care, this could lead to fewer adults who are overweight and obese, as well as better-managed adult obesity. This educational program was implemented so that providers could have increased awareness of the evidenced-based clinical practice guidelines for managing adult obesity. This educational program not only tested providers with a pre-test but also a post-test to assess what knowledge

they gained on adult obesity management. The six-week follow up email allowed for self-report of practice change.

Chapter IV

Evaluation Results

This study was completed to determine if there was an increase in knowledge and treatment of adult overweight and obesity after education of evidenced-based clinical practice guidelines on adult overweight and obesity management. This study also collected data to see if provider bias was present towards people with overweight or obesity. Data was collected with a pre-test, post-test, and six-week follow up test. The study collected data to answer the following six research questions:

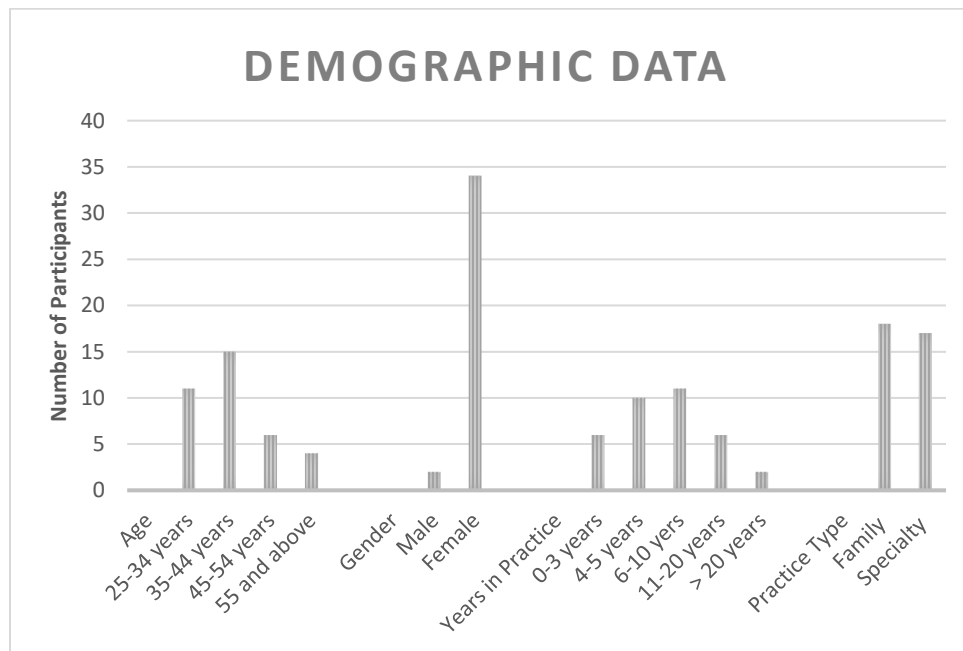
1. Will education of primary care providers increase their knowledge of clinical practice guidelines related to adult obesity?
2. Will education of primary care providers increase the accuracy for diagnosing obesity in adults?
3. Will education of primary care providers increase correct lifestyle modification recommendations in adults with obesity?
4. Will education of primary care providers increase correct identification of candidates for bariatric surgery in adults with obesity?
5. According to self-reported behavior, will providers practice differently six weeks after education is provided?
6. Do primary care providers have self-reported obesity bias?

Description of Sample

The demographic information was collected on the pre-test. The data included gender, age, years of experience, and practice type (Table 3). The majority of the sample was female, with 94% female (n=34) and 5.6% male (n=2). The age of the participants varied: 30.6% (n=11) were 25-34 years old, 41.7% (n=15) were 35-44 years old, 16.7% (n=6) were 45-54 years old, and 11.1% (n=4) were 55 years and older. Seventeen percent of providers (n=6) have been in practice for zero to three years, 27.8% (n=10) for four to five years, 30.6% (n=11) for six to ten years, 16.7% (n=6) for 11-20 years, and just 5.6% (n=2) greater than 20 years. The type of practice at which providers were employed at was almost even with 50% (n=18) family and 47% (n=17) specialty practice with one provider providing no response.

Figure 5:

Demographic Data



Key Variables

Independent Variable.

The independent variable in this study was education over the evidenced-based clinical practice guidelines. The education was provided via PowerPoint by this researcher at the 4 State APN Conference in March of 2018. The education took approximately 15 minutes to complete. Prior to the education being completed, participants completed a pre-test. After the PowerPoint was given and questions were answered, participants completed a post-test.

Dependent Variable.

The providers knowledge level of the evidenced-based clinical practice guidelines as well as their practice trends were the dependent variables. The two dependent variables were affected by the education. Providers knowledge level of the clinical practice guidelines was immediately demonstrated on the post-test. Provider's practice was evaluated on the pre-test and on the six-week follow up email. Practice was evaluated for change related to use of clinical practice guidelines in office.

Analyses of Project Questions

The six project questions were answered with data collected from the pre-test, post-test, and six-week follow up test. The majority of participants only completed the pre-test and post-test. The requirement for participation in the six-week follow up of primary care provider limited the number of participants to 17. Of the 17, primary care providers only ten providers listed their email and only seven responded the six-week follow up email.

Question One.

This question was answered with data that was collected on questions 2-11 on both the pre-test and post-test. These questions were multiple choice questions and were identical questions on each test. Right answers were given five points and incorrect answers zero points. The data were analyzed with a two-tailed *t*-test, $t=7.200$, $\text{sig}=0.000$. The education provided did increase knowledge of clinical practice guidelines. The mean difference indicated that the respondents scored 9.7 points higher on their post-test than on the pre-test.

Table 3: Question One Results

| Paired Samples Test | | | | | | | |
|---------------------|--------------------------|--------------------|----------------|-----------------|-------|----|-----------------|
| | | Paired Differences | | | t | df | Sig. (2-tailed) |
| | | Mean | Std. Deviation | Std. Error Mean | | | |
| | | | | | | | |
| Pair 1 | sumtestpost - sumtestpre | 9.72222 | 8.10154 | 1.35026 | 7.200 | 35 | .000 |

Question Two.

This question was answered from data collected from questions two and three on the pre-test and post-test. These two questions were the same on the pre-test and post-test. The data analysis showed that primary care providers had increased knowledge of diagnosing obesity in adults. On the answer to both questions, participants demonstrated increased frequency of identifying the correct answer.

Table 4: Question Two Results

| | Right | | Wrong | |
|---|-------|------|-------|------|
| | n | % | n | % |
| What BMI measurement is considered overweight? Pre-test | 30 | 83.3 | 5 | 13.9 |
| What BMI measurement is considered overweight? Post-test | 33 | 91.7 | 3 | 8.3 |
| What BMI measurement is considered class I obese? Pre-test | 29 | 80.6 | 7 | 19.4 |
| What BMI measurement is considered class I obese? Post-test | 33 | 91.7 | 3 | 8.3 |

Question Three.

This question was analyzed using data from questions four, seven, eight, and ten from the pre-test and post-test. After education, primary care providers had increased knowledge regarding correct lifestyle modification recommendations for adults with obesity. This was demonstrated by an increase in the frequency of correct identification for all four questions.

Table 5: Question Three Results

| | Right | | Wrong | |
|--|-------|------|-------|------|
| | n | % | n | % |
| What is the amount of exercise that should be recommended for weight loss? Pre-test | 24 | 66.7 | 12 | 33.3 |
| What is the amount of exercise that should be recommended for weight loss? Post-test | 32 | 88.9 | 4 | 11.1 |
| What is the recommend calorie deficit per day for weight loss? Pre-test | 25 | 69.4 | 11 | 30.6 |
| What is the recommend calorie deficit per day for weight loss? Post-test | 31 | 86.1 | 4 | 11.1 |
| Which dietary approach is effective for weight loss? Pre-test | 34 | 94.4 | 2 | 5.6 |
| Which dietary approach is effective for weight loss? Post-test | 35 | 97.2 | 1 | 2.8 |
| Which is not a component of High Intensity Comprehensive Lifestyle Intervention? Pre-test | 14 | 38.9 | 22 | 61.1 |
| Which is not a component of High Intensity Comprehensive Lifestyle Intervention? Post-test | 30 | 83.3 | 5 | 13.9 |

Question Four.

This question was analyzed with data from question nine on both the pre-test and post-test. This question indicated whether providers had an increase in identifying recommended criteria for candidates for bariatric surgery.

Table 6: Question Four Results

| | Right | | Wrong | |
|--|-------|------|-------|------|
| | n | % | n | % |
| When should a patient be referred to a bariatric surgeon? Pre-test | 24 | 66.7 | 12 | 33.3 |
| When should a patient be referred to a bariatric surgeon? Post- test | 27 | 75 | 7 | 20.6 |

Question Five.

This question was analyzed with review of the data from the pre-test and six-week follow up test. Questions 12-18 from the pre-test and questions 1-7 from the six-week follow up email were reviewed. The questions were identical. The answers to the questions were self-reported; actual charts were not reviewed for this study. Seven of the respondents answered all of the questions on the six-week follow up email. One six-week follow up emails was incomplete with just one question answered. Two six-week follow up emails were not opened for completion. Due to the low completion rate of six-week follow up emails compared to pre-test, it was difficult to assess if practice change occurred after the education. Overall, providers did not practice differently after six weeks.

Table 7: Question Five Results: Diagnosis

| | Pre-test | | Post-post | |
|--|----------|------|-----------|------|
| | n | % | n | % |
| In your current practice how often do you diagnosis overweight or obesity in adults? | | | | |
| Weekly | 4 | 11.1 | | |
| Monthly | 6 | 16.7 | 2 | 5.6 |
| 0-1 times per day | 9 | 25 | 1 | 2.8 |
| 2-5 times per day | 9 | 25 | 4 | 11.1 |
| 6-9 times per day | 4 | 11.1 | 1 | 2.8 |
| >10 times per day | 1 | 2.8 | | |
| | | | | |
| | n | % | n | % |
| How often is BMI calculated for patients? | | | | |
| Every Visit | 26 | 72.2 | 6 | 16.7 |
| Yearly | 2 | 5.6 | 1 | 2.8 |
| Never or less than once a year | 7 | 19.4 | | |
| | | | | |
| How often is waist circumference measured? | n | % | n | % |
| Every Visit | 1 | 2.8 | | |
| Yearly | 6 | 16.7 | 1 | 2.8 |
| Never or less than once a year | 28 | 77.8 | 7 | 19.4 |
| | | | | |

For the individuals who responded to these questions (Table 7) for the pre-test and post-test, it appears that most all respondents diagnose overweight and obesity multiple times per day. For the pre-test and post-test, it appears that the majority of respondents calculate BMI at every visit. Most respondents reported in the pre-test and post-test that they never or less than one time per year measure waist circumference.

Table 8: Question Five Results: Discussion

| When do you discuss a patient's weight? | n | % | n | % |
|--|----|------|---|------|
| Every Visit | 12 | 33.3 | 1 | 2.8 |
| When the patient initiates the conversation | 15 | 41.7 | 3 | 8.3 |
| Once Yearly | 6 | 16.7 | 3 | 8.3 |
| | | | | |
| How often do you discuss weight when discussing comorbidities? | n | % | n | % |
| Weekly | 4 | 11.1 | | |
| Monthly | 4 | 11.1 | 1 | 2.8 |
| 0-1 times per day | 9 | 25 | 1 | 2.8 |
| 2-5 times per day | 11 | 30.6 | 4 | 11.1 |
| 6-9 times per day | 3 | 8.3 | 1 | 2.8 |
| >10 times per day | 2 | 5.6 | | |

For the individuals who responded to these questions (Table 8) less than one half (41.7%) of the respondents in the pre-test and post-test reported that they discuss a patient's weight when the patient initiates the conversation. Lastly, less than one-third (30.6%) of respondents reported that they discuss weight two to five times per day in relation to comorbidities.

Table 9: Question Five Results: Referrals

| | Pre-test | | Post-post | |
|--|----------|------|-----------|------|
| | n | % | n | % |
| How often do you refer patients to see the nutritionist/dietician? | | | | |
| Weekly | 4 | 11.1 | 1 | 2.8 |
| Monthly | 14 | 38.9 | 3 | 8.3 |
| 0-1 times per day | 10 | 27.8 | 3 | 8.3 |
| 2-5 times per day | 2 | 5.6 | | |
| 6-9 times per day | | | | |
| >10 times per day | | | | |
| | | | | |
| How often do you refer patients to see a surgeon to discuss bariatric procedure? | n | % | n | % |
| Weekly | 4 | 11.1 | | |
| Monthly | 14 | 38.9 | 6 | 16.7 |
| 0-1 times per day | 9 | 25 | 1 | 2.8 |
| 2-5 times per day | 1 | 2.8 | | |
| 6-9 times per day | | | | |
| >10 times per day | | | | |

The individuals that responded to these questions (Table 9) indicated more than one-third (38.9%) of them refer patients to a nutritionist/dietician monthly while the second largest group of respondents reported a frequency of zero to one time per day (27.8%). It appears that more than one-third (38.9%) of providers refer patients to a surgeon to discuss bariatric surgery monthly.

Question Six.

Eleven questions from the post-test were used for data analysis. The respondents answered the eleven questions on a five-point Likert Scale. The higher value indicates

less provider bias. Overall, providers that completed this study do not have self-reported obesity bias. (Overall Mean =4.02, SD=.548)

Table 10: Question Six Results

| | Mean | Std. Deviation |
|--|--------|----------------|
| *I tend to make assumptions based only on weight regarding a person's health status | 3.18 | 1.290 |
| *I tend to make assumptions based only on weight regarding a person's lifestyle behaviors | 3.32 | 1.199 |
| *I have bias towards patients who are overweight or obese | 3.74 | 1.189 |
| I think that I give appropriate feedback to encourage healthful behavior change | 4.03 | .717 |
| I believe that I am sensitive to the needs of obese individuals | 4.06 | .983 |
| *I tend to make assumptions based only on weight regarding a person's character | 4.12 | 1.008 |
| I feel that I am sensitive to the concerns of obese individuals | 4.18 | .904 |
| I feel that I am comfortable working with people of all shapes and sizes | 4.29 | 1.088 |
| I believe I treat the individual not only the condition | 4.38 | .779 |
| *I tend to make assumptions based only on weight regarding a person's professional success | 4.50 | .749 |
| *I tend to make assumptions based only on weight regarding a person's intelligence | 4.53 | .615 |
| Overall mean for all variables | 4.0294 | .54807 |

NOTE: * Items were recoded with a reversed scale

Key: 1 = Strongly disagree
 2 = Disagree
 3 = Undecided
 4 = Agree
 5 = Strongly agree

Summary

Overall, a positive outcome evaluation was indicated with an increase in correct answers from pre-test to post-test scores. Although clinical practice guidelines are readily available to providers without education over the information, providers do not have the correct knowledge to manage adult obesity. The findings support that education

over evidence-based clinical practice guidelines for adult obesity increased providers knowledge. Although this study was unable to determine statistical significance of provider practice change due to the low level of primary care provider respondents, knowledge for both primary and specialty providers was significantly increased. Self-reported obesity bias was not identified in this group of providers. Education over provider bias has been shown to decrease provider bias towards adults with obesity. These results could have been different if these questions were included on the pre-test prior to education.

Chapter V

Discussion

Relationship of Outcomes to Research

This study aimed to answer six research questions. An educational program was provided to nurse practitioners over evidence-based clinical practice guidelines on managing adult overweight and obesity. The educational program also included information on obesity bias. Information was gathered through the administration of a pre-test, post-test, and six-week follow up email. This data was used to answer the six research questions.

Question One.

Previous studies have noted that without education over clinical practice guidelines there is less knowledge regarding them (Roberts et al., 2015). Providers lack of knowledge of clinical practice guidelines has been cited in previous studies as a barrier to management of adult overweight and obesity (Roberts, Standage, Olaoye, & Smith, 2015). Without specific education of the clinical practice guidelines providers would have to seek out information on the guidelines independently. Improved knowledge of clinical practice guidelines after education was an expected outcome.

Knowledge of clinical practice guidelines was increased after the education over clinical practice guidelines. This was demonstrated through the improved scores and was

an expected finding. Ten questions were compared from the pre-test and post-test. After education, providers scored 9.7 points higher on the post-test than on the pre-test.

Question Two.

Improper identification of obesity class is being made by providers (Jensen et al., 2013). Farren, Ellis, & Barron (2013) performed a study where prior to education providers were only able to identify obesity 23.8% of the time and following education were able to correctly identify obesity 35% of the time. Bleich, Pickett-Blakely, & Cooper (2012) found that only one-third of patients receive the diagnosis of overweight or obesity although nearly 37.9% of adults aged 20 and over are obese and over 70% are overweight.

This researcher found that prior to education providers were only able to correctly diagnosis overweight 83% of the time and obesity 80% of the time. After education, providers were able to identify both overweight and obesity accurately 91% of the time. This was an expected finding. This indicated that education over the clinical practice guidelines improved accuracy in diagnosing overweight and obesity. Previous studies also found that accurate diagnosis of overweight and obesity improved after education of clinical practice guidelines.

Question Three.

Previous studies noted that there is a lack of use of the recommendations (Farren, Ellis, & Barron, 2013). McKinney, et al., (2013) noted that providers were uncertain about lifestyle modification recommendations. *AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults* provides specific recommendations on lifestyle medication recommendations.

Education that was provided during the conference increased the percentage of correct answers on the post-test. This was an expected finding. There were four questions specifically related to lifestyle modification recommendations. Lifestyle modification recommendations included information on diet, exercise, and High Intensity Comprehensive Lifestyle Intervention. Providers were able to identify the correct amount of exercise 89% of the time after education. The education increased correct identification of components of High Intensity Comprehensive Lifestyle Intervention from 39% to 83%. Correct identification of calorie deficit and dietary approaches were also increased after education. The current study improved knowledge of lifestyle modification recommendations so that providers may correctly recommend changes to their patients.

Question Four.

Education over clinical practice guidelines leads to increased knowledge and use of the clinical practice guidelines (Chan et al., 2017). Tork et al. (2015) noted that 65% of primary care providers were able to identify the indications for referral for bariatric surgery. There was an increase in the correct identification of candidates for bariatric surgery. This was an expected finding. The education allowed 67% of the providers were able to identify an appropriate candidate for bariatric surgery. After education, there was an increase to 75% of providers being able to select the correct patient.

Question Five.

Previous studies included chart reviews, and this study only assessed self-reported behavior. Previous studies looked at family primary care providers. This question looked at the pre-test and the six-week follow-up email. There were minimal (n=10) number of

participants that qualified for the six-week follow up email. The proportion of participants that qualified for the follow up email, might have improved if the sample had only included primary care providers rather than also including those practicing in a specialty. The low completion rate of the six-week follow-up email made assessment difficult. The data revealed that providers did not practice differently after six weeks. This was an unexpected finding.

Question Six.

Overall, the providers in this study did not have self-reported obesity bias towards adults with overweight or obesity. Previous studies noted that over 40% of providers have obesity bias (Jay et al., 2009). Khandalavala et al. (2014) noted that primary care providers who have practiced longer have greater bias towards adults with obesity than providers who have practiced less years. No previous studies have addressed this exact research question. Education was provided during the 4 State APN Conference over obesity bias. Khandalavala et al. (2014) previously noted that education over obesity bias leads to decreased obesity bias. Also, the questions were taken directly from The Obesity Society (2016) but were changed from five direct questions to 11 Likert scale responses. There were no previous studies noted to have used these specific questions. The Obesity Society also did not have published information on the five question answers.

Observations

The study was interesting because it looked at a small group of providers in Missouri, Kansas, Oklahoma, and Arkansas. It was interesting that the providers did not have obesity bias and that the percentage of patients with overweight and obesity is higher in all four states than the national average (CDC, 2016). During the study, a large

portion of knowledge was gained over the specific practice guidelines. Although there are several published guidelines, it was surprising that the providers were not up-to-date on the most recent evidence-based practice. Self-reported practice results showed that participants of this study are diagnosing adults with overweight or obesity frequently. Previous studies found that only 33% of patients receive one of these diagnosis (Bleich, Pickett-Blakely, & Cooper, 2012). This study did a suboptimal job of identifying if practice changes were made after six-weeks. The unique 11 question Likert scale did a good job of identifying that provider bias was not present among this group of providers. Overall, it was reassuring that providers are able to increase their knowledge of evidence based clinical practice guidelines with a short presentation over clinical practice guidelines regarding managing adult overweight and obesity.

Evaluation of Theoretical Framework

Rogers Diffusion of Innovation theory was utilized to provide knowledge over evidence based clinical practice guidelines, and it helped spread the innovations regarding managing adult overweight and obesity. Using Rogers Diffusion of Innovation theory provided a framework for educating providers on new innovations. The theory encouraged the clinical practice guidelines to be adopted as a whole rather than individually. Although the project did not include every aspect published in the *AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults* (2013), the majority of recommendations were included as time allowed. Another variable that could have been included were long term outcomes. This theoretical framework aims for sustained long-term effects. Due to the time limitations of this study, the long-term effects were not analyzed. A final variable that may have better explained

was project question five. This question was used to measure self-reported practice change, and it could have examined the different types of adopters of the Diffusion of Innovation theory. Looking at the five types of adopters, innovators, early adopters, early majority, late majority, and the laggards (Rogers, 2003) may have given better insight to future studies on how to increase knowledge of primary care providers. Overall, the providers were able to adopt the clinical practice guidelines and demonstrate their education over the evidence-based practice with the use of Rogers Diffusion of Innovation theory as a project guide.

Evaluation of Logic Model

The logic model for this project proposed short, medium, and long-term goals. Five of the six short term goals were achieved and supported with outcomes data collected. The short-term goals that were met included identifying potential self-bias, correctly diagnosing obesity, correctly identifying lifestyle modifications, and identifying candidates for bariatric surgery. The short-term goal that was not met was to increase screening for comorbidities. This information was eliminated from the educational program and not tested over due to time limitations. Medium goals included changing provider practice after six weeks, increasing use of clinical practice guidelines, and decreasing obesity bias. Only one of these three goals was met with observable data, increasing the use of the clinical practice guidelines. Decreasing obesity bias among providers was not something that was measured. Lastly, the long-term goals of the logic model were not evaluated with this study due to time limitations. Overall, the project results demonstrated a strong relationship between the initial concepts that were proposed in the logic model.

Limitations

There were limitations to this study. Since the sample population was from the conference attendees, the population created error in the study. Question five was unable to be answered fully due to the low response on the six-week follow up email. This may have been prevented if the sample only included primary care providers and not specialty providers. The six-week follow up questions also were self-reported practice change and were not data collected from actual chart audits. One of the major limitations was the small sample size. The initial small sample size further limited the six-week follow up. In previous years, there were more attendees at the conference.

The instruments that were created for this project may have been a limiting factor. These instruments have not been used in any other studies previously and are not validated. Also, altering The Obesity Society five questions into 11 Likert scale questions may have altered the questions and affected the outcome of question six.

Lastly, time was a factor in this study. The entirety of the study was completed in 12 months. This limited the available options for an education implementation site. In addition, the long-term outcomes were not able to be measured due to time constraints.

Implications for Future Projects and Research

This study could be carried out again to reach more providers and ultimately improve the management of adult obesity and decrease the number of overweight and obese adults. The design of the project could be changed to include a more specific participant population, and the length of the study could be extended. Identifying and selecting a different participant population would affect the outcomes. Specifically, the six-week follow-up could potentially have more respondents and provide a greater

understanding of practice change. Extending the length of the study would allow for evaluation of long term outcomes. Also, additional follow-up emails could be sent to the providers at more intervals such as a three, six, nine, 12, and 24 month emails.

Increasing the length of follow-up emails would help determine if the practice changes were permanent or temporary. If this study was able to be completed again with more time, completing actual chart audits could help validate the results of provider practice change.

Further studies on managing adult obesity need to be completed to allow for a greater understanding of lack of management and associated poor health outcomes, as well as proper management and improved health outcomes. In addition to this study more research is needed on how to incorporate evidence-based clinical practice guidelines into provider practice.

Implications for Practice/Health Policy/Education

The findings of this study are significant. Although this study included a small sample size, there was an increase in provider knowledge of evidence-based clinical practice guidelines. Increased knowledge leads to better management of adult overweight and obesity. The guidelines are frequently published and readily available, yet they are not always used in practice. Educational events have the ability to change the practice of primary care providers.

A policy brief over diagnoses of overweight and obesity has the potential to reach legislators and to influence them to write a policy mandating diagnosis of these two diseases. When diagnoses are made, there is more management of these diseases. It is a meaningful use requirement to calculate BMI but not to diagnosis overweight and

obesity. When this diagnosis is made there is a greater chance of treatment of overweight and obesity in patient visits. If it were required to diagnosis overweight or obesity, it would not only increase the number of patients receiving treatment for these diseases but decrease comorbid related conditions including cardiovascular disease, diabetes, hypertension, and several types of cancer.

These study findings could be used for nursing education to decrease potential obesity bias and educate students over management on overweight and obesity. If this information is included at earlier opportunities, it could lead to easier incorporation into practice and prevent the need for practice change in the future (Chan et al., 2017). Education over obesity bias leads to decreased obesity bias (TOS, 2016).

Conclusion

This study aimed to educate primary care providers on up-to-date clinical practice guidelines for management of adult overweight and obesity. Previous studies noted that providers are not up-to-date with the clinical practice guidelines and that management of adult overweight and obesity is not consistent with current recommendations. Lack of education over the clinical practice guidelines was noted as a barrier to use, and this study provided education and increased knowledge of those guidelines. The short and medium outcomes of this study have contributed to practice and education. It is important that further education is provided to primary care providers on current evidence-based practice to ensure the best management of adult overweight and obesity. Clinical practice guidelines are not fully being utilized to their full extent, and the number of adult with overweight and obesity continues to grow. As evidenced by the results of this study,

short educational programs can increase knowledge of primary care providers. Providers must be up-to-date to continue to manage and prevent adult overweight and obesity.

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APPENDIX

Appendix A

Pre-Test

1. Are you aware of the evidenced-based clinical practices guidelines on adult obesity?
 - a. Yes
 - b. No
2. What BMI measurement is considered overweight?
 - a. BMI 18.5-24.9 kg/m²
 - b. BMI is 25<30 kg/m²
 - c. BMI 30<35 kg/m²
 - d. BMI 35<40 kg/m²
 - e. BMI ≥ 40 kg/m²
3. What BMI measurement is considered class I obese?
 - a. BMI 18.5-24.9 kg/m²
 - b. BMI is 25<30 kg/m²
 - c. BMI 30<35 kg/m²
 - d. BMI 35<40 kg/m²
 - e. BMI ≥ 40 kg/m²
4. What is the amount of exercise that should be recommended for weight loss?
 - a. 15 minutes on most days of the week
 - b. 30 minutes on most days of the week
 - c. 60 minutes on most days of the week
 - d. It depends on age, weight, and ability
5. What is the recommended weight loss goal for the initial six months?
 - a. 3-5% of baseline weight
 - b. 5-10% of baseline weight
 - c. 10 pounds
 - d. However much it takes to improve health risk
6. What percentage of weight loss produces clinically meaningful health benefits?
 - a. 3-5% weight loss
 - b. 5-10% weight loss
 - c. Weight loss of any amount will produce health benefits
7. What is the recommend calorie deficit per day for weight loss?
 - a. 250 calories/day
 - b. 500 calories/day
 - c. 1000 calories/day
8. Which dietary approach is effective for weight loss?
 - a. Low-carbohydrate
 - b. Low-fat
 - c. Low-calorie
 - d. High-protein
 - e. Mediterranean-Style
 - f. All of the above

9. When should a patient be referred to a bariatric surgeon?
 - a. BMI ≥ 30 with motivation to lose weight
 - b. BMI ≥ 35 with obesity related comorbid condition
 - c. BMI ≥ 40
 - d. BMI ≥ 40 or BMI ≥ 35 with an obesity related comorbid condition who are motivated to lose weight
10. Which is not a component of High Intensity Comprehensive Lifestyle Intervention?
 - a. Moderately reduced calorie diet
 - b. Increase physical activity
 - c. Use pharmacotherapy
 - d. Use of behavioral strategies to promote adherence to diet and activity recommendations
 - e. Meeting ≥ 14 times in six months with an interventionist
11. CV risk factors associated with overweight and obesity include?
 - a. Hypertension
 - b. Hyperlipidemia
 - c. Hyperglycemia
 - d. All of the above
12. In your current practice how often do you diagnosis overweight or obesity in adults?
 - a. Weekly
 - b. Monthly
 - c. 0-1 time per day
 - d. 2-5 times per day
 - e. 6-9 times per day
 - f. >10 times per day
13. How often is BMI calculated for patients?
 - a. Every visit
 - b. Quarterly
 - c. Yearly
 - d. Never or less than once per year
14. How often is waist circumference measured?
 - a. Every visit
 - b. Quarterly
 - c. Yearly
 - d. Never or less than once per year
15. When do you discuss a patient's weight?
 - a. Every visit
 - b. When the patient initiates the conversation
 - c. Once yearly

16. How often do you discuss weight when discussing comorbidities?
- a. Weekly
 - b. Monthly
 - c. 0-1 time per day
 - d. 2-5 times per day
 - e. 6-9 times per day
 - f. >10 times per day
17. How often do you refer patients to see the nutritionist/dietician?
- a. Weekly
 - b. Monthly
 - c. 0-1 time per day
 - d. 2-5 times per day
 - e. 6-9 times per day
 - f. >10 times per day
18. How often do you refer patients to see a surgeon to discuss bariatric procedure?
- a. Weekly
 - b. Monthly
 - c. 0-1 time per day
 - d. 2-5 times per day
 - e. 6-9 times per day
 - f. >10 times per day
19. What is your age?
- a. 18-24 years old
 - b. 25-34 years old
 - c. 35-44 years old
 - d. 45-54 years old
 - e. 55-99 years old
20. What is your gender?
- a. Male
 - b. Female
21. How many years have you practiced as a nurse practitioner?
- a. 0-3 years
 - b. 4-5 years
 - c. 6-10 years
 - d. 11-20 years
 - e. >20 years
22. What type of practice is your primary practice?
- a. Family
 - b. Specialty

Post-Test

1. Are you aware of the evidenced-based clinical practices guidelines on adult obesity?
 - a. Yes
 - b. No
2. What BMI measurement is considered overweight?
 - a. BMI 18.5-24.9 kg/m²
 - b. BMI is 25<30 kg/m²
 - c. BMI 30<35 kg/m²
 - d. BMI 35<40 kg/m²
 - e. BMI \geq 40 kg/m²
3. What BMI measurement is considered class I obese?
 - a. BMI 18.5-24.9 kg/m²
 - b. BMI is 25<30 kg/m²
 - c. BMI 30<35 kg/m²
 - d. BMI 35<40 kg/m²
 - e. BMI \geq 40 kg/m²
4. What is the amount of exercise that should be recommended for weight loss?
 - a. 15 minutes on most days of the week
 - b. 30 minutes on most days of the week
 - c. 60 minutes on most days of the week
 - d. It depends on age, weight, and ability
5. What is the recommend weight loss goal for the initial six months?
 - a. 3-5% of baseline weight
 - b. 5-10% of baseline weight
 - c. 10 pounds
 - d. However much it takes to improve health risk
6. What percentage of weight loss produces clinically meaningful health benefits?
 - a. 3-5% weight loss
 - b. 5-10% weight loss
 - c. Weight loss of any amount will produce health benefits
7. What is the recommended calorie deficit per day for weight loss?
 - a. 250 calories/day
 - b. 500 calories/day
 - c. 1000 calories/day
8. Which dietary approach is effective for weight loss?
 - a. Low-carbohydrate
 - b. Low-fat
 - c. Low-calorie
 - d. High-protein
 - e. Mediterranean-Style
 - f. All of the above

9. When should a patient be referred to a bariatric surgeon?
 - a. BMI ≥ 30 with motivation to lose weight
 - b. BMI ≥ 35 with obesity related comorbid condition
 - c. BMI ≥ 40
 - d. BMI ≥ 40 or BMI ≥ 35 with an obesity related comorbid condition who are motivated to lose weight
10. Which is not a component of High Intensity Comprehensive Lifestyle Intervention?
 - a. Moderately reduced calorie diet
 - b. Increase physical activity
 - c. Use pharmacotherapy
 - d. Use of behavioral strategies to promote adherence to diet and activity recommendations
 - e. Meeting ≥ 14 times in six months with an interventionist
11. CV risk factors associated with overweight and obesity include?
 - a. Hypertension
 - b. Hyperlipidemia
 - c. Hyperglycemia
 - d. All of the above
12. What is an email address that can be utilized to send a six-week follow up email to?

Please respond to the following statements by circling the number which best indicates your response.

Key: 1 = Strongly disagree
 2 = Disagree
 3 = Undecided
 4 = Agree
 5 = Strongly agree

(Circle one answer on each)

- | | | | | | | |
|-----|---|---|---|---|---|---|
| 13. | I tend to make assumptions based only on weight regarding a person's character..... | 1 | 2 | 3 | 4 | 5 |
| 14. | I tend to make assumptions based only on weight regarding a person's intelligence | 1 | 2 | 3 | 4 | 5 |
| 15. | I tend to make assumptions based only on weight regarding a person's professional success | 1 | 2 | 3 | 4 | 5 |
| 16. | I tend to make assumptions based only on weight regarding a person's health status | 1 | 2 | 3 | 4 | 5 |
| 17. | I tend to make assumptions based only on weight regarding a person's lifestyle behaviors | 1 | 2 | 3 | 4 | 5 |
| 18. | I feel that I am comfortable working with people of all shapes and sizes | 1 | 2 | 3 | 4 | 5 |
| 19. | I think that I give appropriate feedback to encourage healthful behavior change..... | 1 | 2 | 3 | 4 | 5 |
| 20. | I believe that I am sensitive to the needs of obese individuals..... | 1 | 2 | 3 | 4 | 5 |
| 21. | I feel that I am sensitive to the concerns of obese individuals | 1 | 2 | 3 | 4 | 5 |
| 22. | I believe I treat the individual not only the condition | 1 | 2 | 3 | 4 | 5 |
| 23. | I tend to have bias towards patients who are overweight or obese | 1 | 2 | 3 | 4 | 5 |

Six-Week Follow Up Email

1. In your current practice how often do you diagnosis overweight or obesity in adults?
 - a. Weekly
 - b. Monthly
 - c. 0-1 time per day
 - d. 2-5 times per day
 - e. 6-9 times per day
 - f. >10 times per day
2. How often is BMI calculated for patients?
 - a. Every visit
 - b. Quarterly
 - c. Yearly
 - d. Never or less than once per year
3. How often is waist circumference measured?
 - a. Every visit
 - b. Quarterly
 - c. Yearly
 - d. Never or less than once per year
4. When do you discuss a patient's weight?
 - a. Every visit
 - b. When the patient initiates the conversation
 - c. Once yearly
5. How often do you discuss weight when discussing comorbidities?
 - a. Weekly
 - b. Monthly
 - c. 0-1 time per day
 - d. 2-5 times per day
 - e. 6-9 times per day
 - f. >10 times per day
6. How often do you refer patients to see the nutritionist/dietician?
 - a. Weekly
 - b. Monthly
 - c. 0-1 time per day
 - d. 2-5 times per day
 - e. 6-9 times per day
 - f. >10 times per day
7. How often do you refer patients to see a surgeon to discuss bariatric procedure?
 - a. Weekly
 - b. Monthly
 - c. 0-1 time per day
 - d. 2-5 times per day
 - e. 6-9 times per day
 - f. >10 times per day