Obesity in the Socioeconomically Disadvantaged:

A Self-Efficacy Approach to Weight Loss

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Abstract

Many adults have the necessary health information to lose weight, but obesity in socioeconomically disadvantaged individuals is compounded by lack of resources that are readily available to aid in their weight loss. A plan of care tailored to their environment and economic status will foster weight control. A quasi-experimental, quality improvement project with one cohort and a pre- and posttest design evaluated the impact of a lifestyle change weight loss program on body mass index of obese adults. The project was conducted in a primary care setting with a total of 26 male and female participants, ages 18 years and older, with a body mass index of 30 and greater. The lifestyle change program incorporated self-efficacy theory and was provided individually to participants. The results showed that a lifestyle change program, which was specific to patients' desire for weight loss and maintaining the loss, was effective in reducing weight and body mass index while improving self-efficacy. The results indicated that a lifestyle weight loss program could be used in other rural settings with obese individuals to decrease obesity and positively influence health outcomes.

Keywords: obesity, socioeconomically disadvantaged, self-efficacy, usual care

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Socioeconomically disadvantaged represents individuals who were enrolled in the Missouri Medicaid program and eligible for discounted fees. Obesity represents an international body mass index (BMI) of 30 or greater (Fradkin et al., 2013). Adults who receive Medicaid benefits or discounted healthcare can have health improved by a self-efficacy approach to weight loss that uses a plan of care designed for their lifestyle. Self-efficacy is patient-centered and is designed to meet the patient's specific needs compared to standard, or usual, care (Davis-Martin et al., 2006). Usual care is an action plan based on previously designed interventions to combat healthcare issues but may lack individualization (Davis-Martin et al., 2006).

Background

Socioeconomically disadvantaged individuals' health is influenced by their lifestyle choices, environment, means to support their health, education, and occupation (Chen, Jaenicke, & Volpe, 2016; Navalpotro et al., 2012). People who have lower education levels are more likely to be socioeconomically disadvantaged than people with higher education levels (Paeratakul, Lovejoy, Ryan, & Bray, 2002). People who are socioeconomically disadvantaged often live in communities with limited resources to healthy foods and activities to support their health (Berendsen, Kremers, Savelberg, Schaper, & Hendriks, 2015). Obesity leads to lifelong consequences and is a common demographic among individuals with lower socioeconomic status (Chen et al., 2016).

Significance

Various groups of people struggle with obesity and the health consequences associated with their body weight resulting in co-morbidities (Paeratakul et al., 2002). Obesity in socioeconomically disadvantaged populations affects people of all races, and socioeconomically

disadvantaged people include all impoverished individuals despite his/her education level and occupation (Paeratakul et al., 2002). Socioeconomically disadvantaged individuals include people who live in urban or rural communities and come from single or multifamily homes. Men and women are equally affected by obesity (Navalpotro et al., 2012).

People who are socioeconomically disadvantaged are more likely to become obese than people who are not (Paeratakul et al., 2002). Socioeconomically disadvantaged people deal with environmental influences that affect their lives daily (Chen et al., 2016). Lack of knowledge or inadequate resources to manage their healthcare needs further contributes to their obesity (Hilmers et al., 2016). In addition, people who are socioeconomically disadvantaged may have the necessary health information, but their plan of care requires more than what they can afford (Hilmers et al., 2016). Therefore, people who are socioeconomically disadvantaged and obese do not always have what they need to be compliant with medical care (Hilmers et al., 2016). Impoverished individuals in Missouri are affected by obesity because they are socioeconomically disadvantaged (Paeratakul et al., 2002). Research shows that care specific to each individual employing a self-efficacy approach is more significant to weight loss than usual treatment plans in a primary care setting by allowing participants to utilize resources within their communities to promote change (Ashford, Edmunds, & French, 2010; Chen et al., 2016).

Local Issue

Missouri has one of the highest rates of obesity in the United States (Community Health Assessment, 2010). In 2008, the population rate of obesity was 30.6% in the state of Missouri (Community Health Assessment, 2010). Missouri's obesity rate increased to 32.5% in 2017, which is an increase by 1.8% in less than a decade (The State of Obesity, 2019).

Diversity Considerations

Diversity in this evidence-based practice (EBP) project proposal considered the population of people from the state of Missouri. Culture, which includes age, gender, race, ethnicity, environment and behaviors, was represented in this project and contains risk factors for obesity (Navalpotro et al., 2012). According to Navalpotro et al. (2012), higher rates of obesity are found in women regardless of race. In addition, females who are socioeconomically disadvantaged are significantly more obese than males who are not socioeconomically disadvantaged (Zahnd et al., 2015). There is a correlation between socioeconomic disadvantages and an increase in BMI in both genders (Zahnd et al., 2015). Regarding race, Caucasians were less likely to become obese than African Americans and Hispanics with roots from Mexico and Central America (Fradkin et al., 2014). Expanding on this research, Fradkin et al. (2014) reported that in youth, obesity is higher among Hispanics compared to Caucasians and African American youths (Fradkin et al., 2014). Education and occupation are also considered as diversity characteristics as they contribute to lifestyle choices (Navalpotro et al., 2012; Paeratakul, Lovejoy, Ryan, & Bray, 2002). Types of diets and physical activity were factors that were considered in planning and implementing the project because diet and activity vary among individuals (Berendsen, Kremers, Savelberg, Schaper, Hendriks, 2015).

Problem and Purpose

Problem

Socioeconomically disadvantaged adults with obesity face unique environmental challenges to achieve healthy weight; many traditional interventions for weight loss may be inaccessible for these individuals (Berendsen et al., 2015). People who are socioeconomically disadvantaged have higher rates of obesity versus people who are not (Navalpotro et al., 2012; Zahnd et al., 2015). Decreasing obesity and the associated effects and co-morbidities requires behavior change (Paeratakul et al., 2002).

Purpose

Care needs to be tailored to individuals so they can take charge of their own lives with the resources available in their community so they can better manage their obesity (Chen et al., 2016). The purpose of this Doctor of Nursing Practice (DNP) project was to improve the health of obese individuals who are socioeconomically disadvantaged by providing a lifestyle program using self-efficacy and behavioral change concepts. Patients were expected to improve their health care outcomes as they felt empowered to make changes to their lifestyles (Orr et al., 2013). Patients were expected to decrease their weight, BMI, and the effects of co-morbidities once they established their strengths to advance their health (Cutilli, 2009).

Facilitators and Barriers

A key facilitator to the evidence-based practice (EBP) project was an advanced practice registered nurse (APRN) at the project site. Project implementation took place in a primary care clinic in Missouri. The clinic served people enrolled in Medicaid or eligible for the clinic's discounted sliding scale fees for patients who reside in a rural area.

Clinic staff and administrators were facilitators for the project. Also, participants in the project who invested interest in their care and were willing to make lifestyle changes were major facilitators. Participants set their own weight loss goals with guidance from the student investigator and the APRN. Lack of resources such as transportation to get to appointments, access to food, and housing interfered with personal perception of participants' weight loss and presented as barriers to the project (Chen et al., 2016). A $10 stipend for patient participants' time was provided, with a total cost estimated at $300. The project was funded by the student investigator.

Review of the Evidence

Inquiry

The evidenced-based practice project focused on people who are socioeconomically disadvantaged and obese. The goal of the project was to evaluate the impact of a self-efficacy based approach to lifestyle modification that contributes to weight loss. The project question was, in obese socioeconomically disadvantaged people ages 18 and older, does a self-efficacy based intervention to encourage behavioral change, compared to usual care, decrease BMI and weight during three months at a primary care setting?

Search Strategies

The search for the evidence included a variety of databases. The Cumulative Index to Nursing and Allied Health Literature (CINAHL), BioMed central, Excerpta Medica Database (EMBASE), PubMed, and Academic Search Complete were utilized to obtain evidence for the project. Databases represented health sciences/ biosciences, medicine, nursing, and sociology. Key terms included were obesity, socioeconomic status, socioeconomically disadvantage, individualized, self-efficacy, and patient-centered (see Appendix A). Studies were selected based on participants with a BMI of 30 or greater, low socioeconomic status, and published within the last 10 years unless the study was highly relevant to this project. Articles were viewed to determine if they were appropriate to the project, and the student investigator kept all articles aligned with the project inquiry, and applied them to the project.

Twenty studies directly supported the EBP project. Two qualitative, 12 quantitative, two mixed methods research, two systemic reviews, and two EBP guidelines were retrieved that supported the EBP project (see Appendix B for the evidence table). Levels of evidence for this project included five level-one, three level-two, four level-three, five level-four, eight level-six, one level-seven, along with the two EBP guidelines (Melnyk & Fineout-Overholt, 2015). The studies included experimental and non-experimental evidence. The studies were categorized by four subtopics or themes: social determinants, obesity, co-morbidities, and self-efficacy.

Evidence Synthesis

The evidence shows a correlation between socioeconomic status and obesity that is influenced by social determinants and self-efficacy (Artino, 2012; Berendsen et al., 2015; Bleakley & Hennessy, 2012; Bonsaksen, Kottorp, Gay, Solveig Fagermoen, & Lerdal, 2013; Byrne et al., 2006; Chen et al., 2016; Eiben & Lissner, 2006; Fitch et al., 2013; Fradkin et al., 2013; Hilmers et al., 2016; Jensen et al., 2013; Luszczynska, Gutierrez-Dona, & Schwarzer, 2005; McLaren, 2007; Navalpotro et al., 2012; Olander et al., 2013; Paeratakul et al., 2002; Peyer, Welk, Bailey-Davis, & Chen, 2016; Sauerberger & Funder, 2017; Zahnd et al., 2015; Zulkosky, 2009). Social determinants are conditions in which a person is born, grows, or lives (Chen et al., 2016). Self-efficacy is the motivation of one's ability to complete a task (Artino, 2012). Social determinants may lead to obesity (Paeratakul et al., 2002). Obesity is an international (BMI) of 30 or greater (Fradkin et al., 2013). When individuals become obese, they place themselves at risk for co-morbidities if they do not decrease their weight to lower their BMI (Paeratakul et al., 2002). Social determinants, co-morbidities, obesity, and self-efficacy are factors that must be considered when decreasing weight to lower BMI.

Social Determinants

Social determinants are conditions in which people are born or live, which influence their weight (Navalpotro et al., 2012; Peyer et al., 2016). Educational level is also associated with obesity and one's occupation (Fradkin et al., 2014; Navalpotro et al., 2012). The lower the educational level, the more likely one will become obese (Navalpotro et al., 2012). More time spent advancing one's education increases skills leading to a higher occupational class and better living conditions (Navalpotro et al., 2012). Occupation is the determining factor to socioeconomic levels which can make individuals more marketable in society, ultimately influencing a person's salary and the environment in which they live (Navalpotro et al., 2012).

People who live in poorer neighborhoods and are socioeconomically disadvantaged, often lack resources that promote healthier lifestyles, due to limited access to healthy foods and poor structural environments that promote health (Chen et al., 2016; Hilmers et al., 2016).

Behavior also influences the health of this population and is related directly to resources in their environment (Chen et al., 2016). Physical activity can be indicative of an individual's environment, but it is imperative to maintaining health (Berendsen et al., 2015). Environmental structures such as sidewalks, streets, and community centers all influence physical activity due to the risk of accidental injury (Berendsen et al., 2015). Community centers provide a place for individuals to be physically active, but some areas do not have centers within proximity (Berendsen et al., 2015). High crime areas also influence physical activity because its importance is decreased if safety is a concern (Berendsen et al., 2015; Navalpotro et al., 2012). For example, it is not likely for individuals to walk for exercise or bicycle ride if there are neighborhood threats such as homicide, gang violence, or other crimes (Berendsen et al., 2015; Navalpotro et al., 2012). Harmful environmental factors place them at risk for safety and affects their health and lifestyle (Navalpotro et al., 2012).

Poor livelihood leads to barriers that affect individuals' weight (Berendsen et al., 2015; Chen et al., 2016). Barriers to weight loss are often influenced by psychological beliefs a person develops based on situational factors of their environment (Peyer et al., 2016). There is no evidence that explains if obesity causes poor socioeconomic status or if socioeconomic status leads to obesity, but evidence shows that socioeconomic status and obesity are closely related (Paeratakul et al., 2002).

Obesity

There are a variety of factors that influences a person's weight in addition to their education level and occupation such as age, sex, race, diet, physical activity, area in which they live, and knowledge about reaching and maintaining a healthy weight (Berendsen et al., 2015; Navalpotro et al., 2012; Paeratakul et al., 2002). Weight is influenced by a combination of means to support oneself, environment, and lifestyle (Chen et al., 2016).

Diet is one factor that affects an individual's weight (Byrne et al., 2006). People need to consider what they eat to be effective at losing weight, and individuals who keep track of the food they eat are better able to make conscious decisions about food selection (Byrne et al., 2006). Success with weight loss by diet is fostered by lowering dietary fats and decreasing sodium (Byrne et al., 2006; Chen et al., 2016). Another leading factor affecting weight is physical activity, and it contributes to a person's weight (Byrne et al., 2006). People who are not physically active tend to have a higher BMI than people who are active (Eiben & Lissner, 2006). Moderate exercise of 150 minutes per week helps promote weight loss by increasing metabolism (Byrne et al., 2006).

Evidence shows that people who are socioeconomically disadvantaged are more likely to be obese than people who are not (McLaren, 2007). Fitch et al. (2013) report recommendations to prevent obesity by providing annual screening for people ages 18 and older and instituting counseling on weight management for people who are overweight as evidenced by a BMI of 25. The goal is to prevent patients from an unhealthy weight of BMI of 30 or greater, classifying them as obese (Fradkin et al., 2013). Another recommendation is to lower BMI less than 25 to help prevent comorbidities such as cardiovascular disease (CVD; Jensen et al., 2013). Individuals need to weigh themselves weekly to help manage their weight effectively and help prevent co-morbidities (Byrne et al., 2006).

Co-morbidities

Obesity leads to health conditions such as high cholesterol, diabetes, hypertension, and heart disease (Paeratakul et al., 2002). Berendsen et al. (2015) further support that obesity is related to health conditions like chronic obstructive pulmonary disorder (COPD). Obesity is associated with co-morbidities and is the second leading cause of death due to a modifiable condition (Berendsen et al., 2015; Olander et al., 2013). Behavioral change is important to decrease weight and BMI to lower their risk of co-morbidities and death (Berendsen et al., 2015; Olander et al., 2013). Implementation of change is necessary because people who are socioeconomically disadvantaged are more likely to become obese and suffer from preventable health conditions (McLaren, 2007).

In the United States, increase in body weight contributed to high triglyceride plasma levels (Paeratakul et al., 2002). African American women and men were at a greater risk of diabetes and hypertension across all weight classes than Caucasians, but obesity increases their risk (Olander et al., 2013; Paeratakul et al., 2002). Overall, health conditions influenced by obesity are more prevalent in ethnic minorities (Paeratakul et al., 2002). Although obesity is related to low socioeconomic class, obesity related comorbidities occur amongst all races, ages, and socioeconomic statuses (Berendsen et al., 2015; Paeratakul et al., 2002).

Combinations of health conditions may interfere with practice standards to decrease weight due to barriers such as mobility issues or insurance coverage for services (Paeratakul et al., 2002). Because self-efficacy focuses on patients' strengths, it is necessary to plan care to decrease an individual's weight (Artino, 2012). Individuals' lifestyle habits are imperative to consider when creating a care plan that recognizes all health aspects (Paeratakul et al., 2002). People who live with co-morbidities may not benefit from usual care because it may place a

patient at more harm; therefore, care should be specific to each patient's lifestyle which will ultimately lead to long-term effects of healthy weight and decrease the risk for obesity related comorbidities (Berendsen et al., 2015; Paeratakul et al., 2002).

Self-efficacy

Self-efficacy is the belief that a person has in their capabilities (Artino, 2012). High self-efficacy is associated with higher goal setting and increased commitment to accomplish goals than someone with low self-efficacy (Zulkosky, 2009). Behavioral change is the ability to adapt to adjustments that personally challenge an individual (Sauerberger & Funder, 2017). People must be flexible with behavioral changes to improve situations that pose a problem in their lives (Sauerberger & Funder, 2017). People who are socioeconomically disadvantaged will benefit from a self-efficacy approach to decrease weight when behavior change is encouraged in conjunction with their strengths (Sauerberger & Funder, 2017).

Behavior choices made by individuals are influenced by self-efficacy (Artino, 2012). Behavior change to improve health is determined by whether an individual finds an emotional meaning to implement change (Bleakley & Hennessy, 2012). If a person does not find a meaning to change their behavior, they will not (Fishbein, 2008). But, if they find that the behavior is conducive to their culture and values, then the probability of changing is high (Fishbein, 2008). Behavior change is well planned when an individual demonstrates high self-efficacy because the person believes they are capable of accomplishing their goals (Boudreau & Godin, 2007).

When people are persuaded to change or face barriers, they experience low self-efficacy (Ashford, Edmunds, & French, 2010). Self-efficacy influences some personality traits (Luszczynska et al., 2005). Providers assist socioeconomically obese patients by emphasizing their strengths and allowing patients to choose things in their lives that they can adjust to initiate

behavioral change (Bonsaksen et al., 2013; Hilmers et al., 2016). People are empowered when they are allowed to set their goals to create high self-efficacy (Byrne et al., 2006).

Not everyone will benefit from the care provided by usual care techniques because varying lifestyles affect whether a patient is able to meet their goals (Hilmers et al., 2016). Sometimes, standard education provided to clients seems achievable while the patient is in the presence of the provider; however, they often discover they may not have the resources available to reach their weight loss goals based on the management plan already in place from their provider (Hilmers et al., 2016). Inadequate resources can affect self-efficacy, yet some change occurs whether a person believed they could change their behavior or not (Bandura, 2012; Bonsaksen et al., 2013). Research supports that responsibility relies on the patient, provider, and the health care system (Epstein & Street, 2011).

Berendsen et al. (2015) found that people who adopt healthier lifestyles are more likely to lose weight versus individuals who were guided by a set of rules. Healthier lifestyles can be adopted by allowing individuals to focus on what they feel is important and what they are willing to give up to reach their goals (Adams, 2008; Byrne et al., 2006). High self-efficacy makes change more possible and can be done by empowering individuals (Zulkosky, 2009). Empowering patients is done through care specific to each client's needs considering them as a person influenced by their environment (Zulkosky, 2009). Qualities of each patient are identified, and each patient is encouraged to act on his/her current strengths (Cutilli, 2009). A mutual understanding between the patient and the provider is required to place each patient's needs at the center of care (Cutilli, 2009). Eiben and Lissner (2005) reported that people who incorporated a diet and exercise plan as part of their lifestyle changes had a greater chance of decreasing weight than people who received usual care. People who were obese and at a

socioeconomic disadvantage benefited from this project because individualized care using a self-efficacy based approach allowed them to use resources they can afford to lose weight while they received guidance and feedback as they strived to reach their goals (Davis-Martin et al., 2006).

Theory

Self-Efficacy Theory was first defined by Albert Bandura as a theory that has been used across disciplines such as psychology, medicine, business, and nursing (Artino, 2012). The theory has been used to explain a variety of human functions to include behavioral change (Artino, 2012; Klassen, 2004). Stressful situations can be appraised based on one's self-efficacy (Luszczynska, Gutierrez-Dona, & Schwarzer, 2005). Important to this theory is the belief that a person has in their capabilities (Artino, 2012). Self-belief is considered more meaningful than their actual strength because it mentally pushes individuals towards their goals (Artino, 2012). A person's belief in their capabilities may not actually reflect their true abilities, yet their self-belief is considered a strength (Artino, 2012). Personality traits and behavior choices made by individuals are influenced by self-efficacy (Artino, 2012). People develop self-efficacy from a variety of sources; however, there are four main sources: experiences they performed; what they have observed from others; influences or persuasions; and psychological judgment of one's self and abilities (See Appendix C; Artino, 2012). Actual experiences were the most influential of the four sources of self-efficacy (Artino, 2012). People who witness and experience behavioral change are associated with high efficacy. When people are persuaded to change or face barriers, they experience low self-efficacy (Ashford, Edmunds, & French, 2010).

Methods

Institutional Review Board

The University of Missouri Institutional Review Board (IRB) addressed approval of the EBP project as Not Human Subjects Research, evidence-based quality improvement (EBQI; see

Appendix K). A clinic agreed to participate in the project to determine if the intervention had the desired effect on the chosen population. The site was a primary care clinic.

Ethical Considerations

This project displayed respect for all participants despite their differences, including participants' obesity extent or socioeconomic status which was an ethical consideration. Beneficence, to do good for patients, was practiced promoting patients' health (Butts & Rich, 2016). Justice was also considered so that each person was treated without prejudice (Butts & Rich, 2016). The student investigator avoided bias which could have influenced patients' decisions to avoid paternalism. Identifying lifestyle factors with the patient helped avoid paternalistic attitudes. An information sheet was provided to each potential participant before they agreed to the program, so they knew what to expect, including potential benefits and risks of the project. Lastly, patient information remained confidential among the people involved in the project through the securement of patient information in a locked cabinet or electronic medical record (EMR), and patients' socioeconomic status was kept private.

Funding

A $10 stipend for patient participants was provided to each participant with a total cost estimate of $300. The funding source for this DNP project was the student investigator. The total cost to implement the evidence-based project was $975.80 (see Appendix D).

Setting and Participants

The project was implemented within a Missouri primary care clinic. In the project, socioeconomically disadvantaged participant status was determined by enrollment in the Missouri Medicaid program or eligibility for discounted sliding fees for healthcare services through the clinic. The federal guidelines are based on family size. Obese adults ages 18 and

older who received care in the primary care setting for three months or more were recruited through convenience sampling. Specific inclusion criteria were a BMI of 30 or greater and enrollment in the Missouri Medicaid program or eligibility for discounted sliding scale fees for healthcare services through the clinic. Participants with co-morbid disease required Primary Care Provider (PCP) approval at the time of enrollment. All eligible participants had to report a readiness for change, as indicated on a screening tool, before taking part in the program. Exclusion criteria included people who did not receive or qualify for Medicaid, above 200% poverty level, pregnant women, decreased cognitive function, took weight loss supplements, or were part of another established weight loss program outside of the clinic.

EBP Intervention

A lifestyle intervention based on self-efficacy was the intervention and involved creating a personal plan of care for each participant based on their belief in self and motivation to change. Patients contributed to a care plan they believed was obtainable for their lifestyle. Patients chose the important lifestyle changes and reported possible barriers to meeting their goals. The amount of time that was needed to implement the care intervention was three months.

Program recruitment and implementation were conducted in a primary care setting. Nurses, nurse practitioners, a physician, a diabetes educator, social workers, and receptionists were the main recruitment source. Participants were referred to the student investigator to evaluate inclusion and exclusion criteria. Participants were recruited at office visits during three months. In-person interviews were conducted by the student investigator as potential participants were found to identify if they were ready for change using the Weight Loss Readiness Test. More information about the project was provided to participants once readiness for change was identified. Each patient was provided with information regarding the purpose of this EBP

project. Information was provided about the benefits and risks related to the participants' involvement in the project. Patients voluntarily agreed to participant in the EBP project. The patient's BMI was obtained at the initiation of the project along with a demographic survey, medical diagnosis, and their General Self-Efficacy (GSE) score. Patients then set three reasonable, achievable goals to lose weight, and their goals were approved by their provider.

Participants met with the student investigator after two weeks via telephone or in person to identify any potential barriers to their goals and possible changes that were more obtainable. Education about diet and exercise was provided based on each participant's needs. The student investigator provided each participant with handouts outlining types of foods to consume and avoid, types of exercises and how often they should be done, and other healthy options to decrease obesity. Participants followed up with the student investigator again at one and two months. At three months, BMIs were obtained from each participant and findings analyzed (See Appendix E for the Logic Model, Appendix F for the Project Timeline Flow Graphic and Appendix G for the Intervention Flow Diagram).

Change Process and EBP Model

The Transtheoretical Model was used in the EBP to change negative behaviors to positive behaviors (Byrne et al., 2006). A change occurred initially by identifying behavioral concerns leading to obesity, and once behavioral concerns were identified, positive behaviors were found that were conducive to patients' lifestyles. The goal was to transform participants' health behaviors and cause change, leading to weight loss, decreased BMI, and other positive health outcomes while increasing self-efficacy (Byrne et al., 2006). The Stetler Model of Evidence-Based Practice was used for this project. The model used evidence based on research findings to provide safe care and to enable evidence-based nursing practice (Melnyk & Fineout-Overholt,

2015). The model aligned well for this project because, just like self-efficacy, it used critical thinking to promote change (Melnyk & Fineout-Overholt, 2015). Sustainability of the change was fostered by using the Transtheoretical Model and Stetler Model of Evidence-Based Practice. Combined, they empowered people to make decision based on their lifestyle using evidence from research studies.

Project Design

A quasi-experimental design, one cohort, pre-and post-intervention was used to determine the impact of the evidence-based intervention. The intervention was the lifestyle modification program incorporating self-efficacy, and the measured outcome was BMI and weight. Responses to individualized care were measured in obese participants who were at a socioeconomic disadvantage.

Validity

Individualized care based on self-efficacy was expected to cause weight loss because it focused on factors specific to each patient that placed them at risk of obesity. Risk factors related to obesity were targeted to influence a decrease in participants' weight. Forty patients were expected to be recruited to allow for attrition. Participants were selected based on their willingness to lose weight so that genuine efforts of weight loss can be applied in the project. Instruments in this project provided valid, reliable data (Melnyk & Fineout-Overholt, 2015). Potential issues that could have interfered with the validity and conduction of the project were lack of transportation to the primary care setting, changes in health status that interfere with exercise, homelessness, changes in economic status, and provider's influence on participants' choice of risk factors to target. The intervention can be used with other rural socioeconomically disadvantaged populations to produce similar results.

Outcomes Measured

Outcomes measured and expected for the EBP project included weight loss, decreased BMI, and increased self-efficacy. Weight loss was measured based on the amount of weight loss in pounds. The BMI change was based on pre and post BMI values, and self-efficacy was based on a person's perception of an increase in their ability and motivation as measured by a survey.

Measurement Instruments

The stadiometer was used to measure the height of participants, and a scale was used to determine the weight of participants. The BMI was calculated based on height and weight. Weight was collected at intervals throughout the three-month implementation to check participants' baseline weight and their status of weight loss. The Weight Loss Readiness Test was used to collect information pertaining to each patient's diet and physical activity. Also, demographic surveys were used to gather information related to participants' demographics of income, age, race, sex, educational level, and location. Participants spent five minutes during the height, weight, and BMI assessment at their initial encounter and three-month visit. Height and weight were used to formulate each participant's BMI. An additional 15 to 40 minutes was spent collecting data about their diet and physical activity. To measure an increase in self-efficacy, the GSE scale was used for the project. The scale has a Cronbach's alphas between .76 and .90, supporting the tool as reliable. The tool is valid and can be accessed by the public (See Appendix I for outcomes and measurement instruments and see Appendix J for GSE scale; Luszczynska et al., 2005).

Quality of Data

Data were collected at the initiation of the project and three months. Participants were not influenced to report information, and information gathered was entered based on findings. Surveys and questionnaires were written at a fifth-grade level and explained, when needed, by the student investigator. Participant information remained confidential between

provider and student investigator. Measuring instruments used for this project, weight and BMI, are frequently used in literature similar to this project. Self-efficacy scale is also used in the literature to determine the change in a person's perspective about their abilities (Bonsaksen et al., 2013). Power analysis was not used for this project due to a small sample size. Threats to the quality of data included participant retention, transportation to the primary care setting, student investigator's possible influence on participants' decisions, people's overall health status, and the COVID-19 pandemic.

Analysis Plan

Paired *t*-tests were planned to measure the differences in weight loss for interval level data based on percentage of weight loss and BMI, and Wilcoxon signed-rank test was expected to be used to measure self-efficacy gathered from ordinal data based on patients' feelings about their abilities. Due to a small sample size, descriptive statistics were used in the analysis of change (See Appendix L and Appendix M for analysis plan). Findings of this project were compared to published studies to determine if the intended project outcomes were met (Arpey et al., 2017; Ashford et al., 2010; Berendsen et al., 2015; Byrne et al., 2006; Chen et al., 2016; Navalpotro et al., 2012; Paeratakul et al., 2002). Obesity was expected to decrease significantly with the implementation of the EBP intervention. Individuals who experienced care specific to their needs were expected to identify factors that led to obesity, and they were more likely to lose weight than their counterparts. Gains may weaken over time because care is specific to each individual. One way that gains may weaken is if EBP further influences standard care by meeting the needs of most people with obesity who are at a socioeconomic disadvantage.

Results

Setting and Participants

The evidence-based project was implanted from September 30, 2019 to March 2, 2020. Participants were enrolled at various times and agreed to take part in the program for three months. Twenty-six participants were enrolled in the program with two withdrawing and six participants not responding to attempted contact by phone, calls from the clinic, or scheduling an appointment. Ten participants' data could not be collected at the clinic due to the COVID-19 pandemic that prevented students and staff from seeing patients. Participant demographic data included each participant's age, gender, race, and educational level. Demographics included an age range between 37 to 69, seven females and one male, seven individuals who reported their race as Caucasian, and one native American or Alaskan native. Reported educational level included one high school or general educational development (GED), two individuals with some college, two associate degree holders, and three bachelor's degree recipients. Participants reported comorbidities to include hypertension, diabetes, prediabetes, hyperlipidemia, sleep apnea, hypothyroidism, depression, anxiety, gout, arthritis, and gastroesophageal reflux disease (GERD). Pre and post data included BMI, weight, and the measurement of participants' self-efficacy. Height was gathered to contribute to the participants' BMI calculation.

Intervention Course

The intervention included enrollment in the program after the participants were given an information sheet that explained the project and stated what is required of each participant. The participants completed the Weight Loss Readiness Test that assisted in the determination of participants' readiness to take steps leading to change. Participants then met with the student investigator who helped participants identify their unique strengths and barriers to losing weight. Once strengths and barriers were identified, participants set three attainable goals based on their lifestyle. Participants were encouraged to discuss their concerns during the two-week phone

follow-up period so that changes could be made to the goals that participants set initially to better aid in weight reduction and increase their self-efficacy. Follow-up appointments took place by phone during their first month and second month, but participants returned for post-data collection at three months. After two months of the project implementation, two participants dropped the program. By March 2020, there were four participants who could not be reached by phone, and two canceled their previous appointment and could not be reached by telephone. The total was six participants who could not be reached and did not call the clinic to schedule their post appointments.

Outcome Data by Sub-Topic

Data was analyzed from eight program participants. Data collected about the GSE showed a pre score range from 1 (not at all true) to 4 (exactly true) for questions one to 10. The pre GSE mean was 3. The post score mean was 3.1. The overall change mean was .8 as the data showed a decrease in questions one (managing to solve difficult problems), two (being able to find means to goals when someone opposes), and three (easy to stick to aims and goals) of the GSE scale after three months. The pre-GSE score had a wider range overall in participants' self-efficacy.

A total of 4.5 change in the BMI in seven patients was recorded with a pre-BMI mean of 43.8 (n=8) and a post BMI mean of 42.7 (n=8). The mean change was .64 in seven patients, excluding the one gaining weight. Finally, there was a total of 23.7-pound weight reduction in seven participants with a mean of 3.3. The average pre weight mean was 262.8 in the eight patients, and the average post weight mean was 259.8 in the eight patients The data showed changes in participants over three months when a person takes part in their weight loss plan (see Appendix O). A total of 26 participants started the program with two participants dropping from

the program. Twenty-four participants were still enrolled in the program, but only data from 8 participants could be obtained due to the prevention, spread, and closing of the clinic due to COVID-19.

Discussion

Successes

Participants' involvement in the development of a weight loss plan contributed to the outcome of the program. Education about diet and physical activity was given to each participant that allowed them to reflect on their lifestyles. Allowing participants to express strengths and barriers in their lifestyles contributed to them discovering options that would aid in their weight loss. Overall, weight loss and a decrease in BMI was the greatest success in the outcome of the program.

Project Strengths

Participants lived near the clinic in Missouri. Clinic staff were available to provide an information sheet about the project to each potential candidate. Explanation by a familiar face contributed to the greatest success in recruitment and implementation of the program. Participants had access to nutritional education if they had diabetes in addition to suffering from obesity. Social workers were also present for participants who needed additional support, finding resources that meet their unique needs. The organizational culture contributed to participants' comfort and their ability to accomplish tasks.

Results Compared to Evidence

Program results demonstrated that people who live healthier lifestyles were able to decrease their weight and BMI when they made improvements to their diet and physical activity. The results of this project reflect the study done by Berendsen et al. (2015) showing lower rates

of obesity in people with healthier lifestyles. Participants in this program also reported comorbidities. Paeratakul et al. (2002) showed there is a correlation between obesity and comorbidities.

Participants in the program had no higher than a bachelor's degree. Results in Navalpotro et al. (2012) expressed that educational level is significantly related to obesity of the primary income earner in families, but the results of this program did not support a difference in weight and BMI compared to people with other educational levels. Results of McLaren (2007) showed a relationship between body size and socioeconomic status. The program did not consider if participant were the main source of income for their family. Self-efficacy did not play a large role in the reduction of weight. However, behavior change leads to a decrease in weight and BMI. Ashford, Edmunds, and French (2010) discussed the relationship between interventions and changes in self-efficacy, expressing that psychological techniques are more successful at increase physical activity reflective of an increase in self-efficacy. In contrast, Olander et al. reported that changes in behavior lead to improvements in physical activity but did not affect self-efficacy.

Limitations

Internal Validity Effects

Lack of transportation to the clinic prevented participants from making it to follow-up appointments. Some participants changed their appointment to days that they could combine appointments to coincide with outings that were conducive to their driver's schedule. Appointments at the clinic were scheduled months in advance, leading to difficulty rescheduling appointments. Patients had difficulty requesting time off work to go to their follow-up appointments. Not having a direct phone line for patients to call other than the clinic phone

number led to delayed patient messages to the student investigator. Participants were unable to leave voice messages for the student investigator. No participants reported homelessness, and participants did not have a change in their economic status while in the program that prevented them from seeking care. Participants were able to receive services under a sliding scale fee that was intended to make medical care affordable based on their income. Some participants were not open to paying out of pocket for a follow-up appointment unless another appointment, such as an emergency visit was required. Participants also struggled over the Halloween, Thanksgiving, Christmas, and New Year's Eve holidays fighting temptations of overeating. The most significant effect on completion of the program was the COVID-19 virus that forced an early closing to the program.

External Validity Effects

The collected data included 8 participants from all 26 initially enrolled in the program. The small participant population could affect the results of weight loss, decrease BMI, and GSE. The small sample size interferes with transferability by leading to varying results. The clinic had social work resources, diet management from a diabetes educator, and a nutritionist that may not be present at smaller rural clinics.

Sustainability and Plans to Maintain Effects

Obtaining a patient population greater than the initial population would allow more people to take part in the program so results could be statistically significant. Having a telephone that allowed patients to leave messages to the student investigator about changes in a phone number or to return phone calls would have improved the implementation process and potentially enhanced patients' progress while in the program. Participants were also allowed to have post intervention calls via phone on days when patients were scheduled, but the student

investigator was not present. Giving participants cab vouchers to come to their appointment would have helped maintain the project's validity.

Efforts to Minimize the Project Limitations

Efforts were made to minimize project limitations. Phone interactions for follow-up during the implementation was used to aid in the continuation of behavior change and contributed to the continuation of implementation of the program. Throughout the implementation period, the student investigator stayed at the clinic for several hours most weeks, at varying times each day, to be available for communication with participants by phone. A minimum of two interactions was requested to aid in the participants' continuation of the program.

Most participants were able to meet the two person interactions, and the student investigator continued to meet with them in person at two weeks, one month, two months, and three months. Participants worried about the cost of each follow-up appointment. Many participants in the program had varying schedules. To help accommodate the varying schedules, the student investigator worked with their schedules and was available for phone communication.

Interpretation

Expected and Actual Outcomes

The decrease in weight and BMI was expected as a result of behavior change. Self-efficacy was expected to increase over time as participants saw results from their changed behaviors. Program results showed noticeable weight loss and decreased BMI post intervention. A slight increase in self-efficacy was noted but was expected to be higher than recorded. Data collected from a larger participant population would have shown more significant results, but due

to the closing of the clinic due to COVID 19, only eight people were able to complete the program. The closing of the clinic made it impossible to reschedule in-person appointments that ultimately affected the outcomes of the program.

Intervention Effectiveness

Personal interactions with each participant to understand their lifestyle habits contributed to their plan of care. Understanding what each participant does daily contributed to how much and what type of information was given to determine what changes to make while in the program. Participants looked at their lifestyle and found things that supported their weight loss. They discovered what their barriers were to losing weight in order to make the best decision to change their behavior. The intervention is most likely to be effective in a clinic setting similar to the clinic setting for this program. The program would be successful in another rural clinic that has staff with various skills or a clinic that provides multiple services for their patients rather than referring them outside of the clinic. The program would likely be successful at other clinics that utilize a nutritionist that can help participants select healthy food options.

Intervention Revision

Improvement that might increase positive program outcomes would require changes to the intervention design. A program extension from three to six months would expand the time participants are part of the behavior change. Six months of the program would show if a personalized plan of care contributes significantly to behavior change that results in weight loss, decreased BMI, and an overall increase in self-efficacy. Intervention would not occur over the holiday season, including Halloween, Thanksgiving, Christmas, and New Year’s Eve, if not completed over six months which would aid in determining the effectiveness of the learned behavior change.

Expected and Actual Impact

A decrease in weight, BMI and an increase in self-efficacy improves the healthcare system by decreasing obesity related comorbidities. The program's estimated cost was $975.80, but the actual cost of the program was $227.00 and was funded by the student investigator. Educational materials were used and copied by the clinic site. Economic sustainability was created by providing plans specific to each patient. Understanding each patient has the potential to effectively save cost on healthcare by meeting patients' needs instead of providing care solely on the evidence without fully understanding the role of each patients' finances and lifestyle related to their health.

Conclusions

Intervention Usefulness

The evidence reflects that there is a direct relationship between socioeconomic status and obesity. Weight loss was initiated through a self-efficacy approach that enables individuals to decrease body weight. The BMIs were lowered when individuals discovered barriers and strengths to losing weight and created a manageable care plan. Situational factors led to weight loss, but there are some challenges people face. Studies report challenges to weight loss and limitations that affect the results.

Further Study of Intervention

Diet and exercise using a self-efficacy approach to weight loss was the intervention for this evidence-based project. Self-efficacy is based on how a person thinks, feels, and how motivated they are to accomplish tasks to reach goals (Zulkosky, 2009). However, evidence gaps are related to this intervention. Self-efficacy describing how a person feels predicts task achievements, but lifestyle changes with the attention to one's level of self-efficacy do not consider that people may still change their behavior despite them believing in their abilities to

change (Artino, 2012). Desperation to change is another motivating factor that causes behavior change leading to weight loss (Chen, Jaenicke, & Volpe, 2016). Lifestyle changes through diet and exercise can be applied to further studies that focus on other health conditions such as hypertension, heart disease, diabetes, high cholesterol, and COPD to improve or eliminate an individual's condition.

Dissemination

At the completion of this project, evidence showed that obesity among people who are socioeconomically disadvantaged decreased when providing individualized care compared to standard care offered to clients. Patients were able to adopt a healthier lifestyle that aided in weight loss by setting weight loss goals that were achievable based on their lifestyle. Individualized care empowered patients by allowing them to work with the resources in their environment and by changing unhealthy behaviors. Patients identified barriers and set their own goals to weight loss that ultimately lead to a healthier BMI. Poster dissemination outlining the proposed project was presented at the Advanced Practice Nurses of the Ozarks conference in fall of 2019.

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Appendix A

Definition of Terms:

- Socioeconomically disadvantaged- Lack of access to resources due to poverty and little opportunity (United States Department of Health and Human Services, 2018).
- Self-efficacy- An individual's belief and motivation to complete tasks and accomplish goals (Artino, 2012).
- Usual or standard care- Care typically provided by a healthcare organization (Byrne et al., 2006).
- Obesity- People whose body mass index (BMI) is greater than 30 (Fradkin et al., 2013).

Appendix B

Table 1

Evidence Table:

PICOTS question: In obese socioeconomically disadvantaged people ages 18 years and older (P), does a self-efficacy based intervention to encourage behavioral change (I) compared to usual care © decrease body mass index and weight (O) during a three-month period (T), in the primary care setting (S)?

First author, year, title, Journal	**Research Design, Evidence Level, & Method**	**Sample & Sampling**	**Measurement of Outcomes & Reliability**	**Results & Analysis Used**	**Limitations**
Social Determinants/Co-morbidities:					
Arpey (2017). How socioeconomic status affects patient perceptions of health care: A qualitative study. *Journal of Primary Care and Community Health*	Qualitative, level 6 3 main themes representing the range of patient perceptions of how SES affects health care: (1)	80 Medicaid enrollees, in-depth audio recorded interviews, quota sample	Nvivo10 database,36 for systematic coding and searching of narrative data; Research team identified key concepts	Most subjects reported that SES has an effect on their healthcare.	Subjects resisted directly stating that their SES influenced their care

	treatment provided, (2) access to care, and (3) patient-provider interactions				
Berendsen (2015). The implementation and sustainability of a combined lifestyle intervention in primary care: mixed method process evaluation. *BioMed Family Practice*	Quantitative and qualitative, experimental (Randomized Control Trial), evidence level 2; individual lifestyle interventions relating physical activity and diet was measured with the prevalence of overweight and obesity	411 combined overweight, obese, and morbidly obese; Convenience	In-person semi structured interviews and questionnaires from participants and health care providers were used to collect data. The RE-AIM framework was used to find the impact on an intervention.	Healthier lifestyles decrease the rates of overweight and obesity when there is a balance and increase in dietary and physical activity intervention. F4 audio-transcription software and NVIVO 2.0 was used to analyze transcription. T-tests, Pearson chi square and Mann–Whitney U tests and One-way ANOVA or Kruskal-Wallis tests were also used to analyze data.	One Health Care Cluster (HCC) dropped out in the middle of study. Also, some HCC had the ability to offered supervised care prior to the study. Weight loss may not necessarily signify that participants embraced a healthier diet and physical activity. Sample may not represent the target population.
Chen (2016). Food Environments and Obesity: Household	Quantitative, non-experimental, Level six	38,650 individuals in 2104 counties in	To measure the relationship between obesity	Stata Version 13. Almost all lifestyle choices and	Self-reported measures may be unreliable. Also,

Diet Expenditure versus Food Deserts. *American Journal of Public Health*	descriptive; Obesity was measured by household food environments.	the United States; Convenience	and individual, household, and neighborhood factors. Iri Consumer Panel and Iri MedProfiler data was used obtain individual and household data. Poverty information was gained from the Census Bureau's American Community Survey. USDA Score was used to help measure the household level variables.	demographics is directly related to obesity and overweight at the individual level. Fast-food and household factors is significantly associated with obesity but not overweight. Socioeconomic disparity is associated with obesity and overweight. A census tract level switch from nonfood to food desert was associated with obesity and overweight. At the neighborhood level, the food environment had less of an effect on overweight and obesity than at the individual and household level.	the scanner data and USDAScore only represents in-home food purchases and not food from outside of home. In addition, distance and obstacles to food stores and restaurants were not taken into consideration.
Davis-Martin (2006). A primary care weight management intervention for low-	Quantitative, experimental, level three evidence; Obesity	144 overweight and obese low-income African American Women	Participants were in one of two weight loss interventions or	There was a significant difference in weight loss in the intervention groups (70%)	Some participants dropped out or developed health conditions that

income African-American women. *International Journal of Obesity.*	was measured with participants who received a personalize intervention and standard care.	ages 18 to 65; convenience	one of two standard care groups. Questionnaires and surveys were complete by participants, and Baecke physical activity scale. Weight and height were obtained at the beginning of study and at six months. Stadiometer was used to measure height. Personalized plans of care focused on barriers to weight loss while considering culture and socioeconomic status. Behaviors to keep participants	compared to standard care groups (49%). In fact, participants in the standard group showed steady increases in weight. Completers and Intent-to-treat analysis were used in this study.	excluded them from continuing to participate in the study. Also, the study was limited to African Americans.

			motivated in losing weight was a component of individualize care. Standard care was provided for participants in the standard care groups; therefore, no information received at baseline was used to assist in care. On site visits occurred during the first and third month in the intervention groups to make sure intervention protocol was provided effectively.		
Fradkin (2014). Associations between socioeconomic status and obesity in	Quantitative, non-experimental, Level 6 descriptive. Obesity was	4,824 students ages 10 to 13 years old; convenience	Interviews were conducted through computer that allowed personal and self-	African American and Latinos were more likely than Whites to become obese. People of lower	Body sizes and access to health resources may influence obesity. Students'

diverse, young adolescents: Variation across race or ethnicity and gender. *American Psychological Association.*	measured with the socioeconomic status and ethnicity of students.		interviewing. BMI was based on Quetelet index. Portable standiometer was used to measure height, and Tanita electronic digital scale was used to measure height.	socioeconomic status were more likely to become obese than people of higher socioeconomic status. Odds ratios (Ors) were used to analyze data through the SPSS Complex Sampling module.	location, diet, and exercise can influence whether they become obese.
Hilmers (2016). Rural-to-urban migration: Socioeconomic status but not acculturation was associated with overweight/obesity risk. *Journal of Immigrant and Minority Health.*	Quantitative, non-experimental (observational study), Level 6 single descriptive. Cross-sectional study that used data from Peru Migrant, a study designed to "investigate the difference in specific cardiovascular disease risk factors between migrant and non-migrant groups"	587 migrant participants with a BMI greater than or equal to 25 kg/m, Convenience	Demographic surveys were given to eligible participants (gender, age, education level, household income, assets, and place of birth and current location). A multiple deprivation index (SES) was used to determine if participants had a high or low SES.	Most participants reported being physically active. There was no significant difference observed between SES, physical activity (PA), or acculturation level when comparing overweight/obese to non-overweight/obese. SE S was the highest predictor of overweight/obesity. Statistical tests used in this study were t test and Chi-square to	Data from each group was not measured separately because of the limited number of people in the obese category. Also, cross-sectional design prevents further interpretation of the relationship between overweight/obesit y and sociocultural factors.

	(Hilmers et al., 2016, p. 645).			check for differences in participant characteristics in regard to their weight.	
Navalpotro (2012). Area-based socioeconomic environment, obesity risk behaviors, area facilities and childhood overweight and obesity: Socioeconomic environment and childhood overweight. *Preventive Medicine*	Quantitative, non-experimental (cross-sectional), Level 4 descriptive. Obesity was measured by the international body mass index and compared to subjects' socioeconomic status.	4529 Spanish children and adolescents. Data was used form the Spanish National Survey of Child Health; Convenience	Surveys were used to gain information related to the subjects' diet, activities and to obtain information of their height and weight were used. The international body mass index, educational level and occupation of primary household earner were used to determine socioeconomic status, and cut-off point that were established for	The two socioeconomic factors related to overweight and obesity significantly are disadvantages in educational levels and the occupation of the primary earner of families. Age and sex were not statistically significant in influencing the results of overweight and obesity. A multilevel logistic regression model was used	Limitations include parental/ guardian report of height and weight; therefore, the impact of the findings may not be representative of the target population.

			youth and children.		
Paeratakul (2002). The relation of gender, race and socioeconomic status to obesity and obesity comorbidities in a sample of United States (U.S.) adults. *International Journal of Obesity and Related Metabolic Disorders*	Quantitative, non-experimental, Level 6 descriptive; Obesity and obesity related comorbidities were measured by socioeconomic factors.	9643 noninstitutionalized participants, convenience	Interviews were conducted in-person to collect data. Height, weight, diagnosed chronic diseases, and sociodemographic information were self-reported. Body mass index (BMI) was calculated based on participants' report of their height and weight. Education level was obtained by the number of school years each participant completed. Income was determined as	Obesity is associated with gender, race, income, and education. The study results show obesity and obesity related comorbidities are associated with gender, race, and socioeconomic status. Blacks, Hispanics, women, and people who are socially disadvantage have a high chance of being obese or suffer from obesity related comorbidities. Chi-square was used to compare co-morbidities associated with obesity. Stata release 7 and SAS were used for data analysis.	Height and weight were self-reported and may not be true measurements of participants; therefore, BMIs may be inaccurate. Also, more research is needed to understand if obesity affects socioeconomic status or if socioeconomic status affects obesity. More research is needed to determine which factors affect obesity and which traits are affected by obesity.

			higher if the income level was greater than 130%, and lower income was determined if income level is equal to or less than 130%. Outcome measures associated with socioeconomic status were obesity and obesity associated comorbidities. The four socioeconomic factors used to measure obesity and comorbidities were gender, race, income, and education.		
Peyer (2016). Relationships between County	Quantitative, non-experimental, level 4	500 school districts in Pennsylvania with students ages	Social determinants of health were	Descriptive analysis was used to finds trends associated with	Situational factors can vary by location, including

Health Rankings and child overweight and obesity prevalence: a serial cross-sectional analysis. *BioMed Central Public Health*	descriptive; Body size was measured using body mass index collected annually over three years.	six to 19 years old (kindergarten to twelfth grade), convenience	placed in four categories, health behaviors, clinical care, social and economic factors, and physical environments with a total of 13 measures. Body mass index (BMI) was utilized to obtain information on body size. Zhu's absolute threshold was used to explain the effect that county level health factors have on body size by grade level. Pearson correlations was used to determine the association between county	overweight and obesity. MANCOVA and z score was the statistical tests used. The better the county health ranking the lower the rate if obesity, and poorer rankings are indicative of higher rates of obesity.	the thirteen measures used, and influences of students' location prior or during the year data was obtained could have affected the statistics and result.

			health indicators and obesity.		
Zahnd (2015). Gender-specific relationships between socioeconomic disadvantage and obesity in elementary school students. *Preventive Medicine*	Quantitative, non-experimental (cross-sectional), Level six descriptive. The goal is to prevent or decrease childhood obesity via observation leading to collaborative, evaluation and education.	2,648 first and fourth-grade students between 2012 and 2014, Convenience	School, race/ethnicity, gender, grade level, the year data was collected, and socioeconomic disadvantage (SD). SD was determined by eligibility for free/reduced lunch if family income less than 185% of poverty level. High and weight measurement during the fall of each year.	Higher proportion of SD students compared to non-SD students were obese. On the other hand, there were no significant difference in SD and non-SD male students. There were no differences between gender as it relates to year of data collection, socioeconomic status, or race or ethnicity. To compare the differences in gender and weight the Fisher exact test or Chi-squared test of independence was used in this study.	Results may not be representative of children in other schools in the district, state or nation. Other social risks factors were not accounted for such as their parents' education level, if they lived in single parent households, and neighborhood contextual factors (Zahnd et al., 2015).
Obesity:					
Adams (2008). Taking charge of one's own life: A	Qualitative, Grounded Theory, Level six	Fourteen postmenopausal women seven	Semi-structured interviews that were voiced	Constant comparative method was used to analyze data. The three	Women were receiving secondary benefits

model for weight management success. *The Qualitative Report.*	descriptive; Cognitive restructuring used three phases to measure participants' willingness to take charge of their own lives.	identified assureds and seven as disbelievers; Quota sampling	recorded. Responses were questioned in subsequent interviews for validation. Straussian was used in data collection and analysis. Participants went through three stages of "Taking charge of one's own life" to manage weight. These phases were engagement, internalizing, and keeping one's commitment.	phases resulted in the participants achieving weight loss outcomes.	from a larger study that may have influence what information was and was not shared. Another limitation is that each woman was interviewed only once by the researcher to not burden them. This study may not represent the target population.
Byrne (2006). Weight loss strategies for obese adults. *Obesity.*	Quantitative, experimental, Level 3 evidence; Obesity was measure with participants who had personalize	74 overweight and obese participants between the ages of 30 to 40 years old; convenience	Overweight and obesity participants were assigned to either Personalize Weight Management	People who have personalize intervention verses standard care intervention were more likely to reach their target weight goals.	There was no record of patients' diets at baseline and completion of the study to measure dietary changes.

	verses standard care.		Program or Standard Care group. Baseline weight was obtained at the beginning of the study. The anthropometric measurement tool measured height, weight, and waist circumference, and DXA measured body composition. Both measurement tools were then measured with the ADULT software. Harpenden stadiometer was used to measure BMI. Exercise test was done to measure aerobic capabilities.	SAS was used to analyze data. Completers-only and Intent-to-treat analysis were used in this study to measure the effects of treatment.	

Eiben (2006). Health Hunters–an intervention to prevent overweight and obesity in young high-risk women. *International Journal of Obesity*	Quantitative, experimental, Level three evidence; Obesity was measured with lifestyle interventions.	30 women between the ages of 18 and 28 years old; Convenience	Women with a BMI of 18.5 or over were assigned to either the intervention group who intended to combat obesity through care personal to the patient, or they were assigned to the controlled group that did not offer patient centered care. Baseline BMI was obtained at the initiation of the study. Treadmill test, anthropometric examinations, and waist-to-hip ratio were measurement tools used. The dual X-ray absorptiometry	Results were analyzed with the intention-to-treat principle. More importantly, the results were analyzed using the two sample t-tests and ANOVA. Participants in the intervention group who had personalized care specific to diet, exercise, and lifestyle practices that decrease obesity has a significant weight loss compared to the controlled group whose care was not specific to each client.	May not be representative of the target population due to sample size. Also, the study was limited to young women; therefore, it did not represent other women, or men and children.

			(DXA) was used to measure body composition. A food questionnaire was used to measure diet.		
Fitch (2013). Prevention and management of obesity for adults. *Institute for Clinical Systems Improvement*	Evidence-based Guidelines; Systematic reviews, RCTs, meta-analysis, expert opinion; levels 1, 2, 4 and 7; guidelines to prevent and manage obesity.	Patients age 18 years or older; Electronic databases and hand-searches of published literature	Systematic reviews, randomized control trials, meta-analyses from 2005 to 2013. Rating Scheme was used to analyze data. Risk assessment, prevention, diagnosis and treatment that include counseling and goal setting were used to measure risk of obesity.	Annual screening using BMI for patient 18 and older. Also, it is recommended to provide education and counseling to patients with a BMI greater than 25. Management of weight, comorbid conditions, and readiness for change are necessary to prevent obesity in adults.	Safety risks and adverse effects related to the use of weight loss drugs.
Jensen (2013). 2013 AHA/ACC/TOS guideline for the	Practice Guidelines; Systematic	Overweight and obese adults, and 71,000 articles	Systematic approach of evidence to	Analysis were done using published meta-analysis and systematic	Cost analysis, and potential risk of bariatric surgery,

management of overweight and obesity in adults: A report of the American College of Cardiology/America n Heart Association Task Force on Practice Guidelines and The Obesity Society. *American Heart Association Journals.*	review, RCTs, expert opinion, nonrandomization , case control and cohort design; Levels 1, 2, 3, 4, and 7. Guidelines for the management of overweight and obesity.	related to cardiovascular disease as an outcome of obesity using electronic databases and hand-searches of published literature CINAHL, EMBASE, PubMed, Cochrane, PsycINFO, Wilson Science, and Biological Abstracts databases. TeraText, Content Analyst, and Collexis, and Lucene were also used.	measure health benefits, risk of CVD and comorbidities, and interventions of overweight and obese. Rating scheme used to assess the quality and strength of evidence. Peer-review and expert consensus between 1998 to 2009. Used English articles.	review with evidence tables. Recommendations can be applied to most patients to reduce their risk for CVD. Identify patient that need to lose weight then select diet and lifestyle interventions than can decrease their risk for CVD. Bariatric surgeries are used to treat patients who has a BMI greater than 35 or 40 based on risk factors of CVD.	and rapid weight loss can lead to potential health complication.
McLaren (2007). Socioeconomic status and obesity. *Epidemiologic Reviews*	Quantitative, Systematic Review, Level one evidence; articles associated	333 published studies. Sources of Journals include CINAHL, MEDLINE, ABI Inform, PsychInfo,	Primarily cross-sectional studies were used. Data bases were reviewed using key terms	There is a direct relationship between socioeconomic status and body size. Socioeconomic disadvantages related	All studies used for this systematic review were conducted in English.

	socioeconomic status and weight.	Business Source Premiere, EMBASE, ERIC, and Social Science Abstracts.	associated with "obesity" and "socioeconomic status" and their synonyms. About 1,914 articles were examined. Human Developmental Index (HDI) was used to classify levels of development in countries and their samples. The levels are classified as high, medium, or low.	to occupation and education had the greatest effect on obesity.	
Self-Efficacy:					
Ashford (2010). What is the best way to change self-efficacy to promote lifestyle and recreational physical activity? A systemic review with meta-	Systematic review and meta-analysis, level 1, randomized experimental, non-randomized experimental or pre or post	Papers reporting lifestyle or recreational activity; 27 unique physical activity intervention studies.	Schwarzer's meta-analysis computer program was used to quantify the impact of the interventions on	Significant relationship between interventions and changes in self-efficacy. Psychological techniques are most effective to increasing	Lack of systematically analysis scientific evidence on how to base interventions to increase self-efficacy on

analysis. *The British Psychological Society*	intervention designs were eligible or inclusion.		physical activity and self-efficacy. Homogeneity was measured using Q coefficient. Moderator analysis used to determine the cause of heterogeneity. Pairwise Z tests were used to determine which intervention techniques accounted for significantly different effect size estimates. Pearson product-moment correlation coefficient was used to assess amount of change in self-efficacy.	self-efficacy for physical activity.	lifestyle and recreational physical activity.

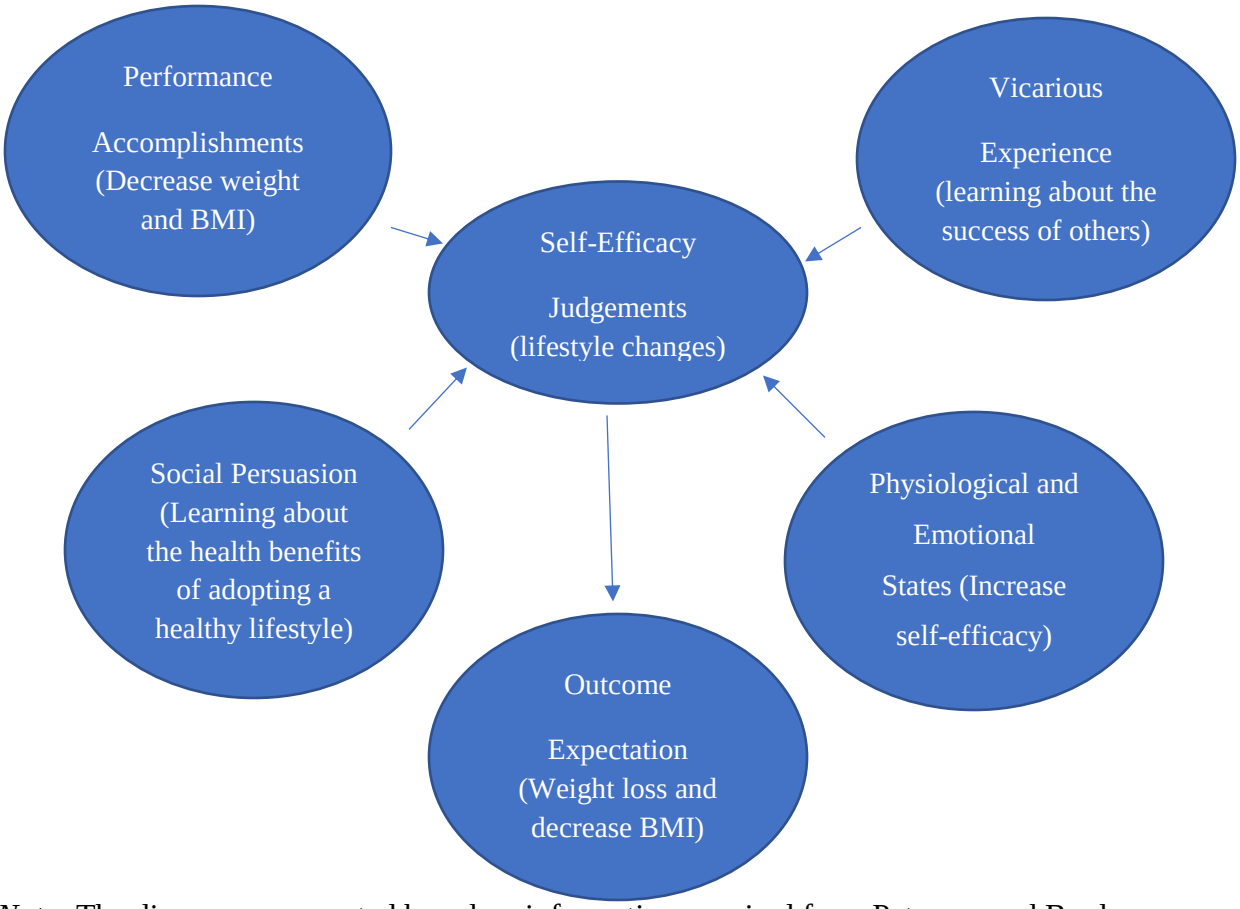
Artino (2012). Academic self-efficacy: From educational theory to instructional practice. *Perspectives on Medical Education*	Quantitative, Level 6, GSE summed item scores, and ranges between 10 (lowest GSE) and 40 (highest GSE).	141 adults with morbid obesity, convenience sample	GSE and a demographic questionnaire, A two-faceted (item and person) Rasch partial credit model was applied to the GSE data.	The 10-item and 7-item versions of the GSE partially met the criteria for unidimensionality. Neither version met the criterion for person response validity, although the results were slightly better for the 7-item than for the 10-item version. 7-item version of the GSE seems to have better psychometric properties than the original 10-item version.	Several items had differential item function in relation to age, education or work status.
Brower (2014). Expanding the theory of planned behavior to predict healthy eating behaviors. *Nutrition and Food Science*	Quantitative, non-experimental, Cross-sectional, level 4 descriptive Women, who were thinking about changing their diet or currently dieting,	79 adult women between the ages of 18 to 53 years old. Fliers were handed out at a university advertising a study about dietary habits.	Food frequency questionnaire (FFQ) was used to measure amount of healthy foods participants eat daily. FFQ was an 85 food items from 8 food	People who identified themselves as healthy eaters were more likely to have intentions to eat healthy. Description analysis was used to describe the sample.	Self-reporting may cause bias, miscalculation of food consumption, motivated college students, and may have forgotten to report.

	had their height and weight were measured to calculate BMI.		groups. 7-point Likert scale was used to measure intent, Cronbach's alpha was used to measure attitudes towards eating healthy. BMI based on the Centers for Disease Control and Prevention's standards was also use.		
Olander (2013). What are the most effective techniques in changing obese individuals' physical activity, self-efficacy and behavior: A systematic review and meta-analysis. *International*	Systematic review, level 1, randomized controlled trials, non-randomized controlled trials, quasi-experimental studies or studies with pre-post design.	58 articles included in the review, help understand the most effective ways to promote self-efficacy and behavior change to lose weight in obese adults	Spearman's Rho to show statistical dependence between two variables. 40-item CALO-RE taxonomy of behavior change techniques was used to help people change their physical	Physical activity behaviors were increased with behavior change techniques without having a great effect on self-efficacy.	Other elements may be more important to increasing physical activity

Journal of Behavioral Nutrition and Physical Activity			activity and eating behaviors		

Appendix C

Bandura's Self-Efficacy Theory



Note: The diagram was created based on information acquired from Peterson and Bredow (2017). The model includes performance accomplishments, vicarious experience, social persuasion, and physiological and emotional states all of which leads to self-efficacy. Performance accomplishments relates to actions that benefits individuals physically, socially, or emotionally. Vicarious experience relates to an individual having experiences through a secondary source that is not their own. Social persuasion involves the influences of others leading to self-efficacy. Finally, physiological and emotional states relate to how physically and emotionally able an individual is to adopt a different behavior. Outcome expectation is what will happen if a goal is accomplished. Luszczynska

Appendix D

Table 1

Budget Information

Personnel and Items	Quantity	Cost	Total Cost/Notes
Direct Cost			
Principal/Student Investigator- Whitney Williams	One	$0.00	Uncompensated
Nurse Practitioner	One	$48.38	Uncompensated
Registered Nurse	One	$31.02	Uncompensated
Patient Participant	30	$10	$300
Blood Pressure Cuffs	One	$16	Uncompensated
Stethoscopes	One	$105	Uncompensated
Adult Scale	One	$20	Uncompensated
Stadiometer	One	$54	Uncompensated
Composition Notebook	40	$2.97	$118.8
Black Ink Pens	8 (Five pack)	$4.01	$32.00
Educational Material and Miscellaneous	Dependent Upon Need	$500	$500
Indirect Cost			
Data Support Personnel	One	$16.28	Uncompensated
Computer	One	$400	Uncompensated
Fliers	500	$25	$25
Total			$975.8

Appendix E

Logic Model

Student: Whitney Williams

Inquiry, PICOTS: In obese socioeconomically disadvantaged people ages 18 and older (P), does a self-efficacy based intervention to encourage behavioral change (I) compared to usual care (C) decrease body mass index and weight (O) during a three-month period (T) at a primary care setting (S)?

Inputs	**Intervention(s)**	**Outputs**	**Outcomes -- Impact**		
	Activities	*Participation*	*Short*	*Medium*	*Long*
Evidence, sub-topics 1. Social Determinants 2. Obesity 3. Co-morbidities 4. Self-efficacy **Major Facilitators or Contributors** 1. Self-efficacy assessment. 2. Pre assessment of lifestyle habits 3. Provider education 4. Assess BMI status of socioeconomically disadvantaged people between the ages of 18 and 65. 5. Community Resources **Major Barriers or Challenges**	**EBP intervention which is supported by the evidence in the Input column (brief phrase)** Self-efficacy assessed with the use of General Self-Efficacy Scale (GSE). **Major steps of the intervention (brief phrases)** 1. Screen for eligibility. 2. Participant report a readiness for change before taking part in the study.	**The participants** N=40, obese socioeconomically disadvantaged adults ages 18 to 65 years old. **Site** Unknown **Time Frame** 3 months **Consent or assent Needed** No; Information sheet **Other person(s) collecting data (yes, no)**	**(Completed during DNP Project)** **Outcome(s) to be measured** Primary: Individual elf-efficacy. Secondary: Change behaviors to promote weight loss **Measurement tool(s)** 1. GSE 2. Stadiometer 3. Scale 4. International body mass index (BMI).	**(after student DNP)** Self-efficacy and usual care will be compared to assess the benefit of the intervention (self-efficacy) on weight loss compared to usual care**.** Positive lifestyle choices to continue to weight loss and/or to maintain a healthy weight.	**(after student DNP)** **Outcomes that are potentials** Healthy weight by evidence of BMI less than 25 but no less than 18.5. Decrease in effect of co-morbidities or elimination of co-morbidities. Increase in socioeconomic status Utilizing a self-efficacy approach on all obese patients.

1. Financial limitations 2.Limited access to healthy foods 3. Poor environmental structures. 3. Limited access to community resources. 4. Patient's health status.	3. Participants assigned to self-efficacy group or usual/standard care group. 4. Self-efficacy approach to intervention group 5. Usual care to control group. 6. Follow-up appointments to assess progress of goals.	No **Others directly involved in consent or data collection (yes/no)** No	5. Health habits questionnaire **Statistical analysis to be used** 1. T-test 2. Chi-square		

Appendix F

Project Timeline Flow Graphic

2016-2018

- Fall 2016-Spring 2018
  - Research topic and significance
  - Review evidence on obese adults who are socioeconomically disadvantaged.
- Fall 2017
  - Determine PICOTS
- Spring 2018
  - Determine Methods
  - Find clinical site to implement project

2018

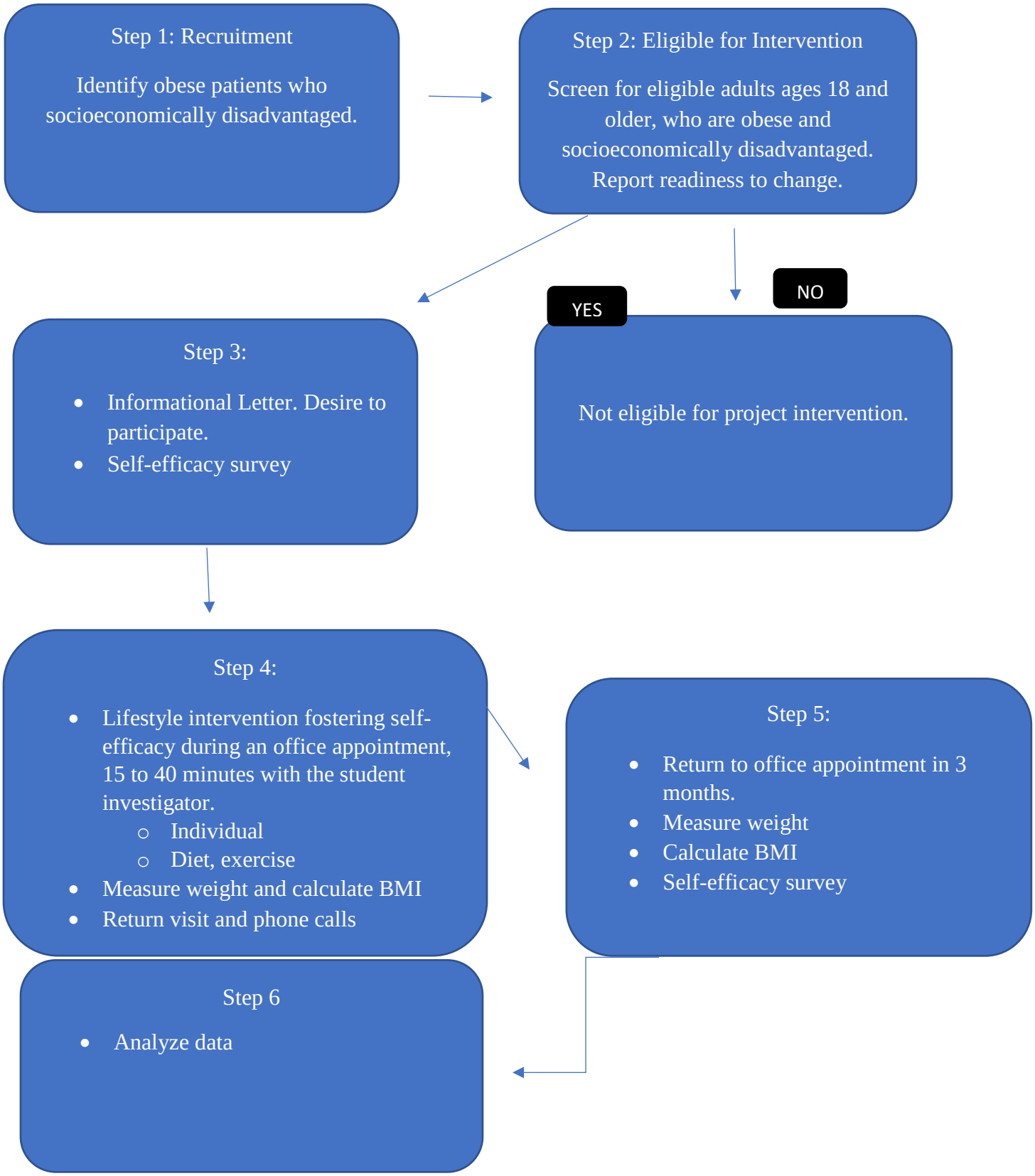
- Summer 2018
  - Identify project focus
  - Research problem
  - Determine feasibility for project site

2018-2020

- June 2019
  - Site approval
- July 2019
  - Obtain IRB approval
- September 2019
  - Initiate recruitment
- September 2019-April 2020
  - Implement intervention of self-efficacy.
  - Data collection and analysis
  - Finalize conclusions
- May 2020
  - Dissemination of findings

Appendix G

Intervention Flow Diagram



Appendix H

Intervention Material

Material about diet and exercise were gathered from the clinic in Missouri. Other information to decrease weight was gathered from obesity guidelines from the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society.

Appendix I

Measurement Instruments

Outcome	Instrument or Source	Validity	Reliability	Permission for Use
#1 Weight loss	Body weight scale	Dependent on patient technique	Dependent on patient technique	No permission needed
#2 Decreased BMI	Stadiometer and body weight scale	Dependent on patient technique	Dependent on patient technique	No permission needed
#3 Increase Self-Efficacy	GSE Scale	Dependent on participants' feeling	Cronbach's alphas between .76 and .90	No special permission needed other than agreement as a project participant.

Appendix J

General Self-Efficacy (GSE) Scale

1	I can always manage to solve difficult problems if I try hard enough.
2	If someone opposes me, I can find the means and ways to get what I want.
3	It is easy for me to stick to my aims and accomplish my goals.
4	I am confident that I could deal efficiently with unexpected events.
5	Thanks to my resourcefulness, I know how to handle unforeseen situations.
6	I can solve most problems if I invest the necessary effort.
7	I can remain calm when facing difficulties because I can rely on my coping abilities.
8	When I am confronted with a problem, I can usually find several solutions.
9	If I am in trouble, I can usually think of a solution.
10	I can usually handle whatever comes my way.

TOTAL=

1 = Not at all true 2 = Hardly true 3= Moderately true 4 = Exactly true

Scale adopted from https://www.psytoolkit.org/survey-library/generalized-self-efficacy-gse.html

Appendix K

Institutional Review Board
University of Missouri-Kansas City
5319 Rockhill Road
Kansas City, MO 64110
816-235-5927

umkcirb@umkc.edu

Dear Lyla Jo Lindholm,

A member of the UMKC Research Compliance Office screened your QI Questionnaire to project #2016021-QI entitled "Obesity in the Socioeconomically Disadvantaged: A Self-Efficacy Approach to Weight Loss" and made the following determination:

QI Determination: The project has been determined to be a quality improvement activity not requiring IRB review.

If you have any questions regarding this determination, please feel free to contact our office at 816-235-5927, umkcirb@umkc.edu, or by replying to this notification.

Note Regarding Publications: It is appropriate to disseminate and replicate QI/program evaluation successes, including sharing the information external to an organization. This may include presentations and publications. The mere intent to publish the findings does not require IRB review as long as the publication does not refer to the activity as research.

Thank you,
UMKC Institutional Review Board

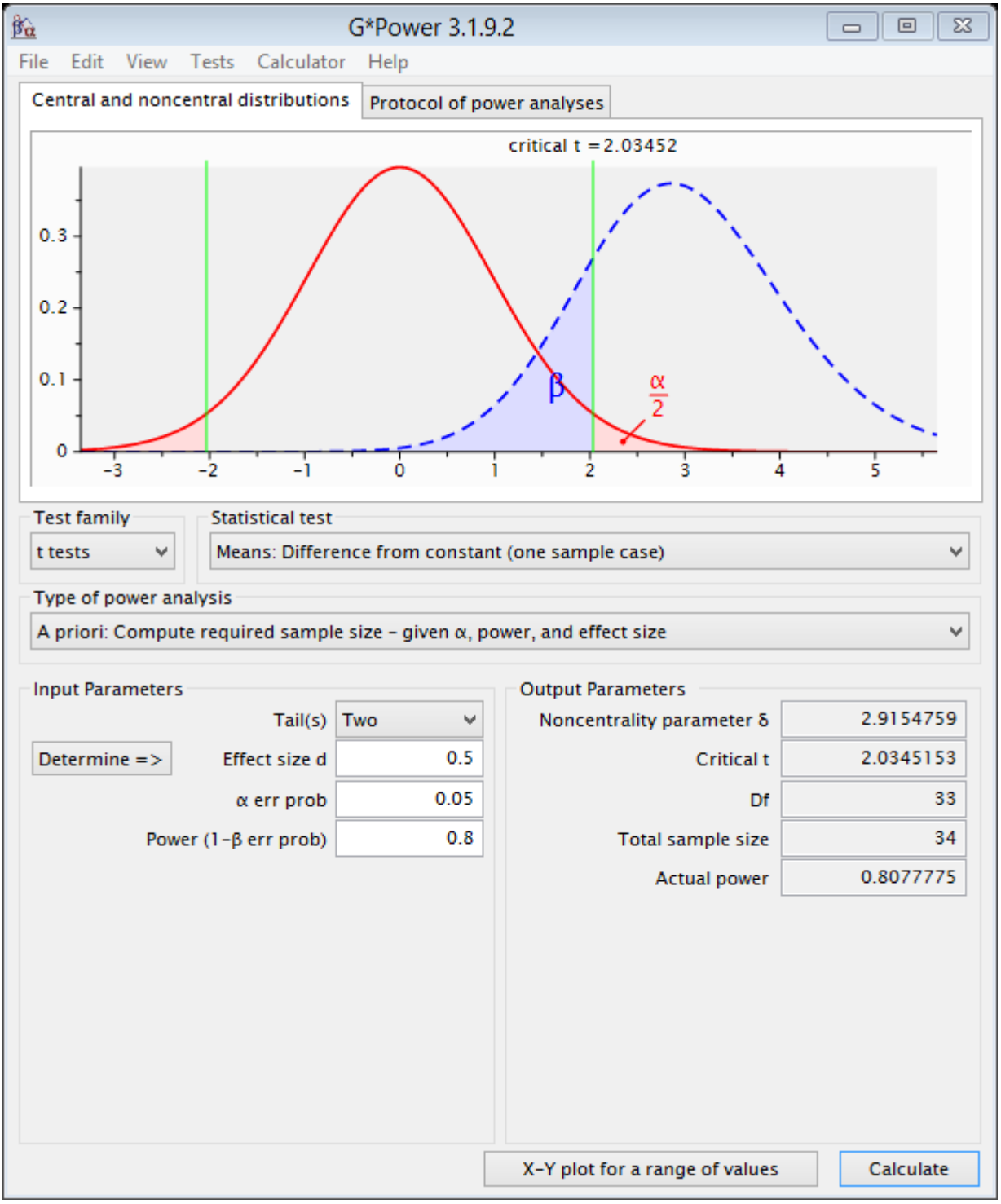
Appendix L

Outcome Measure with Statistical Analysis

Outcome Measure with Tool	Tool Validity & Reliability	Statistical Analysis Plan
#1 Weight loss using a body weight scale	Dependent on patient technique	**Paired t-test or descriptive**
#2 Decreased BMI using a stadiometer and body weight scale	Dependent on patient technique	**Paired t-test or descriptive**
#3 Increase Self-Efficacy using General Self-Efficacy (GSE) Scale	Dependent on participants' feeling and compliance (Bonsaksen, Kottorp, Gay, Solveig Fagermoen, & Lerdal, 2013)	**Wilcoxon or desciptive**

Appendix M

Power Analysis Plan



Appendix N

SPSS Data Sheet

*Untitled2 [DataSet1] - IBM SPSS Statistics Data Editor

File Edit View Data Transform Analyze Direct Marketing Graphs Utilities Extensions Window Help

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	ID	Numeric	8	0	Participant ID	None	None	8	Right	Scale	Input
2	Age	Numeric	8	0	Participant Age	None	None	8	Right	Scale	Input
3	Gender	Numeric	8	0	Gender	{0, Male}...	999	8	Right	Scale	Input
4	Race	Numeric	8	0	Race	None	999	8	Right	Scale	Input
5	Educational_Level	Numeric	8	0	Education Level	None	None	8	Right	Scale	Input
6	BMI_Pre	Numeric	8	0	Body Mass Index Pre Intervention	None	None	8	Right	Scale	Input
7	BMI_Post	Numeric	8	0	Body Mass Index Post Interven...	None	None	8	Right	Scale	Input
8	Weight_Pre	Numeric	8	0	Body Weight Pre Intervention	None	None	8	Right	Scale	Input
9	Weight_Post	Numeric	8	0	Body Weight Post Intervention	None	None	8	Right	Scale	Input
10	Height_Pre	Numeric	8	0	Height Pre Intervention	None	None	8	Right	Scale	Input
11	Height_Post	Numeric	8	0	Height Post Intervention	None	None	8	Right	Scale	Input
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Data View Variable View

Information area IBM SPSS Statistics Processor is ready Unicode:ON

Appendix O

Generalized Self-Efficacy Scale Data

Self-Efficacy *N*=8	Pre Mean (range)	Post Mean (range)	Change
Q1: Manage to solve difficult problems	3.4 (2-4)	2.6 (2-4)	-0.8
Q2: If someone opposes me, I can find the means and ways	2.6 (1-4)	2.5 (2-4)	-0.1
Q3: Stick to my aims and accomplish	3.4 (1-3)	2.5 (1-4)	-0.9
Q4: I could deal efficiently with unexpected events	3.4 (1-3)	3.6 (2-3)	0.2
Q5: I know how to handle unforeseen situations	2.9 (2-4)	2.9 (2-4)	0
Q6: I solve most problems if I invest	3.6 (3-4)	3.9 (3-4)	0.3
Q7: I remain calm when facing difficulties, relying on my coping abilities	2.5 (1-4)	2.6 (2-4)	0.1
Q8: When confronted with a problem, I can usually find several solutions	2.6 (2-4)	3.8 (2-4)	1.2
Q9: If in trouble, I can usually think of a solution	3.1 (2-4)	3.1 (2-4)	0
Q10: I can usually handle	2.5	3.3	0.8

whatever comes my way	(1-4)	(3-4)	
Overall score, Mean	**3**	**3.1**	**0.8 change mean**

BMI Data

BMI Pre	BMI Post	BMI Change
55.9	55.4	0.5
38.5	38.1	0.4
41.8	41.7	0.1
35.9	35.5	0.4
44.0	43.1	0.9
59.0	59.2	-0.2
39.7	39.1	0.6
31.4	29.6	1.8
Mean= 43.8	**Mean= 42.7**	**Total= 4.5** ***Mean Change Loss .64**

*Excludes the one weight gain.

Weight Loss Data

Weight Pre	Weight Post	Weight Change
286.6	284.0	2.6
204.0	202.9	1.1
243.8	243.4	0.4
190.0	188.0	2
298.0	292.0	6
460.0	461.6	-1.6
253.8	250.0	3.8
166.2	156.8	9.4
Mean= 262.8 lbs.	**Mean= 259.8 lbs.**	**Total= 23.7 lbs.** ***Mean Change Loss 3.3**

*Excludes the one weight gain.

DNP Faculty Approval Letter

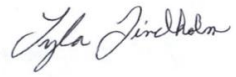
UMKC School of Nursing and Health Studies

June 2019

DNP Student

This letter serves to provide documentation regarding Whitney Williams' Doctor of Nursing Practice (DNP) Project proposal. Ms. Williams obtained approval for her project proposal, *Obesity in the Socioeconomically Disadvantaged: A Self-Efficacy Approach to Weight Loss*, from the School of Nursing and Health Studies DNP faculty in June 2019. The project will be conducted at a primary family care clinic. If we can provide further information, please feel free to contact us.

Sincerely,



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