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A Multi-Faceted Intervention to Improve Diagnosis and Treatment Rates of Overweight and Obesity by Nurse Practitioners in Primary Care

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**A MULTI-FACETED INTERVENTION TO IMPROVE DIAGNOSIS AND
TREATMENT RATES OF OVERWEIGHT AND OBESITY BY NURSE
PRACTITIONERS IN PRIMARY CARE**

by

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EVIDENCE-BASED PRACTICE PROJECT REPORT

Submitted to the College of Nursing and Health Professions

of Valparaiso University,

Valparaiso, Indiana

in partial fulfillment of the requirements

For the degree of

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Susan Disser 4-1-19 [Signature] 3/4/19
Student Date Advisor Date

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DEDICATION

This project is dedicated to my parents, Kenneth and Norma, although they are not here, I know they are watching proudly from above. I could not have accomplished any of my goals without learning perseverance, hard work, dedication, and commitment from them. Most importantly, I could never have achieved so much without their unwavering love, support, and encouragement.

ACKNOWLEDGMENTS

I would like to acknowledge my project advisor, Dr. Natalie Eddy. Her guidance, support, and mentorship helped make this project a reality. I would also like to thank Dr Todd Foster, the clinical researcher director at the facility this project was completed. His insight and guidance were instrumental in this EBP project. Thank you to Denise Gwantley, transformational specialist. Denise worked tirelessly to mine my data for this project.

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ABSTRACT

A MULTI-FACETED INTERVENTION TO INCREASE THE RATE OF DIAGNOSIS AND TREATMENT OF OVERWEIGHT AND OBESITY BY NURSE PRACTITIONERS IN PRIMARY CARE

SUSAN DISSER, MSN, APRN, FNP-C

The United States is amid an obesity epidemic (Institute of Medicine, 2012). Indiana ranks as the tenth most overweight state. (America's Health Rankings, 2018). Despite guidelines outlining the treatment of obesity, primary care providers seldom use these guidelines (Hayes et al., 2017). In a 2010 study, only 28.9% of obese patients received a diagnosis of obesity and less than 25% of these patients received counseling on diet, exercise, or weight loss (Bleich, Pickett-Blackely, & Cooper, 2011). The purpose of this evidence-based practice (EBP) project is to determine if a multi-faceted intervention consisting of academic detailing, reminders, audit with feedback, and frequent communication will increase the rate of diagnosis and treatment of patients with overweight and obesity in primary care. This EBP project is supported by evidence from eight high quality sources. Utilizing the Stetler Model and Lewin's Change Model, this EBP project enrolled 13 advanced practice registered nurses (APRNs) employed at hospital-owned, primary care clinics located throughout a Midwestern State. Descriptive statistics were used to compare data obtained retrospectively through a 2-week chart review pre- and post-intervention. The pre- and post-intervention groups were analyzed by age, gender, and BMI. There were no statistically significance differences between the two groups. Utilizing one-tailed z-scores, statistical significance was found in two of the four the primary outcomes. There was an increase in diagnoses after the multi-faceted intervention in patients with overweight ($z = -1.8, p = .04$). There was also an increase in documented treatment post-intervention in patients with obesity ($z = -2.23, p = .01$). Secondary outcomes examined the providers' knowledge, beliefs and feeling regarding overweight and obesity. Statistical analyses using two-tailed Wilcoxon's Signed-Ranks Test compared survey results pre- and post-

intervention. There were statistically significant results in five survey questions. All questions were on a four-point Likert scale. The questions with statistical significance were: familiarity with the ACCE guideline ($z = -2.12$, $p = .03$) and the Endocrine Society guideline ($z = -2.27$, $p = .02$), significance of available resources to refer overweight and obese patients ($z = -2.17$, $p = .03$), belief that patients are responsible for their own weight management ($z = -2.45$, $p = .01$), and influence of new weight loss drugs on referral to bariatric surgery ($z = -2.16$, $p = .03$). While the results of this EBP project were mixed, this project lends support for use of a multi-faceted intervention targeting providers to increase diagnosis and treatment of overweight and obesity in primary care.

CHAPTER 1

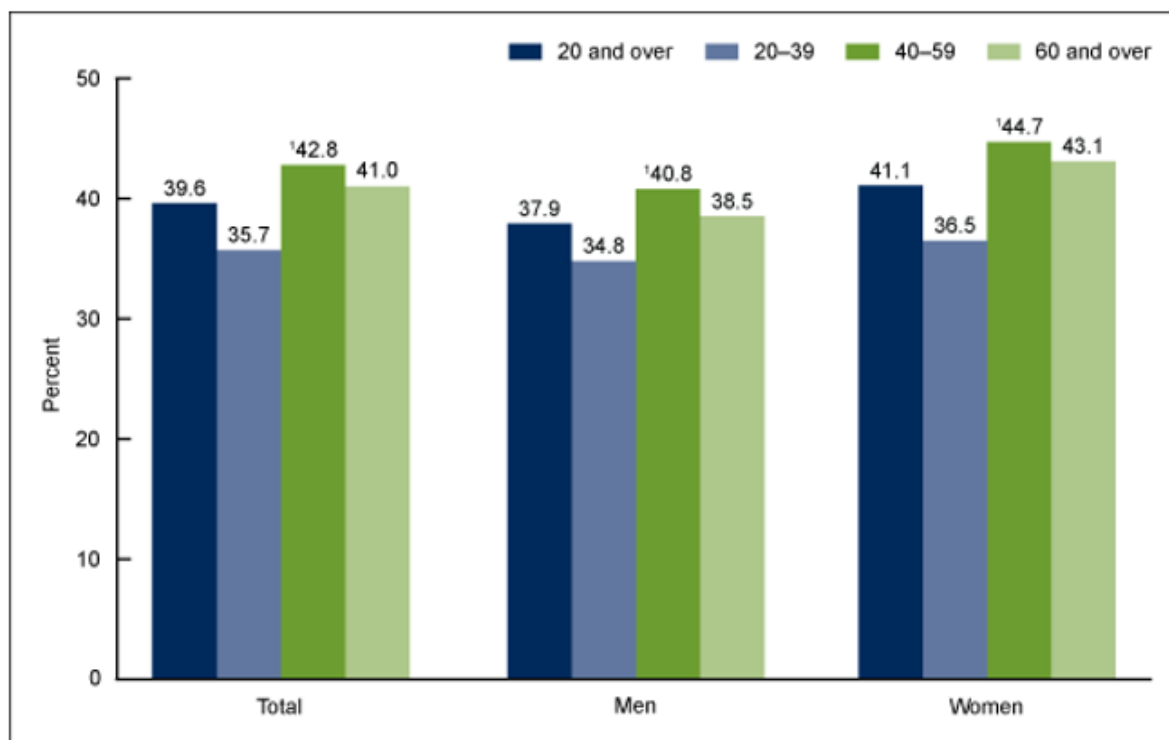
INTRODUCTION

Background

Current State

The United States is amid an obesity epidemic (Institute of Medicine [IOM], 2012). Although other countries are also experiencing an increase in obesity, the United States leads all nations in the rate of obesity (Waters & Revol, 2016). The rate of obesity in the United States has been climbing steadily over the last 30 years (IOM, 2012). Waters & Revol (2016) states that in 2014, 188.6 million people or 67% of the U.S. population over 2-years-old were either overweight or obese. Data from 2015-2016 from the National Health and Nutrition Examination Survey (NHANES) state the prevalence of obesity was 39.8% (crude) in adults and 18.5% in children. Figure 1.1 represents the prevalence of obesity in adults over 20 by gender and age. Obesity data is reported to the Centers for Disease Control (CDC) from two sources: the NHANES and the Behavioral Risk Factor Surveillance System (BRFSS) each with different strengths and weakness. The NHANES data are collected from interviews and physical exams leading to increased accuracy but a time lag from data collection to reporting (Segal, Rayburn, & Beck, 2017). Segal et al. (2017) state that the obesity rates reported by the BRFSS data are underestimated by almost 10%. This underestimation is attributed to small sample size, potentially racial and ethnic underrepresentation, and an individual's inclination to underestimate their weight and overestimate their height.

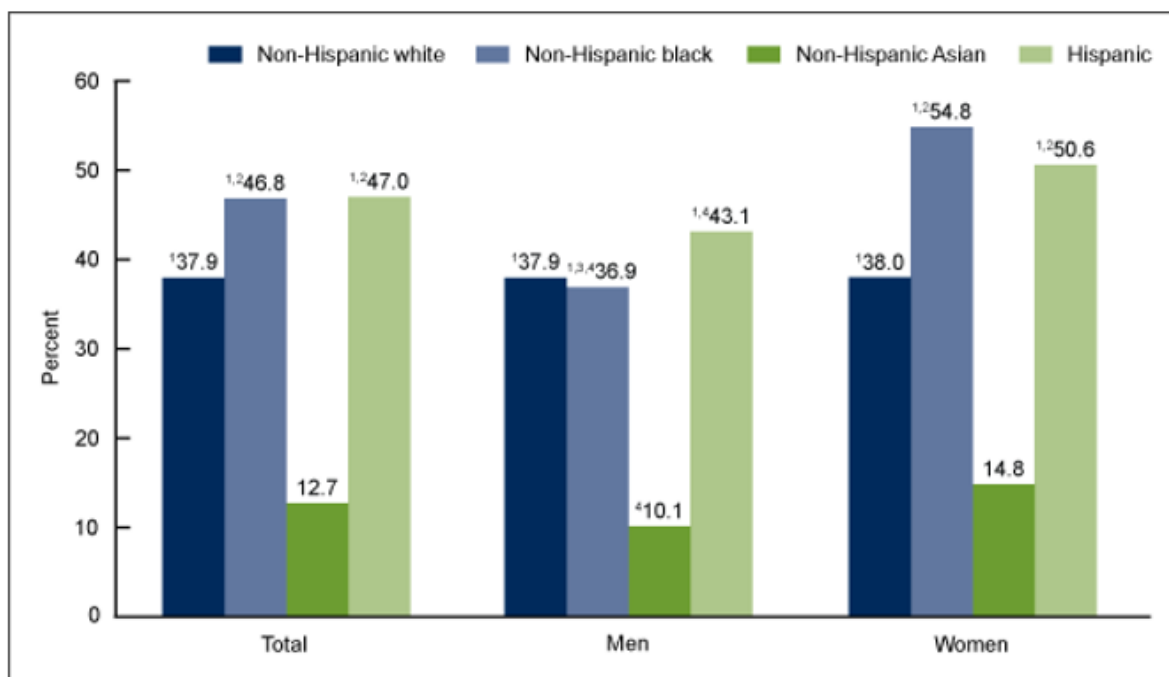
Figure 1.1 |



SOURCE: NCHS, National Health and Nutrition Examination Survey, 2015–2016.

The prevalence of obesity varies with several factors. CDC data (2017) reveals non-Hispanic white males and females have a similar prevalence of 37.9 and 38.0 respectively. Non-Hispanic black and Hispanic had a significantly higher prevalence than non-Hispanic whites; non-Hispanic black and Hispanic females had a significantly higher prevalence than their male counterparts. Non-Hispanic Asians had the lowest prevalence of obesity at 12.7; there was a slight gender variation among males and females at 10.1 and 14.8 respectively. Asian-Americans have a much lower obesity rate than other racial and ethnic groups (Segal et al., 2017). Figure 1.2 summarizes the differences by race and gender. Obesity is inversely related to income levels with children from low-income families at a higher risk for obesity (Segal et al., 2017). However, this is not found in the lowest income group that was below 100% of poverty level. Data from BRFSS show that those with higher education have lower rates of obesity (Segal et al., 2017). Rural communities have higher obesity rates than suburban or urban communities (Segal et al., 2017).

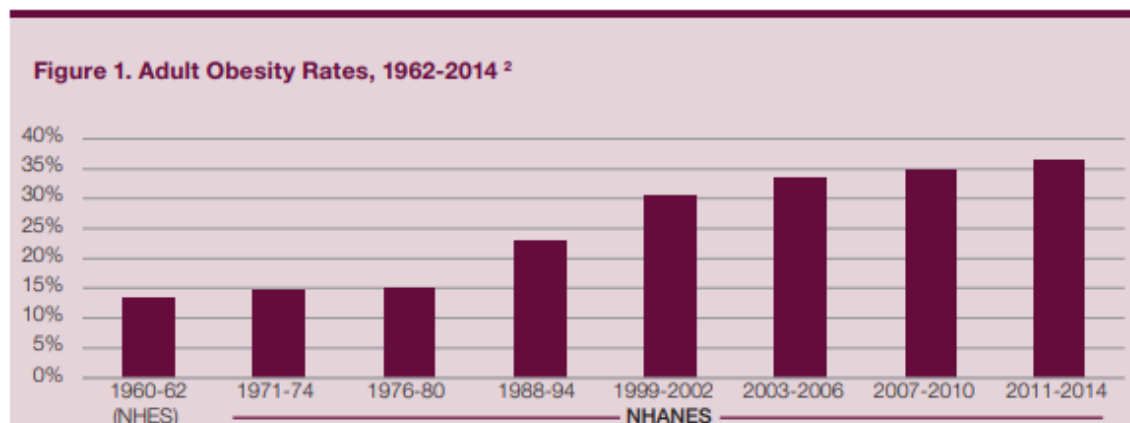
Figure 1.2



SOURCE: NCHS, National Health and Nutrition Examination Survey, 2015–2016.

The NHANES data reveal the rate of obesity has climbed steadily since 1962 as seen in Figure 1.3 (Waters & Revol, 2016). Waters & Revol (2016) note that in 1990, less than 15% of people in every state were obese. In 1985, there were no states with an adult obesity rate over 15% and in 2000, there were no states over 25% (Segal et al., 2017). The BRFSS 2016 data reveals the obesity rate is over 25% in 46 states and 30% in 25 states (Segal et al., 2017).

Figure 1.3

Weighing Down America

Sources: National Health Examination Survey (NHES), National Health and Nutrition Examination Survey (NHANES).

Indiana ranks as the tenth most obese state based on the BRFSS 2017 data with 32.5% of adults meeting the criteria for obesity (America's Health Rankings, 2018). The data are divided into gender, socioeconomic group, ethnic group, income, education, and urbanicity. The Indiana rate of obesity exceeds the U.S. average in all categories except Indiana is lower among the American Indian/Alaskan Native and Hispanic populations and equals the U.S. average in those with less than high school education (America's Health Rankings, 2018). In Indiana, the highest rate of obesity occurs in the 45-64-year-old population. In this group, 38.4% of individuals measured obese (Segal et al., 2017). Obesity affects male and females equally with 31.9% and 31.0% respectively, however, blacks are affected much more than whites or Latinos with rates of 41.7%, 31.8% and 28.7% respectively (Segal et al., 2017).

Consequences of Obesity at the Individual level

Obesity and overweight are linked to an increased risk for many diseases. Epidemiologist recognized the link between obesity and adverse health effects; identifying obesity as a risk factor or exposure for many diseases. This may be attributed to placing the obese individual in a pro-inflammatory state (Waters & Revol, 2016). Metabolic changes related to obesity include increased blood pressure, low-density lipoprotein (LDL) cholesterol, triglycerides, and insulin resistance while decreasing the cardioprotective high-density lipoprotein (HDL) cholesterol (Waters & Revol, 2016). Accumulated fat cells work in concert to function as an endocrine organ releasing the hormone resistin. Resistin causes insulin resistance that leads to type 2 diabetes (Waters & Revol, 2016). To overcome this insulin resistance, the pancreas must increase production of insulin leading to an increased risk of several cancers (Waters & Revol, 2016). NHANES data identified the associated relative risk (RR) for obesity and overweight and type 2 diabetes is 3.42 and 1.52 respectively (Waters & Revol, 2016). Accumulated fat cells also secrete leptin; this hormone adversely affects the cardiovascular system. Leptin, the appetite-reducing hormone, is ironically increased in obese

individuals demonstrating leptin resistance and dysfunction in the system designed to eliminate excess fat (Kyle & Hignett, n.d.).

Cardiovascular disease has a strong association with obesity and overweight. Dyslipidemia, hypertension, coronary heart disease (CHD), and congestive heart failure have a strong correlation with increased BMI. In addition, the relative risk (RR) of various cancers increases with increasing BMI. Data from the 1970s show a strong association between obesity and several cancers including breast, gallbladder, pancreas, liver, ovaries, colon, and endometrium (Waters & Revol, 2016). In females, overweight and obesity not only increases the prevalence of breast cancer; obese women with breast cancer have a worse prognosis and shorter survival when compared to women with normal BMI (Waters & Revol, 2016). This pattern is mirrored in males with prostate cancer. Overweight and obese males have an increased RR of developing prostate cancer and are more likely to have advanced disease and die than their normal BMI counterparts (Waters & Revol, 2016). Chronic inflammation increases the prevalence of asthma among overweight and obese individuals. Obese and overweight individuals are at higher risk for chronic back pain and osteoarthritis (Waters & Revol, 2016). Recent research has identified an increase in the RR of Alzheimer's and vascular dementia in people with overweight and obesity (Waters & Revol, 2016). Figure 1.4 demonstrates the number of cases of diseases attributed to obesity and overweight (Waters & Revol, 2016). Research from the Cleveland Clinic and the New York University School of Medicine ranks obesity as the number one cause of preventable life-years lost with diabetes, tobacco use, hypertension, and hyperlipidemia completing the top five causes (Cleveland Clinic, 2017).

Figure 1.4

Cases Attributable to Overweight and Obesity, 2014

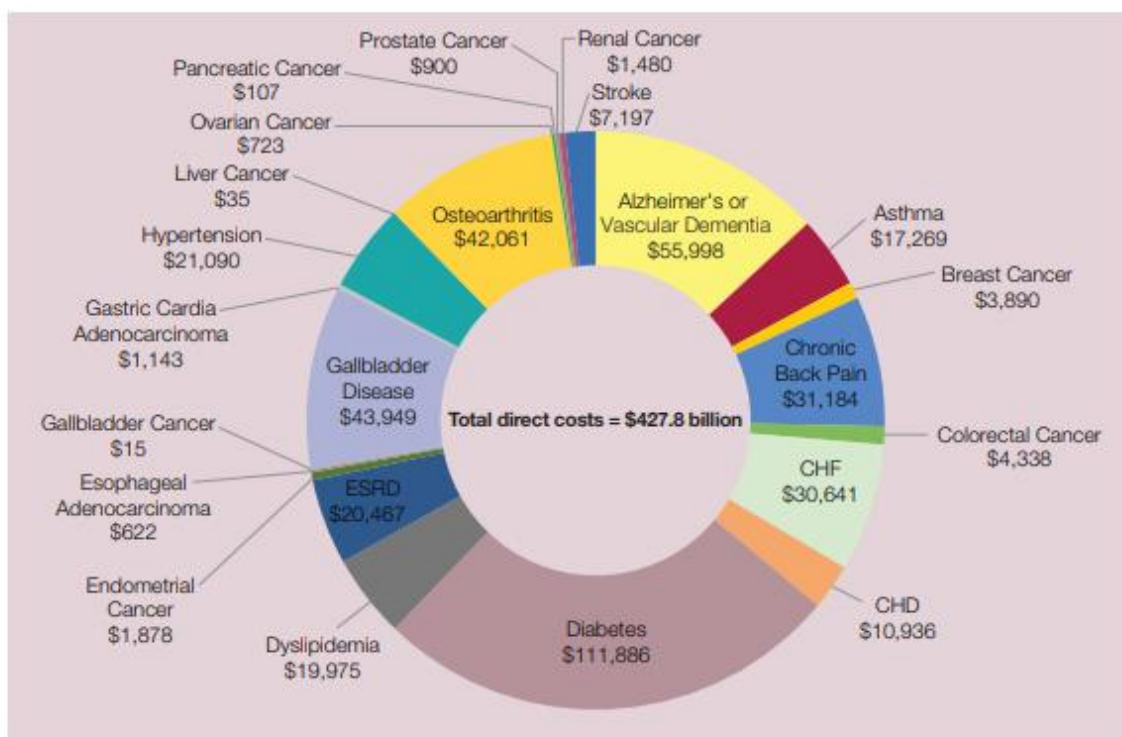
Condition	Cases Attributable		Total Attributable Cases
	Overweight	Obese	
Alzheimer's or Vascular Dementia	487,714	1,314,891	1,802,605
Asthma	2,725,682	7,248,193	9,973,875
Breast Cancer	217,096	441,509	658,604
Chronic Back Pain	4,521,492	11,309,262	15,830,754
Colorectal Cancer	112,851	223,826	336,676
Congestive Heart Failure	2,119,708	5,418,920	7,538,628
Coronary Heart Disease	581,655	2,108,829	2,690,484
Diabetes Type 2	3,869,005	12,892,751	16,761,756
Dyslipidemia	14,447,093	12,454,143	26,901,236
End Stage Renal Disease	925,077	2,067,039	2,992,115
Endometrial Cancer	128,438	289,921	418,359
Esophageal Adenocarcinoma	5,027	10,691	15,718
Gallbladder Cancer	1,057	2,014	3,070
Gallbladder Disease	1,319,767	4,313,972	5,633,739
Gastric Cardia Adenocarcinoma	9,938	18,936	28,874
Hypertension	8,012,576	18,638,613	26,651,189
Liver Cancer	-----	7,110	7,110
Osteoarthritis	9,096,337	12,497,428	21,593,765
Ovarian Cancer	8,594	16,920	25,514
Pancreatic Cancer	3,300	10,438	13,738
Prostate Cancer	125,231	42,277	167,508
Renal Cancer	29,771	68,276	98,047
Stroke	357,041	930,957	1,287,999
Totals	49,104,450	92,326,914	141,431,364

Source: Milken Institute

Consequences of Obesity at the Societal Level

Obesity and overweight have implications for all Americans. Obesity and its sequela are placing an enormous financial burden on the healthcare system. These costs are passed down to taxpayers. The financial costs vary, but PublicHealth.org states that the medical costs for obese patients are between 36-150% higher than non-obesity patients (Public Health, 2018). Using data from 2006-2013, the medical costs of obese adults in 2013 dollars is \$3429 higher than non-obese individuals (Biener, Cawlet, & Meyerhoefer, 2017). Obesity equates to about \$150 billion spent in healthcare annually (Segal et al., 2017). Another 2014 estimate for treating health conditions related to obesity and overweight was \$427.8 billion (Waters & Revol, 2016). Indirect costs are difficult to ascertain but include absenteeism, increased transportation costs related to fuel, and health insurance costs. The Milken Institute's 2014 estimate of indirect costs related to overweight and obesity was \$988.8 billion adding the indirect and direct costs the total 2014 estimate was \$1.42 trillion (Waters & Revol, 2016) see figure 1.5.

Figure 1.5



Source: Milken Institute

In addition to the financial burden, obesity has other consequences. About one-quarter of military applicants are rejected due to their inability to meet weight standards. Service members and their family members that are obese cost the military \$1 billion annually in lost productivity and medical costs (Segal et al., 2017). Obesity has also affected first-responders ability to perform their jobs, 70% of firefighters are obese or overweight increasing their risk for a line of duty cardiovascular death (Segal et al., 2017). Children with obesity are at increased risk of poor academic performance, being bullied, and depression. These factors can affect their ability to become productive members of society (Segal et al., 2017).

Defining Obesity

According to Obesity Medicine Association (OMA), “Obesity is defined as a chronic, relapsing, multi-factorial, neurobehavioral disease, wherein an increase in body fat promotes adipose tissue dysfunction and abnormal fat mass physical forces, resulting in adverse metabolic, biomechanical, and psychosocial health consequences” (Bays et al., 2017-2018, slide 13). This definition is inclusive of the many factors that cause obesity, and the definition reflects obesity as a chronic disease.

Obesity is an increase in body fat or adiposity, which can be measured by body mass index (BMI). The World Health Organization (WHO) provides cut points for the categories of healthy weight, overweight, and obese. A healthy weight is defined as a BMI of 18.5 to 24.9, overweight is 25.0 to 29.9, and obese is >30 (World Health Organization [WHO], n.d.). The BMI can be subdivided further as follows Class I obesity is BMI 30.0-34.9, Class II BMI is 35.0-39.9, and Class III is BMI ≥ 40 (Bays et al., 2017-2018). There are different cut-off points based on ethnicity, race, and gender.

Obesity can affect individual patients differently. Arya M. Sharma, M.D. developed the Edmonton Obesity Staging System Tool to be used in conjunction with BMI to better assess the severity of the disease of obesity in an individual. The tool has five stages numbered one to four; each stage represents a measurement of the co-morbid disease processes in the

individual. The stages are assigned in conjunction with the class of obesity leading to a better understanding of the individual's health status related to their BMI (Sharma, 2009). Mechanick, Hurley, and Garvey (n.d.) suggest the ABCDs of adiposity as an acronym for the disease of obesity which stands for "Adiposity-Based Chronic Disease." They argue that obesity has many negative associations such as the prevailing belief that obesity is the result of poor choices and not enough activity. This belief is in direct contrast to the current research base chronic disease model describing the interplay between genetics, environment, and behaviors.

Factors Causing Obesity

Solving the problem of obesity and overweight in America begins with establishing the etiology. Solutions to the problem cannot be identified and implemented without a clear understanding of the causes and contributing factors responsible for the phenomena. The causes of obesity are thought to be multi-factorial: obesity is the result of the interplay between genetic inheritance, epigenetic inheritance, and cultural and societal inheritance (Bays et al., 2017-2018; Mechanick et al., n.d.). Extragenetic factors include environment, culture, gut microbiota, viral infection, mental stress, neurologic dysfunction, medications, sleep dysfunction, and lack of quality nutrition and physical exercise (Bays et al., 2017-2018).

Epigenetic factors, which are modifications of gene expression not alterations in genetic coding, play an important role in obesity. Research has identified over 60 genetic locations that affect BMI (Genomics Education Programme [GEP], 2016). In response to environmental conditions, these genes are upregulated. They increase leptin, the hunger hormone, and decrease ghrelin the satiety hormone (Bays et al., 2017-2018).

Obesity as a Chronic Disease

Obesity is considered a chronic disease (Hayes, Wolf, & Labbé, 2017). While the Obesity Society (TOS) declared obesity as a disease in 2008; the American Medical Association (AMA) did not follow suit until 2013, the AMA categorized obesity as a complex, chronic disease requiring medical intervention (Kyle, Dhurandhar, & Allison, 2016). Classifying obesity as a

disease has many significant benefits such as increasing the public's understanding of obesity, which may eliminate some of the stigma and bias associated with obesity (Kyle et al., 2016). The disease classification also paves the way for increased research, guidelines, and advocacy (Kyle et al., 2016). Insurance coverage for treatment should also continue to improve. In 2011, Medicare began covering counseling services for beneficiaries with Medicare Part A or Part B with no cost sharing. Medicare benefits cover weekly visits for the first month, then biweekly visits for the next five months, and monthly visit through one year; the beneficiary must meet a 3 kg weight loss at six months to continue to be eligible for the additional six months (Center for Medicare Advocacy [CMA], n.d.).

Statement of the Problem

Data from the Literature Supporting Need for the Project

Clinical practice guidelines (CPGs) are a form of synthesized evidence designed to help providers deliver comprehensive care on various conditions or topics (Hopp & Rittenmeyer, 2012). Despite numerous resources such as clinical practice guidelines, algorithms, treatment models, and classifications, there is a gap in healthcare providers' approach to treating obesity. Research shows there is a knowledge deficit regarding healthcare providers' understanding of the pathophysiology of obesity, approach to the discussion, and the treatment for patients with obesity and overweight (Hayes et al., 2017). In 1999, the Centers for Disease Control (CDC) identified obesity and overweight as a national epidemic paving the way for the first interventions (Hayes et al., 2017). The Institute of Medicine developed a prevention policy in 2012 (Hayes et al., 2017). Most patients first enter the healthcare system through primary care providers, therefore many of the GPGs for obesity and overweight target the primary care providers (Hayes et al., 2017). Despite these resources, there is a lack of proficiency and commitment for providers to treat obesity and overweight (Hayes et al., 2017). The number of patients having their BMI record in the electronic health record (EMR) increased from 54% in

2008-2009 to 73% in 2012-2013, however, during the same years, there was a decline from 33% to 21% in weight-related education (Fitzpatrick & Stevens, 2017).

Barriers to treating patients with obesity and overweight are multi-factorial. Despite being classified as a chronic disease, many healthcare providers do not acknowledge obesity as a disease (Hayes et al., 2017). Glauser, Roepke, Stevenin, Dubois, and Ahn (2015) state that although almost all respondents in their survey stated that obesity was a disease, about half of the primary care providers believed that obesity was due to lack of self-control. Research shows primary care providers seldom use guidelines despite several well-developed, evidence-based clinical practice guidelines outlining the pathophysiology and comprehensive treatment (Hayes et al., 2017). Glauser et al. (2015) cited a general lack of knowledge regarding the existence of guidelines. Negative stereotypes and bias against overweight and obese individuals exist among the patients and the providers resulting in a poor partnership between patient and provider (Hayes et al., 2017). A positive attitude and clinical expertise are imperative to formulate and execute a successful treatment; negative attitudes towards patients with obesity or overweight undermine the patient-provider relationship decreasing any chance of weight loss success (Ritten & LaManna, 2017).

CPGs suggest treating obesity with a multidisciplinary team, but Hayes et al. (2017) noted since the guidelines lacked explicit recommendation of roles, there were discrepancies among participants regarding roles and responsibilities. According to Hayes et al. (2017) once a patient was identified with obesity or overweight, there were problems related to the referral process. In several cases, patients were not even informed of their diagnosis of obesity. The Hayes et al. (2017) study identify the need for a team-based approach, which is supported by the literature; roles and responsibilities of the team members should be explicitly outlined. According to Hayes et al. (2017), the first step in changing from the current reactive treatment to a proactive approach includes the development of a protocol aimed at the primary care providers. These protocols should have a standard approach with clearly defined roles and

responsibilities of the team members and provide guidance on physical and behavioral treatments.

Hayes et al. (2017) identified providers, "feeling clinically overwhelmed by their caseload of patients who are overweight or affected by obesity" (p.51). The Hayes et al. (2017) results parallel the literature identifying providers treating the co-morbidities of overweight and obesity rather than proactively treating the obesity due to a knowledge deficient on the best way to treat obese and overweight patients. Hayes et al. (2017) identified a key to treating obesity in primary care as "lack of awareness and/or implementation of a primary care-relevant standardized protocol with regard to the risk assessment, diagnosis, treatment, and management of persons who are overweight or affected by obesity as a chronic disease" (p.52). Primary care providers cite a lack of guidance for the reason they are reluctant to diagnose and treat obesity (Hayes et al., 2017). Weight loss counseling occurs infrequently, and when it does, specific recommendations are not followed (Farran, Ellis, & Barron, 2013). Hayes et al. (2017) suggest following the guidelines developed for smoking cessation that clearly define the roles and responsibilities of the multidisciplinary team. The success of smoking cessation guidelines includes using community resources and behavioral interventions such as motivational interviewing is well documented and can be applied to obesity management (Hayes et al., 2017). The widespread belief that obesity is not a chronic disease leads to increased healthcare costs. Primary care providers are treating patients reactively often sending them to an expensive specialist when problems develop; changing to a proactive model will prevent the development of these costly co-morbid conditions (Hayes et al., 2017).

This knowledge deficit exists across different specialty providers regarding treating patients with overweight and obesity. A recent survey of providers including obstetricians/gynecologist, nurse practitioners, internists, and family practitioners revealed some significant concerns. Only 33% of the providers were able to correctly identify that the diet preferred by the patient should be recommended, < 20% of providers recommend counseling

based on the United States Preventive Services Task Force (USPSTF) recommendations, and only 8% of providers were able to identify the correct guideline recommendations for starting and continuing pharmacotherapy (Turner, Jannah, Kahan, Gallagher, & Dietz, 2018).

Pharmacotherapy is an adjunct to diet and exercise in all the current CPGs, but the research shows providers are not using medications as recommended by the guidelines. A 2016 study reveals 76% of primary care providers are not prescribing weight loss medication for long-term use and 58% of providers had a negative or very negative view of pharmacotherapy for treating obesity (Granara & Laurent, 2017). Glauser et al. (2015) also found that providers did not know when to use pharmacotherapy nor did they perceive it as a safe, effective option for patients. Despite evidence demonstrating weight loss medication's efficacy and safety, providers listed adverse events, cost, and lack of efficacy as the most common reasons for not prescribing (Granara & Laurent, 2017). Patients with co-morbidities are most likely to be offered medications indicating a late intervention or a missed opportunity to prevent the co-morbidity by intervening earlier in the disease process. Granara and Laurent (2017) demonstrate that patients are not receiving all available treatment options; education directed at providers may help close this knowledge gap. Pathophysiology of obesity also represents an area of lack of knowledge among primary care providers. Less than 30% of primary care providers were able to correctly identify the hormone associated with increased hunger and food intake (Glauser et al., 2015).

Unmet educational needs for providers is demonstrated in the literature despite guidelines informing practice (Glauser et al., 2015, Hayes et al., 2017). A comprehensive set of provider competencies have been developed to fill this knowledge gap. The first set of competencies focus on understanding obesity as a disease, the epidemiology of the epidemic, and the disparate burden and strategies to reduce inequalities in prevention and treatment (Provider Training and Education Workgroup of the Integrated Clinical and Social Systems for the Prevention and Management of Obesity Innovation Collaborative [PTEW], 2017). The next

group of competencies focuses on a collaborative team approach and strategies to help avoid stigma and bias. The final group of competencies focuses on using evidence-based care and services to treat and prevent obesity.

Data from the Clinical Agency Supporting Need for the Project

The Medical Group is a not for profit hospital owned group of clinics located throughout a midwestern state. The hospital system consists of primary care clinics, critical access hospitals, small local hospitals, urgent care facilities, resident clinics, and large urban tertiary centers. The Medical Group's mission is preferential service to the needy and underserved. As a result, the patient population is incredibly diverse. The primary care clinics provided 366,786 visits from May 1, 2017, to April 30, 2018. In the Medical Group, 36.7% of patients seen in primary and specialty practices had BMIs >30 , and 25.9% had a BMI ≥ 25 and < 30 . In that year, 62.6% of all patients seen by the Medical Group were either obese or overweight. Using the national NHANES data for obesity, the Medical Group is slightly below the national average but using the BRFSS data for the state of Indiana the medical group was slightly above their average of 32.5%.

Stakeholders

The stakeholders identified in this evidence-based project are the advance practice registered nurses (APRNs), practice manager, and APRN director. APRNs are ideally suited to provide education, discussion, support, motivational interviewing, and develop an appropriate plan of care for patients with overweight and obesity. The APRN focus on providing holistic care and their ability to listen to patients make them the ideal agent to deliver caring, competent, and evidence-based interventions to assist patients struggling with overweight and obesity. Practice managers will also benefit from the implementation. Learning proper coding and providing the repeat visits as suggested by the evidence will increase the number of office visits and ultimately increase revenue. Appropriately treating patients will improve patient health outcomes. Population health, quality improvement, and government metrics for performance

are key indicators in reimbursement. Focus on improving BMIs will improve and prevent the co-morbid conditions associated with obesity. As patients are supported in their weight loss journey, patient satisfaction scores may improve.

Purpose of the Evidence-Based Practice Project

The purpose of this evidence-based project is to increase the use of CPGs for treating obesity in the primary care setting. Increasing providers use of these guidelines should increase the number of patients diagnosed with overweight or obesity. As a result, there should also be an increase in documented interventions.

Compelling Clinical Question

Can a multi-faceted intervention based on the clinical practice guidelines for treating overweight and obese patients increase the number of patients diagnosed with overweight and obesity and given a documented plan of care for treatment? Will educating nurse practitioners on the intervention and providing tools to prompt diagnoses and treatment in patients with obesity and overweight lead to a change in practice?

PICOT Question

Among primary care NPs employed at a hospital-owned medical group, does the introduction of a multi-faceted intervention versus current practice of no protocol/tool improve the rate of obesity and overweight diagnosis and documented treatment plan in eight weeks?

Significance of the EBP Project

With two-thirds of American's population overweight or obese primary care providers will care for many patients suffering from this disease. The health consequences for these patients is well documented. CPGs all support focusing on a five to ten percent weight loss and note that there are health benefits with as little as a three percent weight loss (Simon & Lahiri, 2018).

The financial burden on the healthcare system is significant. Estimates of healthcare savings of a five percent weight loss in individuals with BMI greater than 40 is \$2137 annually per person (Waters & Revol, 2016). Since primary care is often the point of entry for many

patients, it should be the focus to resolve the problem. Indiana is faced with an even more significant burden of obesity and overweight than the U.S. average. Primary care providers must take the lead to change the course of the disease. Despite the abundance of high-quality, evidence-based guidelines for treating patients with overweight and obesity, there is a documented gap in practice.

This EBP project will consultate the best evidence into a brief intervention to increase APRNs use of CPGs to diagnosis and treat obesity and overweight. The first step in treatment is an appropriate diagnosis. Without a diagnosis, there can be no plan. Evidence illustrates that despite the recommendation to screen adults for obesity and overweight the number of individuals with a diagnosis is low. In a 2010 cross-sectional study, only 28.9% of obese patients received a diagnosis of obesity, of those patients 25.2% received diet counseling, 20.4% received exercise counseling, and only 17.6% received weight loss counseling (Bleich, Pickett-Blackely, & Cooper, 2011). Fitzpatrick and Stevens (2017) state most EMRs calculate the BMI for the provider, however, the provider must add the diagnosis to the problem list. This occurs in less than 30% of patients and patients with a diagnosis were more likely to receive weight loss counseling or treatment. Increasing the patients diagnosed is the foundation to change the trajectory of the disease of obesity and overweight.

CHAPTER 2

THEORETICAL FRAMEWORK, EBP MODEL, AND REVIEW OF LITERATURE

Theoretical Framework

Overview of Theoretical Framework

Kurt Lewin's Change Theory was developed in the 1940s. Lewin was a physicist and social scientist; some consider him the father of social psychology (Tanner, 2018). His change theory has three stages: unfreezing, changing, and refreezing. During the unfreezing stage, the critical component is to change the status quo. During this stage, the message of why things need to change is addressed. The key concepts in the unfreezing stage are preparation and creating the desire for change. Appropriately addressing and framing the problem and the current state creates motivation and the buy-in for change. Creating urgency and excitement increases the motivation to change. Success at this stage increases the probability of continuing success at the other stages. Frequent communication is essential to ensuring success at unfreezing the current state. The new method or process is introduced and started during the change stage. During the change stage, some people will adapt early while others will take longer to adapt. Personalizing the change by highlighting how the change may benefit the individual may help them embrace the change. During the change period, communication is critical to the success of the project; concerns, problems, and issues must be addressed. The final stage of the process is refreezing when the change becomes embedded in the culture and routine of the group. Celebrating successes at this stage is vital to maintaining the change permanently.

Lewin explains how the change theory works based on Theory of Forcefield Analysis. Driving forces push the organization to the change while resisting forces push the organization away from the change. Resisting forces are factors that block the change which could be people, uncertainty, dependence, lack of trust in administration and driving forces may be

technology, economic, people, or improvement. The driving force must overcome resisting forces for change to occur. When planning on organizational change, it is critical to identify the driving and resisting forces. Once the forces are identified, strategies to overcome the resisting forces and enhance the driving forces can be included in the plan for implementing the change.

Application of Theoretical Framework to EBP Project

The first stage, unfreezing, is the most crucial stage creating the “buy-in” of the APRNs. Providing a clear message of the importance of diagnosing and treating patients with overweight and obesity is critical to the project. National and Indiana obesity rates are rising annually affecting the health and financial security of our citizens and nation. Despite numerous evidenced-based clinical practice guidelines available to inform practice, evidence shows that providers are not utilizing these guidelines. Sharing the statistics of the State of Indiana and the Medical Group may help the APRNs understand the current state and why there needs to be a change in practice. At this stage, it is essential to address those APRNs with doubts and concerns.

The second stage, the changing stage, is the stage where the APRNs will be introduced to guidelines through academic detailing. Introducing the APRNs to the 5 A’s of obesity management is an evidence-based approach to managing patients with overweight and obesity and current clinical practice guidelines in an easy to use format will increase their familiarity and comfort with current recommendations. Posters for the exam rooms will be provided serving as reminders for providers and conversation starters for patients. Each APRN in the project will receive individualized support, APRNs wanting or needing additional resources will receive more information. As recommend by Lewin’s Change Model, during the study period subjects will receive weekly communication regarding the intervention through various channels such as on-site, email, text, and phone calls.

The final stage of the project is the refreezing stage where the change becomes integrated into the behavior or action of the provider. In this EBP project, the outcomes will be

assessed through chart review. Results will be disseminated to the APRNs enrolled in the trial. Data will be collected three weeks after the educational outreach and again at seven and eight weeks. The data collected at week three will be disseminated to the providers providing feedback on their performance allowing them to improve their practice further.

Strengths and Limitations of Theoretical Framework for EBP Project

Lewin's Change Theory was selected as the framework for this project since it has been utilized successfully in many organizational change projects. One of the strengths of the model is its simplicity. Many of the other change theories are based on Lewin's theory. The importance of the project and the effects of obesity on patients created the urgency and the need for change in the unfreezing stage. Due to the limited time available for the project, there was not enough time to create a sense of urgency adequately. The time limitation reduces the availability to set the stage effectively prior to preceding with the intervention. The changing phase included interaction and communication which is required for any successful change. The most significant limitation occurred during the refreezing stage. After the final data is collected, there will be no assessment of the long-term effects of the intervention unless the organization chooses to monitor or to implement the intervention for all primary care providers. This was not necessarily a limitation of this model but a reality of a project with a finite timeframe.

Evidence-based Practice Model

Just as a theoretical framework guides the process of translation of the evidence into practice. The use of an EBP model helps the implementation process by utilizing a proven, evidence-based methodology. The process begins at the inquiry stage and goes through to the final stage, which is the evaluation. Utilizing an EBP model provides a systematic, strategic plan improving the chances of a successful implementation.

Overview of EBP Model

The Stetler Model was first developed in 1976 as a model for research utilization. The

Model was revised in 1994 and 2001. The core of the model is critical thinking and use of research utilization (Melnik & Fineout-Overholt, 2015). The model focuses on the product and process of research (Schmidt & Brown, 2019). The model has been considered a practitioner-oriented model partly due to the popularity of use by individual practitioners (Melnik & Fineout-Overholt, 2015). However, the model is equally as beneficial to groups or teams implementing best practice initiatives. The model categorizes evidence as external and internal. External evidence is generated from research but if research is lacking may come from a consensus of expert opinion. Internal evidence is systematically obtained local facts and information. Internal evidence may include data from quality, performance, evaluation, or data collected from the EBP model to determine the current state or measure outcomes and progress. The model consists of five phases each with detailed step by step instructions making the process exceptionally easy to understand.

The first phase is the preparation phase where the problem is identified. Once the problem is identified, baseline internal data can be compared to external data, stakeholders are identified, and the organizational goals and priorities are examined. The literature review begins at this phase, ideally focusing on the highest levels of evidence; systematic reviews and guidelines first. The measurable outcomes can be defined at this point.

Phase two is the validation phase. This phase requires a skilled and careful critical appraisal of the evidence accumulated in phase one and culminates in the construction of a table of evidence. If there is ample credible evidence, this evidence is synthesized into cumulative findings. The evidence is then assessed for feasibility, current practice, fit, and substantiating evidence. The decision to proceed with the implementation is made at this stage. If there is overwhelming evidence, the decision to use now is made, if there is no evidence the decision not to use is made, and if the evidence is good but not overwhelming the decision to consider use is made. The consider use requires the trial of a pilot, a small-scale test of the intervention. Once the decision is made to continue, phase four is the translation or application

stage; this is where the pilot is tested. The final phase, phase five is the evaluation phase when the project is evaluated to determine if the project goals were met.

Application of EBP Model to EBP Project

The Stetler Model was selected for the framework for implementing this EBP practice change for several reasons. The model has a long, illustrious history for implementing various evidence-based projects. The model is perfectly suited for implementation by an individual and does not rely on a team approach. This EBP project was predominately completed and implemented solely by the DNP student project director. While many individuals contributed information and data, the research, implementation, and application were an individual effort by the student DNP project director. While many of the other EBP models relied heavily on a team approach, the Stetler Model worked exceedingly well for an individual practitioner. Additionally, the model is intuitive and readily applicable to any environment, situation, or project.

The first phase of the model is identifying the problem. In this EBP project, the problem is the lack of utilization and compliance to nationally accepted clinical practice guidelines for treating patients with obesity and overweight. One of the assumptions in the Stetler Model is that formal organization may or may not be involved in an individual's project (Stetler, 1994). While organizational support can help with the logistics of a project, it is not imperative in this model; the use of research findings can occur at any level from the bedside nurse to Quality Improvement Committees. An informal discussion with patients and providers revealed a gap in treatment and providers were not comfortable using medications to treat patients. Internal evidence of the Medical Group reveals that 36.7% of the patients suffer from obesity. A literature search for the best strategies to increase providers use of clinical practice guidelines was executed, stakeholders were identified, and a timeline was drafted during phase I. The stakeholders include the manager of practice operations, the director of advanced practice nurses, the medical director of the Medical Group, the director of the population health for the Medical Group, and the research coordinator. The Medical Group is located throughout a

Midwestern state and as a not for profit faith-based organization is committed to providing care to all patients. Many patients within the organization meet the criteria for obesity. The organization is committed to providing the best possible care for all patients. Appropriately treating overweight and obesity can reduce the co-morbidities and help the organization meet national quality standards regarding hypertension and A1C. Improving care is always a priority for the Medical Group so improving the diagnosis and treatment for patients with overweight and obesity is a priority for this organization.

Phase II involved critically appraising the evidence and creating an evidence table which was completed using the Johns Hopkins appraisal tools. The evidence table was created and is included in this chapter. The quality of the evidence was rated, and any poor-quality or poor fit evidence was eliminated. Fit entails how similar the study environment matches the project environment. Although none of the evidence focused solely on obesity, the reviews are generalizable since they focused on strategies to improve the implementation of guidelines from the providers' perspective. The disease or condition is not as relevant as the process.

In the 2001 revision, Phase III represents the combination of phase III and IV from the 1994 model. The evidence was synthesized during this phase looking for commonalities and differences across the body of evidence used in the project. Assessing for feasibility involves evaluating the risks, resources, and readiness. In this EBP project, there is minimal risk other than the investment of time. The project does not require many resources other than the DNP student project director, and there appears to be appropriate readiness for the project. However, readiness is not integral to all projects and not necessarily required for this project as previously mentioned as an assumption of the Stetler Model. After assessing for feasibility, fit, current practice, and substantiating evidence the decision *to consider using* was made. Based primarily on the need for the change in the Medical Group and high level of available evidence, the plans to proceed with a pilot were formulated.

The next phase, phase IV, involved the application of the plan. For this project, a multi-faceted intervention that included the academic detailing sessions, reminders in the form of a poster for exam rooms, and frequent feedback and communication were utilized. The Stetler Model calls for plans for formal organizational change using behavioral change theory if applicable (Stetler, 2001). This EBP project does require the application of change theory as required in the Stetler Model, as previously discussed the theoretical framework is Lewin's Change Theory.

Phase V is the final phase, and it is the evaluation of the pilot. The Stetler Model states that the project should be evaluated on formative data and summative data. Formative data provide integrity to the project and summative data provide outcome achievement (Stetler, 2001). After consideration of costs, outcomes, credibility, benefits, and goal achievement the final decision on whether the intervention was valid and should be implemented throughout the medical group is made.

Strengths and Limitations of EBP Model for EBP Project

The Stetler Model is a robust model for use in almost any EBP project. The model guided the process from identifying the problem of evaluating the outcome. Each phase provided clear direction and goals that needed to be completed. Each step in the process guided the next step creating a logical progression. The model is easy to use and could be used by individual nurses without teams. This model was ideally suited for use in this EBP project since the project was predominately completed by an individual and not a team. The other EBP models relied heavily on the team concept which was problematic for this project. The model also provides specific guidance for formal dissemination and change implementation strategies which are the cornerstones of this EBP project. The most significant limitation for this EBP project was the model is highly structured. While this can be positive for providing structure and guidance, it also can be restrictive. The model does not allow for much variation or deviation.

Literature Search

Sources Examined for Relevant Evidence

A comprehensive literature search was performed in multiple databases including Cochrane, Joanna Briggs Institute, MEDLINE with Full text, CINAHL, and PsycINFO. The final keywords were “guideline* OR ‘evidence-based’ OR clinical practice guideline AND implementation strat* AND provider* OR primary care.” In addition to these databases, a thorough hand search of *Implementation Science* 2017 to 2018 was conducted to capture any new, relevant articles related to the implementation of knowledge. Table 2.1 contains a summary of the databases, keywords, and the number of results.

The limits for the search were January 2015 to June 2018, English language, scholarly, and peer-reviewed. The date 2015 was selected based on the search dates of the systematic reviews used in this EBP project. The systematic reviews had different literature search dates the most recent included trials and reviews from 2016. The literature search for this EBP project included one-year before the most recent dates included in the systematic reviews to capture any new publications since the most recent systematic reviews were completed.

This search strategy yielded 743 results with 123 duplications. Seventy-one abstracts were reviewed, and 21 articles were examined in their entirety. After careful consideration, eight pieces of evidence were selected for inclusion in this EBP project. Evidence was selected if it examined strategies for guideline implementation, screening recommendations, or prescription guidelines. Evidence was excluded if it was hospital inpatient, specific to a health condition that could not be generalizable, or not provider specific. Articles that focused on patient interventions were excluded. All studies in the protocol stage were also excluded, as were quality improvement projects and qualitative studies. Evidence that focused on specific conditions were reviewed to determine generalizability.

Table 2.1

LITERATURE SEARCH RESULTS

DATABASE	SEARCH TERMS	LIMITERS	ARTICLES YEILDED	DUPLICATES	ABSTRACTS REVIEWED	ARTICLES USED
Cochrane	Guideline or “evidence-based” and implementation	2015 to 2018	113	1	9	1
Joanna Briggs	Guideline Implementation	2015 to current	11	0	3	2
CINAHL	Guideline* or “evidence-based” or clinical practice guideline” and implementation strat* and provider* or primary care	2015 to 2018 Peer reviewed English	59	47	9	1
Medline	Guideline* or “evidence-based” or clinical practice guideline” and implementation strat* and provider* or primary care	2015 to 2018 Peer reviewed English	265	3	20	3
PsycINFO	Guideline* or “evidence-based” or clinical practice guideline” and implementation strat* and provider* or primary care	2015 to 2018 Peer reviewed English	51	43	5	0
Handsearching		2017 to 2018	244	29	25	1
TOTAL	N/A	N/A	743	123	71	8

Levels of Evidence

There are several different hierarchies for ranking evidence. The Johns Hopkins Nursing Evidence-Based Practice Model (JHNEBPM) was used for this EBP project. The highest level of evidence, level I, is comprised of experimental studies that are randomized controlled trials (RCT) and for systematic reviews of RCTs with or without meta-analysis. Level II evidence is composed of quasi-experimental studies or systematic reviews with RCTs and quasi-experimental studies. Level III includes quantitative non-experimental studies and systematic reviews containing non-experimental studies. Level IV are clinical practice guidelines and consensus statements. Literature reviews and quality improvement projects are level V.

Appraisal of Relevant Evidence

The search strategy for this EBP project resulted in eight pieces of evidence. Using the Johns Hopkins hierarchy, there is one Level I and seven Level II articles for this EBP project. Although they are high levels of evidence, it is imperative to critically appraise each one for the quality of the evidence. JHNEBPM grades the evidence as high (A), good (B), or low or major flaw (C). Grade A represents a sufficient sample size, definitive conclusions, adequate controls, generalizable results, and consistent recommendations (Dang & Dearholt, 2018). Grade B quality also has sufficient sample size but some control, some consistent results, and reasonable recommendations (Dang & Dearholt, 2018). Finally, the Grade C has an insufficient sample size, inconsistent results, and no conclusions can be drawn (Dang & Dearholt, 2018). According to the Stetler Model, it is essential to understand that a study that was graded as weak due to its small size may have value, especially when integrated with larger studies during the synthesis phase of the EBP process (Stetler, 1994).

Level I Evidence

Alagoz, Chin, Hitchcock, Brown, and Quanbeck (2018) conducted a high quality, A-rated systematic review comprised of 21 RCTs. The studies examined the role of external change

agents (i.e., facilitators, coaches, preceptors, consultants, or mentors). The 21 RCTs were conducted in nine countries, with 13 of the studies occurring in the United States. Most of the studies focused on policies related to chronic health conditions. Five strategies were investigated in the studies: academic detailing, audit and feedback, provision of educational materials, practice facilitation, and system support. While the terms academic detailing and practice facilitation are not well defined in the literature, the authors differentiate the two by the on-going individualized support that the practice facilitator provides on a regular basis. The studies varied regarding the type and number of interventions. Nine of the studies measured the effects of an intervention with two-components while others evaluated the effects of interventions with three or more components. Academic detailing was used as a multi-faceted intervention in 16 of the trials, and 11 of the trials used practice facilitation as an intervention.

All studies that included facilitation reported significant effects in one or more outcomes and none of the studies that reported “no effect” had facilitation as a component of the intervention (Alagoz, Chih, Hitchcock, Brown, & Quanbeck, 2018). Thirteen of the 21 studies reported statistically significant improvement ($p < .05$) in their primary outcome. All of these were multi-faceted interventions with at least two components. Four studies described mixed results: a significant increase in some outcomes with no improvement in others. Five of the six studies that showed no improvement in outcomes using academic detailing and audit and feedback had little to no follow up. Some reasons identified for the lack of effect between the control and experimental group include lack of follow up, and practices were already in place at baseline. Two of the studies that failed to demonstrate any effect between the experimental and control group showed improvement in both the control and the intervention group indicating a positive impact on a larger scale occurring during the study period (Alagoz et al., 2018).

Alagoz et al. (2018) support the use of academic detailing especially as one of the components in a multi-faceted intervention. Alagoz et al. (2018) indicate practice facilitators can increase the uptake and care in chronic disease management. While the literature does not

clearly define the role of the practice facilitator Alagoz et al. (2018) indicate the continual, regular follow up and presence of the facilitator as the primary difference between academic detailing and practice facilitation. Only six of the 16 trials utilizing academic detailing as a component of a multi-faceted intervention showed no difference in the outcome between the control and experimental arm. Lack of communication and follow up was identified as one possible reason for this outcome in the trials without a benefit. As indicated by the Lewin Theory, communication is critical for the successful implementation of change. Overweight and obesity are chronic diseases, Alagoz et al. (2018) systematic review outlines components of a multi-faceted intervention that will increase measured outcomes. Alagoz et al. (2018) suggested in addition to providing printed educational materials, electronic support system, in-person education, and regular frequent follow-up is needed to promote change.

Level II Evidence

There are two Joanna Briggs Institute (JBI) evidence summaries included in the EBP project. JBI is an international research and development center committed to providing the best evidence to inform clinical decisions. The JBI Model of Evidence-based Care is unique; it encompasses "feasibility, appropriateness, meaningfulness, and effectiveness of healthcare interventions." (Joanna Briggs Institute [JBI], 2018, para. 4) JBI maintains rigorous processes, methodologies, and theories for appraisal and synthesis ensuring the quality of the evidence summaries. Therefore, both evidence summaries are considered high or A quality.

Slade (2018) examines the effects of academic detailing on guideline implementation. This evidence summary looked at several studies which examined educational outreach. The recommendations for this evidence summary were synthesized from two systematic reviews, a before and after study (N=19), an RCT (N=4530), a pilot RCT (N=35), a retrospective cohort with a time-series analysis, and a non-RCT (N=101). The summary recommends educational outreach with a Grade A recommendation either alone or in combination with other strategies. The evidence shows a small but consistent effect especially regarding prescribing behaviors,

the results for more complex behaviors were mixed. The characteristics of the practitioners, characteristics of targeted behavior, and the context of the intervention should be considered before developing the intervention (Slade, 2018).

This evidence summary by Slade (2018) provides evidence on the positive effect of academic detailing. Although the results were mixed for complex behaviors, some studies reported a significant effect. One pilot study (N=35), reported 58% of general practitioners in the experimental arm changed management of patients with breathlessness and reported an increase in their knowledge and confidence after academic detailing (Slade, 2018). The control group reported 81% of general practitioners having a low level of confidence in their ability to manage breathlessness. This summary lends support for the academic detailing.

The evidence summary by Gomersall (2017) evaluates the role of healthcare teams and guideline dissemination. This evidence summary examined the role of healthcare teams in guideline dissemination. The summary also reviewed the effect of printed educational materials (PEM) and audit and feedback. PEMs when used as a single intervention and compared to no intervention, had a small but beneficial outcome on professional practice (Gomersall, 2017). Audit and feedback had small improvements in practice. Evidence suggests that multiple approaches should be considered when implementing guidelines, including PEM and audit and feedback. It also stresses the importance that all team members understand the guidelines (Gomersall, 2017).

Gomersall (2017) demonstrates the need for a multi-faceted approach to guideline dissemination. As noted by Gomersall (2017) reminders showed a small improvement in professional practice which was also noted with audit and feedback. This evidence summary provides additional evidence supporting a multi-faceted intervention with reminders and audit and feedback as components.

A quasi-experimental, longitudinal study was performed by Egger et al. (2017) to determine the effects of organizational and educational interventions on adherence to clinical

practice guidelines in Kenya. This was a well-designed, B quality study focused on mid-level providers. The authors used the regular staff as the intervention group and the locum staff as the control group. The intervention consisted of online learning modules, educational outreach meetings, monthly feedback, and systematic environmental changes- posters, signs, and various reminders. The control group did have access to environmental changes but not the other interventions. Four different health conditions were addressed during the study. Guideline adherence at baseline was 41.4% for the regular staff and 26.5% for the locum staff. At the end of the trial, the regular staff increased to 77.1% and the locum staff decreased to 21.8%. This study demonstrates the effects of low-tech, low-cost interventions to increase adherence to guidelines (Egger et al., 2017). Although this study was done in a low-resource setting, many of the clinics in the Medical Group are in rural underserved areas with limited resource availability. Even in resource-rich areas, as reimbursement rates decrease, low-cost implementation strategies become essential in all locations. When assessing for fit in the Stetler Model, these factors indicate a good fit.

Egger et al. (2017) demonstrate the effect of low-cost interventions on mid-level providers' adherence to guidelines. The outcomes support the use of a multi-faceted intervention on the guideline uptake. The locum staff was exposed to a single intervention, the reminders (i.e., posters, computer documentation, signs). However, there was no effect on their use of the guidelines. The interventions used in this quasi-experiment provide substantial evidence to support the multi-faceted interventions utilized in this EBP project. Frequent communication as dictated by Lewin's Model and Egger et al. (2017) is an essential component of the multi-faceted intervention (Alagoz et al., 2018; Chan et al., 2017; Gomersall, 2017).

Chan et al. (2017) reported a summary of systematic reviews to determine effective strategies for implementing clinical practice guidelines. This review, "focuses on the critical first steps of provider adoption, and adherence" to clinical practice guidelines is comprehensive and a good quality Grade B review (Chan et al., 2017, p. e124). Four different strategies for

implementing guidelines were reviewed: reminders, educational outreach, audit and feedback, and provider incentives. Educational outreach showed effectiveness in 12 of 13 systematic reviews for a process of care outcomes especially on prescribing. Three of five systematic reviews and 14 of the 19 included studies reported clinical effectiveness of educational outreach (Chan et al., 2017). Audit and feedback were evaluated in 23 systematic reviews and showed effectiveness in both care outcomes and clinical effectiveness (Chan et al., 2017). Twenty-seven systematic reviews examined the effect of reminders. Reminders had mixed effects on the process of care but a good effect on prescribing and no effect on clinical outcomes. Provider incentives were mixed in both process of care and clinical effectiveness. This review identifies that multi-faceted interventions are more effective than a single intervention (Chan et al., 2017).

Chan et al. (2017) identified strategies that promote guideline usage. As noted, multi-faceted interventions are more effective than single interventions. Chan et al. (2017) acknowledged the factors that hinder and facilitate the implementation process. Barriers to implementing and using guidelines include time, resources, skepticism, knowledge deficit regarding the guideline, the age of provider, and workflow. Chan et al. (2017) suggest strategies for facilitating implementation. Stakeholders and leadership should be involved in planning, developing, and leading interventions. Local management needs to provide support and enthusiasm along with adequate time to promote and implement the new practice (Chan et al., 2017). Multi-faceted interventions, electronic guideline integration with computers, and reminders are additional factors which may improve successful implementation (Chan et al., 2017). According to Lewin, for change to occur driving forces must overcome resisting forces. Developing a plan to overcome these barriers while developing an intervention conceived from the evidence will create the driving force necessary for change. Chan et al. (2017) support academic detailing for guideline implementation. Chan et al. (2017) summary of systematic

review lends more support for the use of a multi-faceted intervention including academic detailing to improve guideline uptake.

Kovacs et al. (2018) explored the effectiveness of various implementation strategies in this systematic review and meta-analysis. This high quality, Grade A review included 36 studies. A harvest plot was completed with the 36 studies, and a forest plot was completed with 21 of the studies. Some studies tested a single intervention while others tested a multi-faceted intervention which included a combination of two or more interventions. According to this review, a single diverse intervention such as "audit, reminder, motivational interviewing, or patient-mediated had the greatest effect with 73% of outcome indicators being effective; 0.48 [0.38, 0.58]" for all outcome except counseling (Kovacs et al., 2018, p. 1149). Educational meetings have a similar rate of success with 67% outcome indicator being effective (0.18 [0.06, 0.31]) (Kovacs et al., 2018). Multi-faceted interventions had 65% of indicators being effective 0.11 [0.01, 0.20] (Kovacs et al., 2018). The least effective method of implementation was the passive distribution of materials. Educational outreach plus audit and feedback resulted in a decrease in either intervention alone (38% of the indicators showing any effect). Other combinations did not result in this dramatic of a decrease but were not as effective as the single method. The authors recommend interactive educational outreach as opposed to passive didactic sessions. Also, reminders have been shown to have some effect on guideline implementation, so they recommend using reminders with educational outreach.

Kovacs et al. (2018) identify the positive effects of audit, reminders, educational outreach, and motivational interviewing, however, this review does not indicate that a multi-faceted intervention results in better outcomes than a single intervention. While Kovacs et al. (2018) do not indicate improved outcomes with a multi-faceted approach, each component of the multi-faceted intervention for this EBP project does demonstrate a positive effect and lend additional support for the DNP project.

There was one Level II Cochrane Systematic Review utilized in this EBP project. The Cochrane Database of Systematic Reviews produces “high quality, relevant, up-to-date systematic reviews, and other synthesized research evidence into inform health decision making.” (Cochrane, n.d., para. 5) The systematic reviews are developed through a rigorous process ensuring the quality of the reviews.

Pantoja et al. (2017) conducted a review of systematic reviews to find evidence for implementing interventions strategies in low-income countries. This Cochrane Review is a Grade A, high-quality review containing 39 systematic reviews, most of the reviews were from high-income countries. The strategies targeted either healthcare organizations, workers, workers for a specific problem, or healthcare recipient. Interventions that focused on healthcare workers were educational meetings, practice facilitation, local opinion leaders, audit and feedback, and tailored interventions. The authors conclude that utilizing printed materials may slightly improve practice outcomes compared to no intervention. At a low level of certainty, internet-based learning may improve knowledge compared to no intervention, but it is unclear if it improves patient outcomes or health care workers' skills and behaviors (Pantoja et al., 2017). Educational meetings alone or combined with other interventions probably improve the care delivered to patients (Pantoja et al., 2017). Practice facilitation probably improves the implementation of practice guidelines. Local opinion leaders also probably increase adherence to guidelines. Audit and feedback may lead to a small change in adherence to guideline but do not affect patient outcomes, compared to educational outreach and organizational interventions audit and feedback have little or no difference in compliance (Pantoja et al., 2017). The results of multi-faceted versus single intervention are mixed.

Pantoja et al. (2017) provides additional support for educational outreach either as a single intervention or combined with other interventions. Pantoja et al. (2017) provide corroborating evidence to Alagoz et al. (2018) findings regarding practice facilitation and the positive effects on guideline implementation. Consistent with the other evidence reviewed, audit

and feedback show small effect. Pantoja et al. (2018) increase evidence providing support for the DNP project.

Chauhan et al. (2017) produced a high quality, Grade A level II systematic review analyzing interventions affecting primary care providers' practice. This review included 138 systematic reviews representing 3502 studies. The review examined education, enablement, environmental restructuring, incentivization, modeling, persuasion, training, and multiple interventions and the effects on adherence to guidelines, screenings, prescribing, and referrals. Education such as academic detailing improves knowledge, appropriate prescribing, screening rates, and patient outcomes (Chauhan et al., 2017). Academic detailing when coupled with other interventions such as audit and feedback, reminders, or various other interventions improve guideline implementation (Chauhan et al., 2017). Enablements include information technology such as the EHR, clinical decision support (CDS), embedded prompts, and point of care testing. These tools have been shown to decrease adverse drug interactions, improve several patient outcomes, and improve patient-provider communication. Modeling behavior by using local opinion leaders have been effective in decreasing inappropriate prescriptions and referrals. Chauhan et al. (2017) determined that persuasion in the form of posters is effective at improving the rate of vaccination and preventive screenings while reducing unnecessary imaging for lower back pain. Chauhan et al. (2017) recommends multi-faceted interventions over single. Educational outreach with other interventions is effective for chronic disease management in primary care (Chauhan et al., 2017).

Chauhan et al. (2017) provided high-quality evidence supporting educational outreach. The academic detailing when coupled with audit and feedback and reminders can be useful for implementing clinical practice guidelines. Chauhan et al. (2017) also support a multi-faceted approach over a single intervention. The evidence from this systematic review provides additional strength to the DNP project.

Construction of Evidence-based Practice

Synthesis of Critically Appraised Literature

The prevalence of overweight and obesity is growing annually (Waters & Devol, 2016). Primary care providers are positioned to treat patients with overweight and obesity influencing and impacting the course of the disease. Despite the numerous clinical practice guidelines, patients are not receiving the care they require until late in the disease process (Granara & Laurent, 2017). Finding the best evidence to help guide the uptake of guidelines was critical to develop an intervention to improve the usage of the guidelines. Determining and translating the evidence-based strategies to guide the dissemination of clinical practice guidelines and knowledge was the focus of the literature review and synthesis. In the Stetler Model, phase III is the point where the evidence is viewed in its entirety to determine if there is evidence to proceed with a pilot.

The Stetler Model encourages utilization of high-level evidence if possible. This EBP project utilized high-level evidence: two evidence summaries, five systematic reviews, and one quasi-experimental study. While there are many ways to implement knowledge, the evidence consistently shows measurable improvement in practice with educational outreach or academic detailing (Alagoz et al., 2018; Chan et al., 2017; Chauhan et al., 2017; Kovacs et al., 2018; Pantoja et al., 2017; Slade, 2018). Although Kovacs et al. (2018) showed better outcomes with a single intervention (effect size of 0.27 [0.17, 0.38]) than a multi-faceted intervention (0.13 [0.06, 0.19]), the other reviews state that multi-faceted improved outcomes (Alagoz et al., 2018; Chan et al., 2017; Chauhan et al., 2017). Reminders and audit and feedback showed mixed results when used alone but did have positive effects when coupled with other interventions such as educational outreach. The Stetler Model also impresses the importance of multiple interventions for implementation (Stetler, 2001). Alagoza et al. (2018) identified the need for follow-up after the educational or academic detailing session. Alagoza et al. (2018) cite the failure of improvement in five studies over the control groups may be due to lack of follow-up after the education. They compared those studies to studies where there was monthly

individualized follow-up which showed significant improvement in the measured outcome. The need for follow-up, and close communication is reinforced in the theoretical framework for this project. According to Lewin's Theory, during the Changing Stage, communication and frequent interaction are vital for the change to be successful. After carefully appraising the evidence and synthesizing the evidence, there is an evidence-based recommendation to proceed to the next phase of the implementation which is to pilot the intervention.

Best Practice Model Recommendation

The evidence on treating patients with obesity and overweight is robust. Highly respected organizations have practice guidelines, resources, online learning modules, and conferences available to inform practice. Despite these resources, patients are not getting treatment for several reasons (Glauser et al., 2015; Hayes et al., 2017). This EBP project seeks to determine the best strategy to implement a multi-faceted intervention to increase diagnosing and treating obesity and overweight. The intervention is based on the principles of change utilizing Lewin's Change Theory and the synthesized high quality, high-level evidence obtained through an exhaustive, comprehensive literature review.

A multi-faceted intervention will be utilized in this project as supported by the evidence. The Stetler Model also supports the multi-faceted intervention when a formal dissemination or change strategy is planned. The Stetler Model states that passive education is rarely effective and multiple strategies should be considered (Stetler, 2001). As dictated by the evidence, the EBP project will utilize a multi-faceted intervention. The evidence supports all the components in the intervention. The intervention is composed of an academic detailing/education outreach session, feedback throughout the project, and reminders in the form of posters for the exam rooms and 5A 's of Obesity cubes for the APRNs' offices. The DNP student project director will serve as the clinical expert performing the academic detailing for the APRNs. As outlined by Kovacs et al. (2018) the academic detailing session will be interactive as opposed to didactic to

provide better results. An interactive format allows for more individualization depending on the individual APRN's knowledge and comfort on the topic.

The academic detailing will include pertinent information from guidelines on diagnostic criteria, pharmacological and surgical treatment options and when they are appropriate. The academic detailing session may be a one on one session or a group session depending on the number of subjects enrolled at the site.

The DNP student project director provided the training at the subject's office. The academic detailer presents the clinical practice guideline in a short, ready to use format addressing the knowledge deficit barrier and incorporating suggestions of Chan et al. (2017) to facilitate success. The academic detailer introduced premade order sets which will save the provider time but also allow customization of the orders based on patient or provider preferences. These order sets to address the barriers of time and skepticism.

The enrolled APRNs will also receive information regarding the American Association of Nurse Practitioners (AANP) Introductory Certificate of Obesity Management in Primary Care which can be completed online and is available at no cost for AANP members. Egger et al. (2017) utilized online training modules as a component in the quasi-experiment with favorable outcomes (Egger et al., 2017).

The chart audit at 3-weeks will provide feedback to the APRNs as the evidence shows small but consistent improvement with audit and feedback (Chan et al., 2017; Chauhan et al., 2017; Egger et al., 2017; Gomersall, 2017; Kovacs et al., 2018; Pantoja et al., 2017). Besides, there will be frequent communication as outlined in Lewin's Change Theory. The DNP student will maintain weekly interaction with the subjects by phone, email, text or by a site visit. The purpose of the communication is to provide feedback, address questions or concerns, solve problems that may have developed, and celebrate victories.

How the Best Practice Model will Answer the Clinical Question

The evidence supports this DNP project to increase the use of CPGs for treating

overweight and obesity in primary care. The utilization of Lewin's Change Theory and Stetler Model created a well planned and executed DNP project that would inform practice.

The clinical question was "Can a multi-faceted intervention based on the clinical practice guidelines for treating overweight and obese patients increase the number of patients diagnosed and treated for overweight and obesity in the primary care setting? Will educating nurse practitioners on interventions and providing tools to prompt diagnoses and treatment in patients with obesity and overweight lead to a change in practice?" Data of patients correctly diagnosed with overweight or obesity was compared before the intervention and after the intervention. The patients with a diagnosis that has a documented treatment plan were also compared pre and post intervention. If the intervention improved the diagnosing and treating of patients with overweight and obesity, there will be a statistically significant measure noted ($p < .05$) in the post-intervention data. If the number of patients with diagnoses increase or the number of patients with a documented plan increase after implementation, the intervention may have been useful in increasing the diagnoses and treatment.

Table 2.2 Evidence Summary

Citation (APA)	Purpose	Design/Level/ Quality Rating	Sample	Measurement/ Outcomes	Results/Findings
Alagoz et al (2018)	To determine the effect of external change agents in promoting change in primary care settings	<ul style="list-style-type: none"> • Systematic Review • Level I • A Quality 	21 RCTs	Adherence to practice guidelines Appropriate prescribing Appropriate referrals	Practice facilitation-all studies report significant effects one or more outcomes Multifaceted intervention-13 of 21 studies had positive effect ($p < .05$) Studies without positive effect had little or no follow up
Chan, et al. (2017)	To determine effective strategies to aid in implementation of clinical practice guidelines	<ul style="list-style-type: none"> • Systematic Review • Level II • B Quality 	39 SRs 16 overviews of SRs	4 implementation strategies: educational outreach visits, audit and feedback, reminders, and provider incentives Measuring process of care and clinical outcomes	Educational outreach-general effectiveness in process of care and clinical effectiveness Audit/feedback- general effectiveness in process of care and clinical effectiveness Reminders- mixed effectiveness in process of care and ineffective for clinical outcomes Provider incentives- mixed effectiveness in process of care and clinical outcomes Multi-faceted appear to be more effective
Chauhan et al. (2017)	To evaluate behavior change interventions influencing PCPs in primary care	<ul style="list-style-type: none"> • Systematic Review • Level II • A Quality 	138 SRs	Adherence to practice guidelines Appropriate prescribing Appropriate referrals	Education-Effective to increase knowledge, skills AD-effective for prescriptions, screening, knowledge, and patient outcomes Environmental restructuring-collaboration increased physician guideline adherence Modeling-positive effective on prescription and referral Reminders-worked well for screening, vaccination, and decreasing imaging for lower back pain Multiple interventions-education and other especially effective in chronic disease management

Egger et al. (2017)	To determine if four simple, low-cost interventions could improve adherence to a set of clinical quality measures in a low resource primary care setting	<ul style="list-style-type: none"> • Quasi-experimental, longitudinal • Level II • B Quality 	<p>Mid-level clinic officers (CO) regular staff n=7 1684 charts reviewed</p> <p>Mid-level clinic officers (CO) Locum staff served as control group n=13 880 charts reviewed</p>	Measurement of adherence to the clinical quality measure	<p>Adherence to the CQM before the interventions: CO: 41.4% Locum CO: 26.5% After 6 months intervention:</p> <p>CO: 77.1% Locum CO: 21.8%</p> <p>The odds of adherence to an individual CQM for the COs (OR, for a one-day change over the study period: 1.013; 95% CI: [1.008, 1.018]) No change for the locum COs (OR: 0.999; 95% CI: [0.996, 1.004])</p>
Gomersall (2017)	To determine the evidence regarding guideline dissemination and implementation strategies for healthcare teams	<ul style="list-style-type: none"> • Evidence summary • Level II • A Quality 	<p>1. SR included 88 studies with ten different dissemination and implementation strategies</p> <p>2. SR of 45 studies including RCTs, quasi-randomized, controlled before and after and interrupted time series evaluating printed educational materials</p> <p>3. Workshop report developed by</p>	<p>1. SR to synthesize literature relevant to guideline dissemination and implementation using healthcare team and team-based practices.</p> <p>2. SR assessed effects of printed educational material (PEM) on healthcare provider practice and patient health outcomes, how PEM characteristics influence effects</p> <p>3. Survey to measure interprofessional education and workplace learning</p> <p>4. SR to determine the effect of tools developed by the guideline producers to determine if it increased guideline utilization</p> <p>5. SR to determine the effect of audit and feedback</p>	<p>1. Utilization of team-based guidelines have a positive effect on patient and provider outcomes</p> <p>2. PEMs may have a small beneficial effect on professional practice, insufficient information to estimate effect on outcomes or significance</p> <p>3. Expert opinion recommends tailoring utilization to local setting informed by the local barriers to usage, financial incentives are as effective as other interventions</p> <p>4. Survey demonstrates participants demonstrate collaborative behaviors in their practice</p> <p>5. Implementation tools developed by guideline developers probably lead to improved adherence to some guidelines</p> <p>6. SR evaluating audit and feedback revealed moderate or high bias in studies, feedback may be effective if baseline performance is low, if it is given by supervisor or peer, if it is given both written and orally, given more than once, and if targets are provided with an action plan. This may result in a small improvement.</p>

			<p>experts informed a literature synthesis</p> <p>4. Survey of 43 participants</p> <p>5. SR including RCTs, cluster RCTs, controlled before and after and interrupted time series</p> <p>6. SR</p>		
Kovacs, et al. (2018)	Determine effectiveness of various guideline implementation strategies	<ul style="list-style-type: none"> • Systematic Review • Level II • B Quality 	<p>36 Studies in the harvest plot</p> <p>21 Studies on the forest plot</p>	<p>Passive distribution of materials</p> <p>Audit/feedback</p> <p>Educational meetings</p> <p>Reminders</p> <p>Motivational interviewing</p> <p>Measured by knowledge transferred, diagnostic behavior, prescriptions, counselling, or patient-level results</p>	<p>Single intervention (audit, reminder, motivational interview, or patient-mediated intervention) had largest effect 73% (0.48 [0.38, 0.58])</p> <p>Educational meetings was 67% of indicators being effective (0.18 [0.06, 0.31])</p> <p>Multifaceted interventions (2 or more) 65% of indicators being effective 0.11 (0.01, 0.20)</p> <p>Single intervention is as effective as a multifaceted intervention</p>
Pantoja et al. (2017)	To identify effects of implementation strategies in low income countries	<ul style="list-style-type: none"> • Systematic Review • Level II • A Quality 	39 SRs	<p>Strategies targeted at healthcare workers</p> <p>Strategies targeted at healthcare organizations</p> <p>Strategies targeted at healthcare receipts</p>	<p>Educational meetings/workshops-alone or with other interventions probably improve practice and patient outcomes</p> <p>Especially consistent and high for prescribing</p> <p>Local opinion leaders acting alone or with other intervention improve adherence</p> <p>Audit/feedback improvement over usual care but little or no difference when compared to educational interventions</p> <p>Tailored interventions are more effective than usual care but mixed result when compared to non-tailored interventions.</p>

					Multifaceted interventions versus single intervention were inconsistent
Slade (2018)	To determine the effectiveness of academic detailing on evidence implementation	<ul style="list-style-type: none"> • Evidence summary • Level II • A Quality 	<ol style="list-style-type: none"> 1. SR that included 69 RCTs with >15,000 HCP 2. Before and after study with 10 subjects 3. SR that included 11 RCTs and 4 observational studies 4. Non-RCT with 101 nursing home residents 5. Retrospective cohort with time series analysis 6. Pilot RCT with 35 subjects 7. RCT with 4530 participants 	<ol style="list-style-type: none"> 1. Reducing the number of inappropriate prescriptions 2. Provision of venous thromboembolism prophylaxis 3. Changing prescribing behavior 4. Nutritional guidelines in LTC setting 5. Care in treating respiratory infections in primary care 6. Treating breathlessness at end of life 7. NSAID prescribing 	<ol style="list-style-type: none"> 1. Venous thromboembolism prophylaxis- 15-minute educational visit by expert resulted in a 16% improvement (95% CI: [5,26]) in patients receiving appropriate prophylaxis 2. SR in primary care prescribing behavior varied across the studies but overall showed AD as a stand-alone intervention showed moderate effect the median between the group difference in relative change was 21% (IQR 43.76%) for the RCTs and 9% (IQR 8.5%) for the observational studies. 3. Non RCT comparing external facilitation and AD on the outcome of LTC residences showed no difference 4. Retrospective cohort study showed 29.4% decrease in antibiotic prescriptions and 8.3% decrease in unnecessary provider visits after AD on respiratory infections 5. RCT of primary care providers and end of life breathlessness. After AD session, 58% of providers report a change in their approach to treatment of breathlessness, report in increase in their confidence and knowledge. The control group reported an 81% low confidence in knowledge and management. 6. RCT on how AD will affect NSAID prescribing-improvement in the recommended NSAIDs prescribed by providers increased odds 19% 95% CI [10,29].

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

Participants and Setting

This EBP project seeks to answer the question if a multi-faceted intervention targeted at APRNs in primary care can increase the number of patients diagnosed and treated for overweight and obesity. Despite CPGs, patients are not receiving treatment for overweight and obesity (Hayes, Wolf, & Labbé, 2017). Primary care APRNs employed by a large, not for profit, hospital-owned medical group were the subjects in this EBP project. The Medical Group is located across the state of Indiana; the clinics can be found in rural, suburban, and urban areas. The DNP student project director composed a recruiting email with pertinent information about the project. The APRN director sent this initial recruitment email on September 17, 2018, to the APRNs in the Medical Group. The initial email did not yield the desired goal of 15 APRNs. The APRN director resent the email the APRNs on October 18, 2018, encouraging them to consider participating in the project.

Outcomes

The primary outcome of this project was to determine if the multi-faceted intervention consisting of academic detailing, reminders, audit and feedback, and frequent communication will influence APRNs care of patients with obesity and overweight. Retrospective chart review for two weeks September 23, 2018, to October 6, 2018, was analyzed for each subject in the project. The DNP student project director audited each visit to determine if the patient was seen for an adult health exam. Since other visit types were not used for data collection in this project, the chart was closed, and no further information was collected. Those visits billed as adult health exams (E &M codes 9938xx and 9939xx) were further audited by the DNP project facilitator. The BMI was recorded as <25, 25 to <30, or >30 and the visit was checked to see if there were an appropriate diagnosis and treatment charted corresponding to the patient's BMI.

Using the same process, the post-intervention data were collected for weeks seven and eight after the academic detailing session. Feedback was scheduled to occur at week three post-academic detailing session. The week three data were delayed for several providers. This delay resulted in the decision to change the post-academic detailing data collection from weeks five and six to weeks seven and eight. Moving the final collection date allowed all subjects to utilize the feedback, incorporating change to their practice before the final data collection. The pre and post-intervention data were pooled for all providers and compared using a z-test for two population proportions.

The secondary outcome measured APRNs current comfort, beliefs, and knowledge regarding overweight and obesity. Hayes et al. (2017) documented providers knowledge deficit as one of the factors responsible for the inadequate treatment of patients with overweight and obesity. This knowledge deficit is especially apparent regarding the indications, efficacy, and contraindications for weight loss pharmacotherapy and bariatric surgery (Glauser et al., 2015; Granara & Laurent, 2017; Ritten & LaManna, 2017). There have been multiple studies exploring providers beliefs, knowledge, and feelings regarding overweight and obesity (Bleich et al., 2012; Glauser et al., 2015; Simon & Lahiri, 2018). Glauser et al. (2015) developed and utilized a survey in their research on physician knowledge and perception of obesity. With the permission of the authors and the owner of the survey, CE Outcomes, the survey used was modified and shortened for this project (Appendix A). In this project, the survey was used to determine if the intervention had any effect on the APRNs' knowledge, beliefs, or feelings. The survey was delivered to the subjects via REDCap (Research Electronic Data Capture). If the subject failed to complete the survey, the DNP student project director contacted the APRN via email requesting that they complete the online survey. All surveys were completed prior to the DNP student project director's onsite academic detailing session. The survey was reissued to the providers December 1, 2018. All subjects completed the post-intervention survey deliver via

REDCap. The results from the survey were compared using Wilcoxon's Signed Rank Test and McNemar's Test.

Intervention

Once subjects enrolled in the project, they received a consent form outlining the project, the risks, benefits, and their rights as human subjects. The consent forms were sent to the subjects by email. Through a phone call, the DNP student project director reviewed the content of the consent form with the subject and addressed any questions or concerns. The subjects signed and faxed the consent document back to the project director which were then uploaded into REDCap. After the consent was signed, the subject was officially enrolled in the project, and they were sent a link via REDCap to enter their demographic information into REDCap, and the survey was available to the subjects at that point.

The DNP student project director performed the academic detailing session at the APRNs' practice site. The academic detailing session consisted of a PowerPoint® presentation, but each session was individualized to each APRN and interaction was encouraged during the session. The evidence from the literature review identified reminders when used in conjunction with academic detailing increased the measured outcome (Chauhan et al., 2017; Chan et al., 2017; Egger et al., 2017; Flodgren et al., 2017; Gomersall, 2017; Pantoja et al., 2017; Slade, 2018). In this project, reminders in the form of posters for patient exam rooms and the 5 A's of obesity management cube were provided at the academic detailing session. The dates of the academic detailing occurred from October 8, 2018, to November 2, 2018. Regardless of the date of the academic detailing session, three weeks after the session, data were expected to be extracted and disseminated to the subjects. These results were used to provide feedback to the subjects and not used in any statistical analysis. Unexpected issues with data collection delayed this feedback, some of the subjects did not receive the feedback until week four and five. With IRB modification and approval, the final data collection period was moved from weeks

five and six post-intervention to weeks seven and eight due to the delay in the mid-intervention feedback.

During the Changing period, Lewin's suggests frequent communication to improve the success of the change. The DNP student project director composed weekly emails with different topics to provided additional information and resources. These emails generated questions and further correspondence between the subjects and the DNP project facilitator. The emails provided written resources for the subjects. Final post-intervention data were collected using the same methodology as outlined in the pre-intervention collection methodology. The post-survey link was sent by invitation generated by REDCap December 1, 2018.

The final phase of the Stetler Model, Phase V, is the evaluation of the intervention. The data were analyzed, and the outcomes measured. The primary outcome was the comparison before and after the multi-faceted intervention of patients with obesity or overweight diagnosed and treated during an adult health exam. The demographics of the subjects were also compared. Utilizing statistical analysis, the secondary outcome measured the effects of the academic detailing on APRNs knowledge, feelings, beliefs, and comfort.

Planning

The implementation of this EBP project occurred from September 21, 2018, to December 14, 2018. The project was planned based on Lewin's Change Theory and executed utilizing The Stetler Model. While the project occurred over from September 2018, to December 2018, the project entailed ten weeks of planning before the implementation corresponding to Stetler's phase I, II, and III and Lewin's unfreezing period. Proper dedication and emphasis spent on Stetler's phase I, II and III laid the groundwork for the phase IV, the pilot and the change phase of Lewin's Model.

The recruitment phase of the project occurred with an email sent on September 17, 2018. The DNP student project director created an email which was sent to all APRNs in the

Medical Group (Appendix B). The recruitment email outlined the specifics of the project and the commitment required of the subjects along with the purpose of the project. An email providing an overview of the project and problem statement was designed and slated to be sent to all APRNs on September 10, 2018. However, this first email was not sent due to time constraints and other factors. According to Lewin's Theory, addressing the need for change in an urgent, compelling way will create the motivation for change.

The DNP student project director developed the academic detailing session content. The session was a 30-minute interactive presentation with a PowerPoint®. The content of the PowerPoint® was information composed of educational materials provided by Obesity Medicine Association, American Association of Clinical Endocrinologists (AACE), Novo Nordisk, and Obesity Canada (Appendix C). The posters for the APRNs' exam rooms and materials for the waiting room were ordered from Novo Nordisk (Appendix D). The 5A's of Obesity cubes were ordered from the Canadian Obesity Network (Appendix E).

Data

Measures

The survey that was used in this project was used in a published study by Glauser et al. (2015). To ensure validity and clarity, the survey was tested in a pilot of practicing providers composed of the same target population as the population of interest. The original research surveyed 300 providers: 100 endocrinologists, 100 primary care physicians, 70 cardiologists, and 30 bariatric specialists. The authors note that although case vignettes have been shown to be valid tools to measure the process of care, study participant may select answers that the survey developers expect and not their true feelings or beliefs (Glauser et al., 2015). They note this as a limitation of the study.

Collection

For each of the enrolled APRNs, the transformation specialist provided a list of patients seen by each provider during the data collection periods. Each chart was quickly reviewed by

the DNP project facilitator looking specifically for those visits coded adult health exams. All other visits were excluded. The BMI was assigned to <25, >25 but <30, and >30 and tallied on a data collection sheet. The visit was reviewed to see if there was the appropriate diagnosis corresponding to the BMI and if an intervention was charted. Treatments could be a referral to bariatrics, discussion about healthy eating, increasing exercise, medication, or referral to a nutritionist. The data were extracted at three points in time: pre-intervention, three weeks post-intervention, and weeks seven and eight post-intervention. The data at week three was only used to provide feedback to the subjects and not part of the final analysis. Baseline data collected from pre-intervention was compared to data collected at weeks seven and eight to determine the effect of the intervention.

Survey data was collected and managed in REDCap. Once enrolled in the study, REDCap sent the link allowing the APRNs to access the survey after entering their demographic information into the REDcap database. The post-intervention survey was sent to the subjects by email invitation. REDCap notified the principal investigator if the survey was not completed allowing the principal investigator to contact the subject and encourage completion.

Management and Analysis

SPSS 24.0 was used to complete the data analysis for this project. The z-test of two population proportions were used to determine if the academic detailing, reminders, audit, and feedback increased the rate of patients with overweight and obesity receiving a diagnosis and a treatment plan. A *p*-value of less than 0.05 was considered statistically significant for this project. Utilizing Wilcoxon's Signed Rank Test and McNemar's Test, SPSS 24.0 was used to examine the effects of the intervention on the subjects' behaviors, knowledge, and practice. A *p*-value of less than 0.05 is considered statistically significant.

Protection of Human Subjects

This project received approval from the medical group's Institutional Review Board (IRB) on September 7, 2018. Also, the project was also approved by the Valparaiso University IRB on

September 11, 2018. Both IRBs approved this project with an expedited review. The DNP student project director completed several requests for modifications to both IRBs throughout the project. The Medical Group's IRB approved the last modification on January 16, 2019, and Valparaiso University IRB on January 21, 2019.

To protect the human subjects of this EBP project, the DNP student project director completed the National Institutes of Health protection of human right training on April 5, 2018 (Appendix F). The DNP student project director completed the Collaborative Institutional Training Initiative (CITI Training) for principal investigators May 19, 2018 (Appendix G). To comply with HIPAA standards and protect the human subjects in the project, the subjects' demographic information will only be accessed from secure, encrypted computers located within the clinic setting. The demographic information and the data extracted from the charts will be stored on REDCap. Subjects will be numbered sequentially from one. Data will be stored on REDCap for three years after the completion of the project. Data for this study will be entered into a REDCap database, which uses a MySQL database via a secure web interface with data checks used during data entry to ensure data quality. REDCap includes a complete suite of features to support HIPAA compliance, including a full audit trail, user-based privileges, and integration with the institutional LDAP server (Harris et al., 2009). The MySQL database and the web server will both be housed on secure servers operated by Ascension Information Services (AIS) and the Ascension Clinical Research Institute (ACRI). The servers are in a physically secure location on campus and are backed up nightly, with the backups stored in accordance with the AIS retention schedule of daily, weekly, and monthly tapes retained for one month, three months, and six months, respectively. Weekly backup tapes are stored offsite. The AIS servers provide a stable, secure, well-maintained, and high-capacity data storage environment, and both REDCap and MySQL are widely-used, powerful, reliable, well-supported systems. Access to the study's data in REDCap will be restricted to the members of the study team by username and password.

This EBP did not require maintaining and storing patient medical record numbers (MRN). Data that has been collected from charts were used in aggregate form and not patient specific. The transformation specialist provided the patient names to the DNP student of the charts that needed to be audited. The DNP student project director individually examined these charts as described. Chart audits were performed in a closed office to ensure added security and patient confidentiality. Once the chart was audited, the document containing the patient names were shredded.

CHAPTER 4

FINDINGS

The purpose of this EBP project was to determine the effect of a multi-faceted intervention on the rate of diagnosing and treating patients with overweight and obesity in the primary care setting. The PICOT question was: Among primary care NPs employed by a hospital-owned medical group, does the introduction of a multi-faceted intervention versus current practice of no protocol improve the rate of documented diagnosis and treatment in patients with overweight and obesity? The project took place at eleven hospital owned, not-for-profit primary care clinics located throughout a midwestern state. The clinics' locations were as follows: urban (7.7%), suburban (23.1%), and rural (69.2%). The location setting was defined by the subjects and may not accurately fit the definition of urban, suburban, or rural communities. Nine sites had one subject participating in the project, and two sites had two subjects enrolled in the project. The multi-faceted intervention consisted of academic detailing at the subject's clinic site, reminders in the form of posters for patient exam rooms and the 5 A's of Obesity cube for their desk, audit with feedback, and frequent communication throughout the eight-week study period.

Prior to the intervention, retrospective chart review occurred over a 2-week period, and the data was entered into *Statistical Package for the Social Services* (SPSS). Eight weeks after the academic detailing session, post-intervention data were collected through chart review over 2-weeks and entered into SPSS. The subjects took a survey administered through REDCap before and after the academic detailing session. The results of the survey were entered into SPSS. The data were analyzed to answer the following questions:

Question one: What are the diagnosis rates of patients with a BMI >25 <30 and are they significantly different in the pre- and post-intervention groups?

Question two: What are the diagnosis rates of patients with a BMI >30 and are they significantly different in the pre- and post-intervention groups?

Question three: What are the treatment rates of patients with a BMI >25 <30 and are they significantly different in the pre- and post-intervention groups?

Question four: What are the treatment rates of patients with a BMI >30 and are they significantly different in the pre- and post-intervention groups?

The data from the survey were statistically analyzed to answer the secondary question:

Question five: Can a multi-faceted intervention influence APRN's beliefs, feeling or knowledge regarding patients with overweight and obesity?

Participants

The EBP project enrolled 13 APRNs in employed in the primary care setting, 12 worked in family practice and one in internal medicine. All subjects were female. Years of experience varied with two APRN reporting 0-2 years in practice (15.4%), three APRNs reported having 3-5 years' experience (23.1%), one practitioner had 6-8 years' experience (7.7%), and seven practitioners reporting more than nine years in practice (53.8%). The subjects' weight was self-reported, 46.2% (n=6) stated they were normal weight, 30.8% (n=4) stated they were overweight, and 23.1% (n=3) marked themselves as obese. Table 4.1 summarizes the subjects' demographic information.

Table 4.1

Demographics of APRNs

N=13

		n	%
Gender	Female	13	100
Years in practice			
	0-2 years	2	15.4
	3-5 years	3	23.1
	6-8 years	1	7.7
	>9	7	53.8
Clinic setting			
	Urban	1	7.7
	Suburban	3	23.1
	Rural	9	69.2
Subject's weight			
	Normal	6	46.2
	Overweight	4	30.8
	Obese	3	23.1

Size and Characteristics

Patients were included in the chart review if the provider saw them for an adult health exam. All acute visits, follow-ups, patients under 18, and Department of Transportation physicals were not included in the chart review. Patients that were seen for Medicare Wellness were also excluded from the chart review.

Pre-Intervention Group Characteristics. A retrospective chart audit was performed on all patients each APRN saw from September 23, 2018, to October 7, 2018. Data were extracted from charts that were coded as an adult health exam (N = 163). The charts were further reviewed to determine if the patient had a BMI <25 (n=37, 22.7%), BMI>25 <30 (n=42, 25.8%), or BMI >30 (n = 84, 51.5%). The patients with BMI >25 <30 and BMIs >30 were the patient of interest. This groups' demographics were recorded to be compared to the post-intervention group. Demographics included gender, age, and BMI. For gender, in the overweight group 57.1% (n = 24) were female, and in the obese group, 57.1% (n = 48) were female. Since the data collected from age and BMI was not normally distributed the median was used instead of the mean. In the overweight group, for the median age was 50, (IQR 36.3-59) and the median BMI was 27.05 (IQR 26-28.78). In the obese group, for age the median was 45, (IQR 34.25-57) and for BMI the median was 34.8, (IQR 32.52-39.85). When combining the results for overweight and obese, there were 57.1% (n = 72) female, median age was 45 (IQR 34.75-57.25), and median BMI of 32.55, (IQR 28.63-37.1). Of the 42 patients with overweight, nine (21.4%) were given a diagnosis of overweight at the visit. Of the nine patients that received the diagnosis of overweight, eight (88.8%) of them were given a treatment plan. Of the 84 patients with obesity, 51 (60.7%) received a diagnosis, and 47 (92.2%) of those patients were given treatment. Treatment plans varied but usually consisted of diet and exercise counseling, information on healthy lifestyle and community resources, or medications.

Intervention Group Characteristics. Data were collected for a 2-week period eight weeks after the academic detailing session. All providers charts were reviewed but only those charts coded as an adult health exam were used in the data collection (N=176). Those charts were checked for the BMIs and the following results were obtained: BMI <25 (n=39, 22.1%), BMI >25<30 (n=46, 26.1%), and BMI >30 (n=91, 51.7%). Only the patients in the overweight and obese groups were used for the rest of the data analysis. In the post-intervention overweight group, 52.2% (n = 24) were female, and in the obese group, 62.6% (n = 57) were female. The data for age and BMI were analyzed, and it was determined that the data was not normally distributed, so the median was used to describe the group. In the overweight group, the median age was 46.5 (IRQ 32.5-56.25), and the median BMI was 27.6 (IQR 26.25-28.53). In the obese group, the median age was 48 (IQR 34-58), and the median BMI was 35.5 (IQR 32.4-41.3). Pooling the demographics for the overweight and obese groups the results were: 59.1% (n = 81) female, median age 47 (IQR 34-58), and the median for BMI 32.4 (IQR 28.45-37.3). Table 4.2 summarizes the demographics. In the post-intervention group, of the 46 patients with overweight, 18 (39.1%) received a diagnosis, and all 18 (100%) of those patients had a documented treatment. In the 91 patients with obesity, 61 (67%) received a diagnosis, and all 61 (100%) of those patients also received a treatment.

The two groups were compared using to determine if there were statistically significant differences that may contribute to the findings in the outcomes. There was no significant difference in gender, age, or BMI between the pre- and post-intervention groups. Table 4.2 compares the gender of the pre and post-intervention group. The Fisher Exact Test was used to show there was not statistically significant differences in gender. Table 4.3 summarizes the age and BMIs between the pre- and post-intervention groups. Using the Mann Whitney U test, there was no difference in the two groups based on age or BMIs.

Table 4.2

Gender of Groups

	Pre-intervention				Post-intervention				<i>p</i> -value
	Female	%	Male	%	Female	%	Male	%	
BMI>25<30	24	57.1	18	42.9	24	52.2	22	47.8	0.67
BMI>30	48	57.1	36	42.9	57	62.6	34	37.4	0.54
Both combined	72	57.1	54	42.9	81	59.1	56	40.9	0.80

Fisher's Exact Tests used to generate *p*-value

Table 4.3

Group Characteristics

	Pre-intervention			Post-intervention				
	n	Mdn	IQR	n	Mdn	IQR	Mann-Whitney U	p-value
Age								
BMI>25<30	42	50	36.25-59	46	46.5	32.5-56.25	-0.46	0.64
BMI >30	84	45	34.24-57	91	48	34-58	-0.86	0.39
Both combined	126	45	34.75-57.25	137	47	34-58	-0.41	0.68
BMIs								
BMI>25<30	42	27.05	26-28.78	46	27.6	26.25-28.53	-0.82	0.42
BMI >30	84	34.8	32.52-39.85	91	35.5	32.4-41.3	-0.76	0.45
Both combined	126	32.5	28.63-37.1	137	32.4	28.45-37.3	-0.54	0.59

Mdn=median, IQR= interquartile range

Changes in Outcomes

Statistical Testing and Significance

Using SPSS Version 24, parametric tests were used to compare rates of diagnoses and treatment in two populations. A one tailed z-test of two population proportions were used to compare the pre and post-intervention data. Nonparametric tests were used to determine if there was a change in the survey results after the academic detailing session. The survey contained Likert questions as well as multiple choice and pick all that apply. To analyze the survey results, two-tailed Wilcoxon Signed Rank Test was used for the ordinal data and two-tailed McNemar's test was used for the nominal data. A $p < .05$ for all data analyzed was used to demonstrate statistical significance.

Findings

Primary Outcomes:

Question one: What are the diagnosis rates of patients with a BMI >25 <30 and are they significantly different in the pre- and post-intervention groups? The rate of diagnosis in patients with a BMI >25<30 in the pre-intervention group was 25.8% and 39.1% in the post-intervention group. The z score was -1.8 and $p = .04$. This show a statistically significant improvement in the diagnosis rates in patients with overweight.

Question two: What are the diagnosis rates of patients with a BMI >30 and are they significantly different in the pre- and post-intervention groups? The rate of diagnosis of patients with BMI >30 before the intervention was 60.7% and after the intervention 67%. The z score was -0.87, $p = .19$. Therefore, there was not a statically significant improvement in the diagnosis after the intervention in patients with obesity.

Question three: What are the treatment rates of patients with a BMI >25 <30 and are they significantly different in the pre- and post-intervention groups? In patients with BMIs>25<30, the rate of documented treatment before the intervention was 88.8% and after the intervention, it was 100%. The z-score was -1.44, $p = .07$, which was not significant. Therefore, this intervention did not improve the rate of treatment in patients with overweight.

Question four: What are the treatment rates of patients with a BMI >30 and are they significantly different in the pre- and post-intervention groups? The rate of documented treatment in patients with BMIs> 30 before the intervention was 92.2% after the intervention the rate increased to 100%. The z score was -2.23, $p = .01$. This intervention showed statistically significant improvement in the rate of treatment in patients with obesity. Table 4.4 summarizes all the results.

Table 4.4

Primary Outcome Measures

	Pre-intervention N=163	Post-intervention N=176	z-score	p-value
	n (%)	n (%)		
BMI <25	37 (22.7)	39 (22.2)		
BMI >25<30	42 (25.8)	46 (26.1)		
No diagnosis	33 (78.6)	28 (60.9)		
Diagnosis	9 (21.4)	18 (39.1)	-1.8	0.04*
Treatment	8 (88.8)	18 (100)	-1.44	0.07
No treatment	1 (11.1)	0		
BMI >30	84 (51.5)	91 (51.7)		
No diagnosis	33 (39.3)	30 (33)		
Diagnosis	51 (60.7)	61 (67)	-0.87	0.19
Treatment	47 (92.2)	61 (100)	-2.23	0.01*
No treatment	4 (7.8)	0		

The data from the survey were statistically analyzed to answer the secondary question:

Question five: Can a multi-faceted intervention influence ARPN's beliefs, feeling or knowledge regarding patients with overweight and obesity? The survey had questions on a four-point Likert scale, knowledge questions, case studies, and select all that apply. The results of the survey were analyzed as a two-tailed matched paired test using a Wilcoxon signed-rank test and McNemar test. There were only five survey questions that had statistically significant results. The first question that had a statistically significant result was exploring communication with patients with overweight and obesity. The question asked subjects to rate the significance from not all significant to extremely significant, "Lack of resources to which I can refer overweight and obese patients." Wilcoxon's Signed Rank Test generated a $p = .03$. The next question asked the participant to rate their level of agreement from disagree to agree. The question, "Patients are primarily responsible for their own weight management" had a $p = .01$ using Wilcoxon's Signed Rank Test showing a statistically significant change. The subjects were asked, "How familiar are you with each of the following clinical practice guidelines?" Using Wilcoxon's Signed Rank Test, the AACE guideline ($p = .03$) and the Endocrine Society guideline ($p = .02$) showed statistically significant changes. The final question with a statistically significant change asked subjects, "To what extent do the following factors influence your decision to refer a patient for bariatric surgery?" The availability of new weight loss drugs ($p = .03$) showed a significant change using Wilcoxon's Signed Rank Test. All other questions on the survey did not produce statically significant changes in the pre- and post-survey results.

CHAPTER 5

DISCUSSION

The purpose of this EBP project was to determine the answer to the following PICOT question: *“Among primary care APRNs employed at a hospital-owned medical group, does the introduction of a multi-faceted intervention versus current practice of no protocol/tool improve the rate of obesity and overweight diagnoses and documented treatment plan in eight weeks?”*

The multi-faceted intervention included academic detailing, reminders, audit with feedback, and frequent communication. The intervention was introduced at 11 primary care clinic sites located throughout a Midwestern state. The data were reviewed pre- and post-intervention to determine if the intervention can affect the rate of diagnosis or treatment. In addition, the secondary outcome of interest wanted to determine if the intervention could affect providers knowledge, beliefs, comfort, or behaviors regarding overweight and obesity. The results of this project with a careful and critical assessment and explanation of the outcomes will be discussed in this chapter. Also, a thorough review of contributing factors influencing the outcomes and project limitations and successes will also be addressed in the chapter. The theoretical and EBP framework selected to guide the development and implementation of this project along with implications for similar projects will be discussed and evaluated.

Explanation of Findings

This EBP project was designed to answer the primary questions, however, the project was designed to evaluate the secondary outcomes as well. The primary outcomes explored the rate of diagnosis and treatment in patients with overweight and obesity pre- and post-intervention. The pre-intervention data was obtained through a retrospective chart review of all patients seen by each provider from September 23, 2018, to October 6, 2018. Charts were hand audited by the DNP project facilitator. The DNP project facilitator performed the same

chart review process eight weeks after the AD session. To maintain consistency and data fidelity, two weeks of charts were reviewed post-intervention.

The rate of diagnoses increased in both the overweight and obese groups after the intervention. The overweight group showed a statistically significant improvement ($p = .03$), but the improvement in the obese group was not statistically significant ($p = .19$). The rate of treatment also yielded mixed results. Again, there was improvement post-intervention in both groups, however, in the overweight group statistical significance was not established ($p = .07$). Statistically significant improvement post-intervention was established in the obese group ($p = .01$).

The results from this EBP project mirror the results from the literature review. The evidence used in this EBP project were seven systematic reviews or evidence summaries and once quasi-experimental longitudinal study. The complexity of guideline implementation and the various studies included in the systematic reviews had many different intervention strategies. These factors make interpretation of the study's results complicated and often yielded mixed results. While Alagoz et al. (2018) systematic review of RCTs supports the use of multi-faceted interventions especially with practice facilitators or AD with follow-up, some of the individual RCTs in the review demonstrated mixed results. These RCTs showed improvement in one outcome but not in another which are similar to the findings in this EBP project. Alagoz et al. (2018) explained the results may be due to lack of follow-up since five of the six studies with no improvement that utilized AD and audit with feedback had no follow-up. This EBP project did provide communication via weekly email, however, it did not provide on-site support which Alagoz et al. (2018) noted as a possible cause of lack of improvement in measured outcomes. The need for follow-up with practice facilitation is supported by Pantoja et al. (2017).

The two Joanna Briggs evidence summaries used in this project provided support for a multi-faceted intervention with AD and audit with feedback. This EBP project showed results that were consistent with Slade (2018) and Gromersall (2017). Slade (2018) showed there was a small but consistent improvement in prescribing behaviors, but complex behaviors showed positive but mixed results. Gromersall (2017) notes small improvements in professional practice with outreach, reminders, and audit with feedback.

Chan et al. (2017) noted that barriers to guideline implementation were time, resources, knowledge deficits regarding the guideline, and workflow. In this EBP project, weekly communication included pre-made order sets to simplify use and more resources sent via email. During the AD sessions, resources were available for providers to see and information on cost and how to order the resources were provided. The goal throughout the project was to help overcome these barriers making the process of diagnosing and treating overweight and obesity easier and less time consuming for providers. Time constraints are especially important when viewed by the number of patients seen for adult health exams and the percentage that are overweight or obese. In the pre-intervention period, 77.3% of patient seen for wellness were overweight or obese and 77.8% in the post-intervention period. Providers are overwhelmed with over three-quarters of patients requiring additional time to discuss and counsel them on weight, nutrition, and exercise. Providing time-saving strategies to help providers meet the needs of the patients is another component of the multi-faceted intervention. According to Lewin's Theory, for change to occur driving forces must overcome resisting forces. Providing pre-made order sets can overcome the resistance cause by lack of time.

While the mixed results from this EBP project are consistent with the results from the literature review, several issues may have confounded the results of this EBP project. The pre- and post-intervention data collected was subjected to bias related to the small sample size. The EBP project occurred during periods when several providers were out of the office resulting in

differences in their pre- and post-intervention visits. The pre-intervention data were collected during September and October 2018. Some of the providers were on vacation and contributed only one week of data during that time. The final data collection occurred at the end of November through December. Clinics were closed for the holidays resulting in some providers having fewer visits than in the pre-intervention data.

While the total number of patients seen for an adult health exam was not statistically different pre- (N= 163) and post-intervention (N=176), there was a difference in the contribution of the various providers. For example, one provider was new and did not see any patients for adult health exams in the pre-intervention period but saw eight in the post-intervention period. While another provider saw 16 patients in the pre-intervention period and 36 in the post-intervention period, another provider saw 19 pre-intervention and five post-intervention. Some providers had minimal effect seeing only 2-6 patients while others saw 20-30 patients. With a small sample size, this variation between providers can have a substantial effect on the outcome.

Two of the subjects were extremely high performers in both the pre- and post-intervention. One provider achieved 100% in diagnosing and treating both overweight and obese patients in both the pre- and post-intervention. Another subject was at 100% in diagnosing overweight in pre-and post-intervention and 80% for diagnosing and 75% for treating obesity in the pre-treatment data which increased to 100% for diagnosing and treating obesity in the post-intervention data. In a small sample, these factors can skew the results considerably.

The subjects for this EBP project were self-selected. Self-selection introduces selection bias into the project. The providers that decided to participate in this project may have an interest in treating obesity and overweight or perhaps just interested in learning more about the

topic. These differences can affect the outcomes, especially when compared to subjects that do not have any interest in the topic.

The secondary outcome explored APRNs current knowledge, feelings, and beliefs regarding treating patients with overweight and obesity. The survey was adapted and shortened with the permission of the author. The original survey was completed to accumulate information and data on providers knowledge. It was not used as a repeated measure following an intervention. In this EBP project, there were only five questions that showed statistically significant results.

Results from the original survey Glauser et al. (2015) showed that only 20% of primary care physicians could correctly identify ghrelin as the hormone that increases hunger and food intake while 76.9% of the APRNs in the pre-intervention survey in this EBP project correctly identified the hormone which did not change post-intervention. Glauser et al. (2015) stated only 33% of primary care physicians were able to identify a weight loss medication's mode of action correctly. In this EBP project, in the pre-intervention survey, 75% of the subjects correctly identified the mode of action, and this increased to 84.6% post-intervention. This information shows the APRNs in the EBP project are probably more knowledgeable regarding overweight and obesity than others before the start of the project. Although these results are not statistically significant, there was a slight increase in the knowledge of the mode of action after the AD session. The results that the subjects in this EBP project are significantly higher than Glauser et al. (2015) may be a factor of the self-selected APRNs are already interested in and treating patients with overweight and obesity. This selection bias may affect all the results of the project.

Guidelines usage and familiarity has been noted as a barrier to treating patients with overweight and obesity (Glauser et al., 2015; Hayes et al., 2017; Turner et al., 2018). The

results from the pre-intervention survey are consistent with the literature. According to the original survey, on a 10-point Likert scale mean familiarities of guidelines were: AACE 5.6, USPSTF 5.6, and NHLBI 4.6. This EBP project used a four-point Likert scale. The subjects that selected “not familiar at all” or “slightly unfamiliar” were as follows: AACE 77%, USPSTF 46.2%, NBLBI 61.6%, and Endocrine Society 92.3%. Post-intervention the subjects selecting “not familiar at all” or “slightly unfamiliar” were as follows: AACE 41.7%, USPSTF 33.3%, NBLBI 83%, and Endocrine Society 58.4%. Using two-tailed Wilcoxon’s Signed-Ranks Test, there was a statistically significant result for the AACE and the Endocrine Society guideline. During the AD sessions, resources from AACE and the Endocrine Society were available for the subjects to see and evaluate. The AACE resources were especially well-received by the APRNs because they were user-friendly and helpful for prescribing obesity medication. The hands-on resources may explain why there was an improvement in both of these guidelines, but not the other two guidelines. The increase in the unfamiliarity post-intervention in the NHLBI guideline seems to have occurred in several subjects ranking the guideline as slightly familiar in the pre-intervention survey to slightly unfamiliar in the post-intervention survey. This change was not statistically significant since the two-tailed testing would have captured it during the data analysis ($z = 0.82, p = .41$).

Glauser et al. (2015) reported the 47% of primary care physicians selected “agree” or “somewhat agree” that obesity is the result of a lack of self-control and 81% selected “agree” or “somewhat agree” that patients are primarily responsible for their weight management. In this EBP project, in the pre-intervention survey, only 7.7% selected “somewhat agree” and none selected “agree” to lack of self-control as a cause of obesity. After the intervention, this dropped to no one selected “agree” or “somewhat agree.” The pre-intervention response to patients are primarily responsible for their own weight management was 84.7% of the APRNs selecting “somewhat agree” or “agree.” Post-intervention this decreased to 69.3% selecting “somewhat

agree” or “agree” representing a statistically significant difference. Again, these results indicate that the APRNs in this project may have a better understanding of obesity and overweight, especially when compared to the results of the original survey by Glauser et al. (2015).

In this EBP project, the pre- and post-intervention survey asked subjects to rate the significance of several barriers to communication when treating patients with overweight and obesity. Lack of resources to which they can refer overweight and obese patients were found to have a statistically significant result. In the pre-intervention, subjects rate lack of resources “slightly significant” or “extremely significant” 84.6% and after the intervention they rate it “slightly significant” or “extremely significant” 61.6%.

Lack of appropriate pharmacotherapy was well documented in the literature review (Glauser et al., 2015; Granara & Laurent, 2017; Hayes et al., 2017; Turner et al. 2018). In this EBP project, 11 of the 13 APRNs stated they prescribed weight loss medications before the intervention after the intervention 12 of the 13 APRNs stated they prescribed weight loss medications. Providers were asked the significance of different barriers to treating overweight and obesity. In the pre-intervention survey, 15.4% of the providers' rate unawareness/lack of knowledge of FDA approved weight loss therapies as "slightly significant." This decreased to 7.7% after the multi-faceted intervention. In the pre-intervention survey, 15.4% of the APRNs selected "extremely significant" for lack of safe and effective pharmacologic therapies. This decreased to 8.3% after the intervention. Providers were asked to rate their level of agreement with several statements. The APRNs were asked, “Currently available medications for obesity are safe.” In the pre-intervention survey, 48.5% selected “disagree” or “somewhat disagree” and in the post-intervention survey 30.8% selected “somewhat disagree” and none selected “disagree”. While Glauser et al. (2015) found that 42% of primary care physician selected "disagree" or "somewhat disagree." When asked, “Currently available medications are effective” 38.5% in the pre-intervention group disagreed or somewhat disagreed and 15.4% in

the post-intervention group disagreed or somewhat disagreed, and Glauser et al. (2015) noted 39% of primary care physicians selected disagreed or somewhat disagreed. While these results were not statistically significant, there was an improvement in understanding of medication usage and management. It is interesting to note that most of the APRNs were prescribing medications but almost half of them did not believe they were safe. The pre-intervention results were similar to the results Glauser et al. (2015) obtained in the original survey.

The final question from the survey that did have statistical significance was regarding obesity medication. The question asked the APRNs to what extent do various factors affect their decision to refer patients to bariatric surgery. The question asked them to rate the significance of the new weight loss drugs. In the pre-intervention survey, 38.5% of the APRNs rated the answer as "somewhat significant," and none rated it as "significant." In the post-intervention survey, 77% of the APRNs rated it as "somewhat significant" or "significant." Although this EBP project did not enroll physicians, the findings are consistent with Granara and Laurent's (2017) findings. Their survey results showed advanced practice clinicians with the majority being APRNs, had a significantly more favorable view of weight loss medications and higher weight loss expectations than physicians. They speculated that APRNs holistic approach may be the reason for this difference and that a holistic, patient-centered, individualized approach is the key to adequately addressing obesity (Granara and Laurent, 2017).

The changes in the familiarity of guidelines, who is responsible for managing weight, and availability of resources to refer patients shows a small but significant shift in overall practice. Providers are exhibiting confidence in the available resources to care for patients and a willingness to take on the care of these patients. It is a slow process which will need more time than eight weeks to continue. This illustrates the refreezing period of Lewin's Change Model. Providers should be incorporating this new knowledge into their practice. While there were only five questions from the survey with statistically significant results, there were several questions

with improvement. The small sample size makes achieving statistical significance difficult. It is encouraging to see improvement and as shown in the literature continued support and outreach could help continue and sustain the changes.

Evaluation of the Application of the Theoretical and EBP Frameworks

Lewin's Change Theory served as the theoretical framework for this EBP project. The Stetler Model provided a guide for the implementation of the project. Utilizing the two frameworks helped from the inception to the evaluation of this project.

Theoretical Framework

Lewin's Change Theory provided the theoretical underpinning to guide this project. Change is a complicated process employing a well-utilized theory helped anticipate, avoid, and eliminate possible barriers to successful implementation. This model was selected to overcome organizational and individual issues that might have made the project more difficult.

Stage one, unfreezing, is arguably one of the most critical stages of the three. During this stage, the sense of urgency and the need for change is created. The media and national health standards are beginning to emphasize the importance of healthy weight. The national and state level focus on the impact of obesity and overweight helped provide urgency for this project. This stage was scheduled to have several pre-recruitment emails sent to the providers in the medical group along with a discussion and an explanation about the project from the medical director at a quarterly staff meeting. Unfortunately, due to time constraints, the pre-recruitment emails and medical staff meeting did not come to fruition. The first email the providers received was a recruitment email outlining the need for the project, an explanation of the project, and their requirement if they decided to participate. The director of the medical group APRNs was instrumental in sending the recruitment emails and adding her support to this

vital cause. The email was sent twice since the number of subjects was not reached with the initial email.

There were many questions and interest generated with the emails. Several APRNs in specialty practice expressed interest, but the original research question was primary care so to maintain fidelity only APRNs in primary care were included. However, after about one week, the interest in the project seemed to cool. During this stage, it is essential to maintain interest over time with frequent contact by providing more information. The timeline for this EBP project did not allow for adequate development during this unfreezing period.

The second or changing stage started with the academic detailing sessions. During the AD sessions, providers received information on current statistics, trends, treatments, co-morbidities, and techniques to assist patients with overweight and obesity. Providers were introduced to clinical practice guidelines. The sessions were interactive and generated discussion and questions. Posters for patient rooms and the 5 A's of obesity were given to the providers to serve as reminders. The changing stage continued throughout the project. Weekly emails with more information and resources were sent to the providers. Audit with feedback was scheduled to occur at week three, but some providers received it later than week three. The final data collection period was adjusted to allow time to incorporate the audit with feedback into their practice before final data collection.

The third and final stage is refreezing. This is the period when the change is incorporated into the practice. Ideally, this is the goal once a change is made, it becomes the norm, the culture. In this EBP project, data from weeks seven and eight post-intervention were analyzed and reviewed. Statistical significance was demonstrated in two of the four primary outcome measures. The data from this EBP project were presented in poster format at the Coalition of Advanced Practice Nurses of Indiana (CAPNI) Conference. The data should be

collected again in six months or one year to determine if the providers have retained the information, skills, and maintained the changes.

In this EBP project, the three stages overlapped each other. There was not a point where one stage stops and the next one started. It flowed from one stage to another. While the unfreezing stage started during the recruiting of the APRNs into the project, the information and resources the APRNs received during the AD and the follow-up helped create more interest in the project and desire to learn. The knowledge and information they learned during the AD sessions created some of the desire to make changes. Many of the APRNs described feeling uncomfortable discussing weight with patients. Learning about obesity as a chronic disease and the pathophysiology of obesity seemed to provide confidence to discuss weight with patients. As they gained confidence and knowledge, they flowed into the changing stage incorporating these new skills and techniques into their practice. This stage takes time for providers to develop routines; providers may try different strategies to determine what works best for them. They may enlist the help of their medical assistants to find short cuts to diagnose patients since as already mentioned over three-quarters of their patients are either overweight or obese. Finally, refreezing occurs as the providers find their methodology and process and incorporate it into their practice.

EBP Framework

The EBP framework provides the methodology for implementing the EBP project. Utilizing an EBP framework provides structure, direction, and guidance to implement an EBP project. The Stetler Model was used to provide the blueprint for the implementation of the EBP project. The Stetler Model is ideally suited for this project since groups or lone practitioners can use it. The model has five phases: preparation, validation, comparative evaluation/decision making, translation/application, and evaluation (Stetler, 2001).

The Stetler Model was an exceedingly good fit for this project and complimented Lewin's Change Theory well with some overlap between stages and phases. The Stetler Model mirrored the exact process from literature review to final evaluation that a doctoral nursing student must master. The step by step progression of this model breaks the entire EBP process down into smaller tasks. While the model has five phases it is fluid, and phases flow together; they are not linear or clear cut (Melnik & Fineout-Overholt, 2015).

Phase I of this project began in the spring of 2018. This was the preparation phase of the project. Several ideas were conceived during this period, and the initial problem and questions were developed. The problem was identified, and initial research seeking systematic reviews was started. This process was continued into the summer of 2018 with the development of the PICOT question and the formal search strategy. Phase II and Phase III occurred in the summer of 2018. The formal literature review and the critique and synthesis of the evidence occurred during this period. These phases provided the support to advance to Phase IV of the project, the translation of the evidence into the pilot project.

Phase IV occurred from September 24, 2018, to December 29, 2018. The decision to do a formal pilot was made, and the project was implemented. The Stetler Model suggests multiple strategies for implementing change such as opinion leaders, interactive education, reminders, and audits. This EBP project incorporated all of those suggested strategies into the multi-faceted intervention. The project is defined in Phase IV. This EBP project uses instrumental research utilization at a formal organizational level. There is also symbolic research utilization since the project is a proposal for change, trying to get providers to change how they think about and treat overweight and obesity. While the EBP project occurred at the organization level, it occurred in a subgroup of the organization. The project may continue on a larger scale across the entire organization.

Phase V occurred from January 18, 2019, to February 21, 2019. The final phase on the model is the evaluation phase. In this project, two of the four primary outcomes had statistically significant results along with five survey questions. The instrumental and symbolic use at the organizational level shows promise with this multi-faceted intervention. However, the cost, travel, and time of a single individual providing the AD and follow-up may not be cost or time-effective. This is especially obvious in light of the evidence that practice facilitators increase outcomes (Alagoz et al., 2018; Pantoja et al., 2017). Utilizing local experts to serve as practice facilitators would be more cost and time effective cutting down on the travel time across the state.

The Stutler Model requires an evaluation of the formative data and summative data. Formative data provides information on the integrity of the intervention (Stetler, 2009). In this EBP project, the intervention was maintained and provided equally to all subjects. The only deviation occurred during the audit with feedback. The process unexpectedly required some deviation. While all of the subjects received the audit with feedback, some of the subjects did not receive the feedback until week five. The final data collection date was adjusted to allow for the feedback to be incorporated into practice. All other aspects of the intervention were provided to all subjects. Results and findings from this project were used to answer the PICOT question and for no other use. The summative data was used to determine the EBP project outcome or goal achievement. As noted, the results were mixed in the EBP project. However, due to the small sample size and other limitations of this project any significant results show support for future projects. The final evaluation reveals adherence to both the organization's IRB and Valparaíso's IRB. Throughout the EBP project, there were several requests for changes to the protocol and requests and approval from the IRBs was granted.

Strengths and Limitations of the EBP Project

Strengths

This EBP project had several strengths. There was considerable support for the project from the leadership of the organization. The director of the APRNs for the medical group assisted with recruitment and served as the site facilitator. The quality team and population health provided support with acquiring data from the organization. The manager of practice operations and director of practice operations provided support with resources. They also provided the DNP project facilitator time for outreach and time to work on the EBP project. The transformation specialist worked tirelessly to mine the data from the EHR, but in the end, the results were inconsistent. The project timing coincided with organizational projects on obesity and another pilot program in development. This provided the right project at the right time in the right organization.

The subjects while all female they did practice in a diverse practice setting. Designing this EBP project to include sites throughout a midwestern state while time and labor intensive increased the generalizability of the findings. The subjects reported their practice site as urban (n=1), suburban (n=3), and rural (n=9). In addition, there was a good mix of experience between the subjects. The years of experience ranged from 0-2 years to >9 years. The data was not analyzed by years in practice or practice site, but it could be analyzed in the future to see if any of those factors affect the rate of diagnosing or treating overweight or obesity. The pre- and post-intervention chart review produced a fair amount of data for analysis. The pre-intervention data (N=163) and post-intervention data (N=176) were similar with no significant differences. These factors lend strength to the generalizability of the results.

The subjects were open to the education provided at the AD sessions. The academic detailing sessions were well received and generated considerable discussion and interaction. After the AD session, the DNP project facilitator received many questions and requests for

additional information which was provided. The weekly communication was also well received often with additional questions or comments. The interest of the APRNs was surprising to the DNP project facilitator during the AD sessions. Providers are hectic and often overwhelmed with work-related duties, however, the subjects were curious and excited to learn about resources during AD sessions and never rushed the DNP project facilitator.

The DNP project facilitator completed the AD sessions and all communication. The DNP project facilitator was also a practicing family nurse practitioner in the organization. This was perceived as an additional strength for the project. Understanding the organizational culture is a benefit when implementing any EBP project, especially one involving change. Understanding the organizational strengths and being an insider was a benefit. Providing the AD as a peer was better received than if an outsider completed the AD. This is especially true when addressing barriers. Intimate knowledge of their work day, expectations, and challenges, made it easier to address barriers to diagnosis and treatment during the AD sessions. Working within an organization, there is also a reputation which can add credibility.

Limitations

This EBP project had several limitations in addition to its strengths. Most notably, the sample size and selection. As noted, there were 13 APRNs in the project. They were self-selected from APRNs at a medical group. The self-selection process creates bias. Those opting in may have an interest in the subject and be more inclined to change their practice as a result of the intervention. Those that enrolled in the project may have a particular interest in advancing nursing practice through nursing education. As a result, they may also be more inclined to change practice as a result of the intervention than someone else. The size of the sample is too small to draw any real conclusions. Especially as mentioned, the small sample is subject to one or two participant's data skewing the results.

This EBP project occurred over eight weeks. The timing of the project was unfortunate in that it occurred over fall break, Thanksgiving, and Christmas. Some providers were away, and some offices were closed for the holiday. Ideally, the project would have occurred over a longer time frame, and data could have been collected for a more extended period than two weeks. This would eliminate the effect of one or two providers being on vacation for a week.

Stage 1 of Lewin's Change Theory is all about creating the desire for change. During this unfreezing period, the problem is communicated to the group, and the sense of urgency created. By skillfully allowing the story to unfold with the right amount of information provided at the right time, the change agent will create excitement, curiosity, and urgency for the proposed change. Unfortunately, due to time constraints, this stage was not adequately developed. This stage was rushed through which can compromise all the subsequent stages of the change process.

The original EBP design was to allow the EMR to sort the data. However, after numerous attempts and trials, this did not yield consistently reproducible results. As a result, all charts were hand audited which was time intensive. A better system of identifying charts of patients seen for adult health exam through data mining must be identified if this project is going to be repeated on a larger scale. Hand auditing charts introduced human error.

While there was frequent communication with the subjects after the AD session, this was done weekly in the form of emails with additional resources added. Ideally, the studies with the best outcomes provided on-site change agents to help incorporate the change into practice. Unfortunately, due to the time constraint of this project, the DNP project facilitator serving as the only outreach provider, and the clinic sites located throughout the state onsite follow up visits were not possible. Future projects should incorporate adequate on-site follow-up.

While the survey used in this project was published in *Obesity Research and Clinical Practice*, the authors tested the survey through a pilot test. The survey was not validated statistically. The survey was not validated during this EBP project. The survey was used pre- and post-intervention; the purpose was to look for changes in results. Additionally, the small sample size would not produce meaningful results. Therefore, when reviewing the secondary results, they must be viewed in this context.

Implications for the Future

Practice

The lag from research to practice is significant, about 17 years (Morris, Wooding, Grant, 2011). Once the knowledge becomes accepted in mainstream healthcare, there is a further lag in the uptake or usage in practice. Some knowledge takes longer to become standard practice than others. While there are many reasons for this slow process, patients are often not receiving the best possible, evidence-based care. This EBP project demonstrates this phenomenon. Clinical practice guidelines exist but are not being utilized. In the pre-intervention survey, the subjects stated they are “slightly familiar” or “extremely familiar” with the following guidelines: AACE 23.1% (none stating extremely familiar), USPSTF 53.9%, NHLBI 38.5% (none stating extremely familiar), and Endocrine Society 7.7% (none stating extremely familiar). After AD, subjects stated are “slightly familiar” or “extremely familiar” with the following guidelines: AACE 58.3%, USPSTF 66.7%, NHLBI 16.6%, and Endocrine Society 41.7%.

This EBP project can be used to implement and improve providers use of guidelines or other practice change. Doctoral prepared APRNs can lead teams to develop, organize, and implement practice change in many settings. The skills of the DNP in identifying a problem or need for change, accumulating and evaluating evidence to support the change, developing a plan for change, leading the team, and translating evidence into practice makes the DNP

prepared APRN invaluable and irreplaceable. While this project yielded mixed results consistent with the literature, Alagoz et al. (2018) and Pantoja et al. (2017) demonstrated improved results with practice facilitators or when AD is followed with regular on-site follow-up. Future projects need to ensure that adequate follow up is a component of the multi-faceted intervention.

Theory

This EBP project is about change and change is a complicated process. Utilizing a theoretical change theory to help overcome some of the predictable barriers to implementing change can help increase the chances of success. Using Lewin's Change Theory helped guide the process for this EBP project. The Stetler Model served as the blueprint to execute the project. The EBP framework will continue to provide structure as the results are disseminated to the subjects and the organization. If the organization continues with this program, the same principles that guided the EBP project will guide the continuation of the project. In future projects involving change, it is imperative to allow adequate time for Stage 1, the unfreezing stage. This is the pivotal part of the process. Rushing through the unfreezing stage can jeopardize the entire change process. Future projects need to allow adequate time to set the stage and create an interest in the change.

Research

This EBP project has mixed results. A more extensive study with more providers would be beneficial to determine the effect of the intervention. Ideally, future studies should occur over a longer timeframe to determine the sustainability of the change. Future studies should include more onsite visits since the research shows follow-up especially onsite improves outcomes. This EBP project enrolled APRNs only, a similar project with physicians and APRNs could help determine if there are differences between the providers as noted by Granara and Laurent

(2017). Also, future research should focus on a similar study without self-selected subjects to eliminate some of the sample bias. A follow-up qualitative study identifying barriers to the process of diagnosing and treating obesity and overweight could question the original subjects in this EBP project. These results may help identify barriers and provide feedback about the intervention. Gomersall (2017) suggests that identifying local barriers and targeting strategies to overcome these barriers will increase success in guideline dissemination.

Education

This EBP project clearly defines the need for a formal education process for providers to support practice change. This is also supported by the evidence in the literature. Regardless of the practice change, providers are reluctant to make changes. The process is long and arduous. Organizations must understand the process and the methodology required to change practice. This EBP project outlines the process of helping providers use clinical practice guidelines. Organizations could enlist providers with special interests or knowledge in certain areas and build teams to provide AD on topics or behaviors that need to change. The safety and efficacy of weight loss medications are well documented, but providers are reluctant to offer these medications to patients (Glauser et al., 2015; Granara & Laurent, 2017; Hayes et al., 2017; Turner et al. 2018). Focusing on educating providers could close the gap and provide access to medications for many more patients with overweight and obesity.

Providing education to providers is one aspect; in addition, providers must also educate their patients. Leveraging the EMR with patient education accessible at the point of care during an office visit will help providers disseminate relevant information to patients. Availability in the EMR at the point of care empowers the providers with knowledge during the office visit. In this EBP project, the subjects were given order sets already populated with talking points. The provider could add to the information or delete information if they desired. Building on the order

sets, the technical support teams, and quality teams should continue to create and improve order sets for providers making their role easier.

Conclusion

This EBP project answered the PICOT question: *“Among primary care APRNs employed at a hospital-owned medical group, does the introduction of a multi-faceted intervention versus current practice of no protocol/tool improve the rate of obesity and overweight diagnoses and documented treatment plan in eight weeks?”* As discussed, the results were mixed in for the primary and secondary outcome measures. Encouraging guideline usage and change in practice require complex behavior changes. The evidence shows mixed results on changing complex behaviors. The mixed results from this EBP project are promising. The low-tech, low-cost intervention had a positive impact on the providers. Adding follow-up has been documented to increase the outcome measures. Therefore, support for the continuation of the project with some modifications and additional follow-up should be recommended. Not only for this topic but the same principles can be applied to any guideline implementation.

In addition to applying evidence to improve the uptake of clinical practice guidelines in treating patients with overweight and obesity, this EBP project highlighted the attributes of the doctoral prepared APRN. In addition to the clinical skills required for patient care, the doctoral prepare APRN brings many other skills to the healthcare team. This project demonstrated the ability of the DNP to serve as a team leader, devising, developing, and implementing a plan for change. The DNP student also served as the subject matter expert providing the academic outreach to the APRNs and serving as a resource for questions related to obesity management. The DNP student was the change agent identifying the need for change, finding the evidence to support the change, and finally evaluating the outcome of the change process.

The healthcare landscape is everchanging. Patients treated in primary care are becoming exceedingly more complex in their healthcare needs. Overweight and obesity is a contributory factor causing patients to have numerous co-morbidities. Appropriate and proactively treating patients will help eliminate some of the co-morbidities associated with overweight and obesity. Aggressive education targeting providers must become a priority to change the trajectory of overweight and obesity. DNPs are exceptionally well suited to lead the change by providing education and leadership at the organizational, state, and national level.

APPENDIX A

Demographics

Please complete the survey below.

Thank you!

Do you screen for obesity?	<input type="radio"/> Yes <input type="radio"/> No
Which measures do you use to screen and identify a patient as obese?	<input type="checkbox"/> Weight <input type="checkbox"/> Body Mass Index (BMI) <input type="checkbox"/> Waist Circumference <input type="checkbox"/> Weight/height Table
Among the following, which do you believe primary care providers are responsible for as part of their scope of practice, the practice environment, or their community?	<input type="checkbox"/> Screening for overweight and obesity <input type="checkbox"/> Nutrition and/or physical activity counseling of overweight and obese patients <input type="checkbox"/> Prevention of overweight and obesity through counseling <input type="checkbox"/> Screening, evaluation, and management of obesity-related co-morbidities (e.g. type 2 diabetes) <input type="checkbox"/> Prescription of weight loss medications and associated monitoring <input type="checkbox"/> Management and referral of appropriate patients for bariatric surgery <input type="checkbox"/> Management of patients including counseling and monitoring after bariatric surgery <input type="checkbox"/> Referral of overweight and obese patients to weight loss resources in the community <input type="checkbox"/> Collaborating with dietitians or other professionals to develop weight loss plan for individual patients <input type="checkbox"/> Referral to dietitians <input type="checkbox"/> Cognitive behavioral therapy and related approaches to obesity <input type="checkbox"/> Regular tracking of all patients' weight <input type="checkbox"/> Encouraging a healthy lifestyle among physicians, nurses, and others with whom you work with <input type="checkbox"/> Advocacy for a healthier community (e.g. healthy school lunches, more recreational facilities) <input type="checkbox"/> Motivating obese and overweight patients to recognize/acknowledge weight problem and achieve weight loss goals

Please rate the significance of each of the following barriers in communicating with your overweight and obese patients about their weight. (Select one for each)				
	1= Not significant	2= Minimally significant	3=Somewhat significant	4=Extremely significant
	1 Not significant	2	3	4 Extremely significant
Fear of offending the patient by raising the issue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concern that the patient is not interested in discussing the issue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of training on how to discuss	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of resources to which I can refer overweight and obese patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low likelihood of succeeding in helping my patients achieve and maintain a healthy weight	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please rate the significance of each of the following barriers in managing obesity (select one for each)				
	1= Not significant	2= Minimally significant	3=Somewhat significant	4=Extremely significant
	1 Not significant	2	3	4 Extremely significant
Reimbursement issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of training on how to manage and diagnose obesity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unawareness/lack of knowledge of FDA approved weight loss therapies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of safe and effective pharmacologic therapies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risks associated with invasive interventions outweigh the potential benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please rate your agreement with each of the following statements. (select one for each)				
	Disagree	Somewhat disagree	Somewhat agree	Agree
Patients are primarily responsible for their own weight management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Obesity is the result of a lack of self-control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can help overweight and obese patients achieve a healthy weight	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Currently available medication for obesity medication are effective	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Currently available medications for obesity are safe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Few patients can lose weight through lifestyle changes alone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guidelines for management of obesity are useful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A modest weight loss of 5-10% can produce clinical benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Obesity is a risk factor for other chronic diseases (T2DM, dyslipidemia, hypertension, certain cancers, arthritis)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Obesity is a disease as defined by the AMA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

A 51-year-old Mexican American construction worker recently started a new job comes to see you for the first time for an employee physical. He is married and has 3 children. He states that he has had high blood pressure in the past, but no other significant medical history. He smokes 1 pack per day, no medications, drinks alcohol rarely, no illegal drugs, and no allergies. PE is WNL except he is 5'7", weight 183lbs (BMI 28.7) and BP 150/90.

(Use information to answer next four questions)

How likely are you to address the issue of his weight at this visit? (select one)

- ☐ 1 Not likely at all
☐ 2
☐ 3
☐ 4 Extremely likely

Which of the following statements do you believe is the most appropriate way to begin the discussion about his weight? (select one answer)

- ☐ "You have a problem with your weight. You need to lose weight to improve your overall health."
☐ "I am concerned about both your blood pressure and your weight, which is in the overweight range. Is this something you would like to work on together?"
☐ "Have you tried to lose weight in the past? What have you tried?"
☐ "Your BMI is between 25 and 30. You therefore need to lose weight"
☐ "If you don't lose weight, you're going to have to go on medication."

How likely are you to do each of the following at this initial visit ? (select one answer per question)

	1= Not likely at all	2= Somewhat unlikely	3=Somewhat likely	4=Extremely likely
	1 Not likely at all	2	3	4 Extremely likely
Repeat blood pressure measurement and arrange for follow-up for blood pressure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Counsel on nutrition and/or weight loss	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recommend and counsel about salt restriction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recommend and counsel about increasing physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Counsel on smoking cessation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How likely are you to screen for the following at the initial visit? (select one answer of each question)

	1= Not likely at all	2= Somewhat unlikely	3=Somewhat likely	4=Extremely likely
	1 Not likely	2	3	4 Extremely likely
Type 2 diabetes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dyslipidemia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hypertension	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Arthritis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Colon cancer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You make recommendations for lifestyle changes for weight loss and better blood pressure control and ask him to follow up in 8 weeks. He misses that appointment and returns one year later. Shortly after the last appointment he lost his job and his health insurance. He has not worked in almost 10 months. He has not been able to maintain the lifestyle changes. He states he feels well. His weight is now 217 lbs (BMI 34) and BP 160/100. The PE is WNL.

For this patient, which do you believe are the indications for weight loss medications? (select all that apply)

- ☐ His BMI ≥ 30 kg / m²
- ☐ His co-morbid hypertension
- ☐ His Mexican American ancestry
- ☐ His failure to lose weight after recommendations for lifestyle changes

How familiar are you with each of the following clinical practice guidelines? (select on for each)

	1= Not familiar at all	2= minimally familiar	3=Somewhat familiar	4=Extremely familiar
	1 Not familiar at all	2	3	4 Extremely familiar
American Association of Clinical Endocrinologist	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
U.S. Preventative Services Task Force	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
NHLBI Guideline on Identification, evaluation, and treatment of overweight and obesity in adults	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Endocrine Society Pharmacological Management of Obesity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

A 31-year-old African American woman returns for a check-up for her asthma. She is feeling well. She is a non smoker and does not drink alcohol. She is married with 2 young children. She had a tubal ligation and no other significant medical history. Her only medications are albuterol PRN and fluticasone inhaler 2 puffs daily. She is an RN at the local hospital. Her family medical history is unknown as she is adopted. Height 5'5"; weight 284 lb; BMI 47.4; BP 120/70; and the rest of the PE is WNL.

(Use information to answer next two questions)

Which of the following test(s) would you recommend for this patient? (select all that apply)

- ☐ CBC
- ☐ Fasting glucose
- ☐ Hemoglobin A1C
- ☐ Fasting lipid profile
- ☐ Sleep study
- ☐ Liver function tests
- ☐ TSH
- ☐ Abdominal ultrasound
- ☐ Screening for depression
- ☐ Renal function tests

Which medications are currently FDA-approved for the long-term treatment of obesity in patients like this one? (select all that apply)

- ☐ Sympathomimetic amine-antiepileptic extended release (Qsymia)
- ☐ Serotonin 2c receptor agonist (Belviq)
- ☐ Lipase inhibitor (Orlistat)
- ☐ GLP1 agonist (Saxenda)
- ☐ Phentermine

Her labs are unremarkable. You recommend lifestyle changes and ask her to return in 3 months. She returns as requested and states she has had some success in increasing her level of physical activity and in restricting her portions. However, she has gained an additional 19 pounds (BMI=50.4kg/m²). Her blood pressure and PE are normal.

Which one of the options is your preferred management strategy at this time? (select one answer)

- ☐ Continued counseling about lifestyle changes only
☐ Pharmacotherapy with FDA-approved medication in combination with lifestyle changes
☐ Referral for bariatric surgery
☐ Referral to a dietician, commercial weight loss program, or other external resource only

To what extent do the following factors influence your decision to refer a patient for bariatric surgery? (select one answer for each)

1= Not at all influential 2= Minimally influential 3=Somewhat influential 4=Extremely influential

	1 Not at all influential	2	3	4 Extremely influential
Patient's BMI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient's obesity-related co-morbidities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient's age	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of new weight loss drugs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient's lack of weight loss with lifestyle changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety profile of drug treatments for obesity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risks and complications from bariatric surgery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient requests or is interested in surgery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you prescribe medication for weight loss?

- ☐ yes
☐ no

Which of the following statements is correct?

- ☐ Lipase inhibitor promotes weight loss by acting centrally on the serotonergic system
☐ Serotonin 2c receptor agonist acts primarily on the 5HT_{2c} receptor to promote weight loss
☐ Sympathomimetic amine promotes weight loss by restricting absorption of fat from the small intestine
☐ Aminoketone antidepressant promotes weight loss primarily through its action on the cannabinoid CB₁ receptor

To what extent do the following factors influence your decision to refer a patient for bariatric surgery? (select one answer for each)

1= Not at all influential 2= Minimally influential 3=Somewhat influential 4=Extremely influential

	1 Not at all influential	2	3	4 Extremely influential
Patient's BMI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient's obesity-related co-morbidities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient's age	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of new weight loss drugs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient's lack of weight loss with lifestyle changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety profile of drug treatments for obesity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risks and complications from bariatric surgery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient requests or is interested in surgery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you prescribe medication for weight loss? ☐ yes
☐ no

Which of the following statements is correct?

- ☐ Lipase inhibitor promotes weight loss by acting centrally on the serotonergic system
- ☐ Serotonin 2c receptor agonist acts primarily on the 5HT_{2c} receptor to promote weight loss
- ☐ Sympathomimetic amine promotes weight loss by restricting absorption of fat from the small intestine
- ☐ Aminoketone antidepressant promotes weight loss primarily through its action on the cannabinoid CB₁ receptor

Which one of the following hormones increases food intake?

- ☐ Glucagon-like-peptide-1
☐ Ghrelin
☐ Cholecystokinin
☐ Amylin

How significant are each of the following in your decision to select a weight loss medication? (select one for each)

1= Not significant 2= Minimally significant 3=Somewhat significant 4=Extremely significant

	1 Not significant	2	3	4 Extremely significant
Route	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dosing frequency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Percent weight loss	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complications (hypertension, depression)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX B

I am seeking primary care APRNs to participate in an evidence-based practice project for my DNP at Valparaiso University.

The goal of this project is to determine if a multi-faceted intervention can increase the frequency of diagnoses and treatment overweight and obesity among APRNs in primary care. The number of patients with overweight and obesity is growing annually. Indiana is currently ranked as the 10th most obese state. Despite this national epidemic, many patients are not being diagnosed and the patients with a diagnosis are not being treated appropriately. My practice treats many patients with overweight and obesity. It is my calling and passion. My hope is that this project will help other providers feel more comfortable treating patients with obesity and overweight and ultimately more patients will receive the care they desperately need.

The project will entail an on-site meeting that will include up to date information regarding diagnosing and treating patients with overweight and obesity. The meeting will take about one hour and will take place at your office. In addition, you will be asked to complete a short online survey before and after the meeting. The expected dates for the educational meeting are in October.

That is all that will be required from anyone participating in the project. There will be chart audits to determine the number of patients diagnosed with obesity and overweight before the meeting and after the meeting. No patient information will be stored or recorded.

I hope that you will consider taking part in this important project.

Please feel free to contact me with any questions you may have regarding the project. Thank you for considering participating in this project.

Susan Disser, MSN, FNP-C

susan.disser@ascension.org

317-418-6737 cell

317-456-1100 office

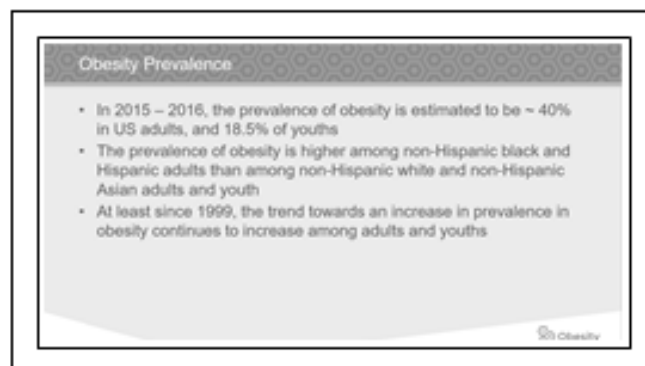
APPENDIX C



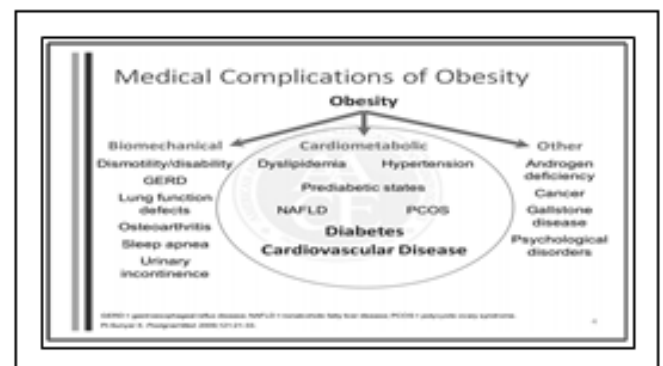
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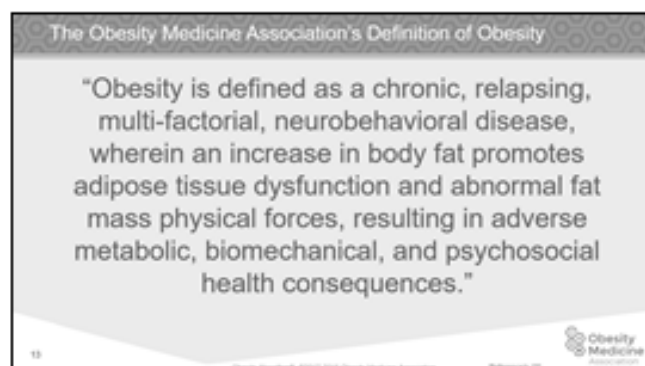
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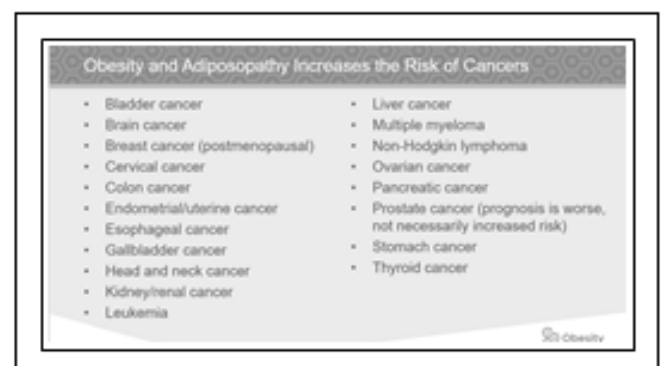
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6

Metabolic Manifestations of Adiposopathy

- | | |
|---|--|
| • High blood glucose (diabetes mellitus, type 2 diabetes mellitus) | • Insulin resistance |
| • High blood pressure | • Hypocholesterolemia (fatty liver) |
| • Metabolic syndrome | • Hyperuricemia and gout |
| • Adipose-specific dyslipidemia | • Cholelithiasis |
| • Increased triglyceride levels | • Acanthosis nigricans |
| • Decreased high-density lipoprotein cholesterol levels | • Nephrolithiasis |
| • Increased atherogenic particle number (increased apolipoprotein B) | • Glomerulopathy |
| • Increased proportion of small, dense, low-density lipoprotein particles | • Pro-thrombotic predisposition |
| • Increased triglyceride-rich lipoproteins | • Neuropsychiatric diseases (such as worsening depression due to hyposecretory immune and endocrine responses) |
| • Increased lipoprotein-remnants | • Asthma (due to adipose-specific immune and endocrine responses) |
| | • Worsening of other inflammatory diseases |

Sea density

7

Obesity-Related Impairments in Hormonal Regulation of Appetite and Energy Balance

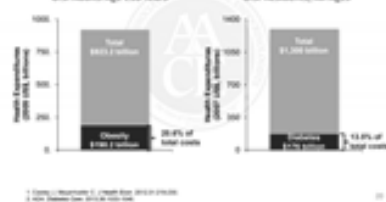
Key Hormone Changes Associated with Weight Gain and Regain

Hormone	Source	Normal function	Alteration
Cholecystokinin (CCK)	Duodenum	Suppress appetite	Levels decrease during dieting and weight loss
Glucose-dependent insulinotropic polypeptide (GIP)	Duodenum, jejunum	Energy storage	Levels increase during dieting and weight loss
Ghrelin	Gastric fundus	Stimulate appetite, particularly for high-fat, high-sugar foods	Levels increase during dieting and weight loss
Glucagon-like peptide 1 (GLP-1)	Ileum	Suppress appetite and increase satiety	Decreased functionality

10

Obesity-Related Illness Accounts for One-Fifth of U.S. Healthcare Costs

Obesity Costs ¹	Diabetes Costs ²
U.S. Adults Age ≥18 Years	U.S. Residents, All Ages
<p>2007: \$147.1 billion</p> <p>2010: \$160.0 billion</p> <p>2015: \$175.0 billion</p> <p>2020: \$190.0 billion</p>	<p>2007: \$100.0 billion</p> <p>2010: \$105.0 billion</p> <p>2015: \$110.0 billion</p> <p>2020: \$115.0 billion</p>



8

Key Principles

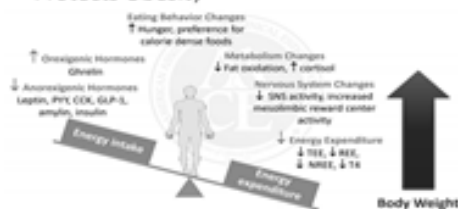
Early Intervention Means Addressing Root Causes and Removing Roadblocks

- Successful obesity management requires identifying and addressing both the 'root causes' of weight gain as well as the barriers to weight management.
- Weight gain may result from a reduction in metabolic rate, overeating, or reduced physical activity secondary to biological, psychological or socioeconomic factors.
- Many of these factors also pose significant barriers to weight management.

Title of Monthly Management © 1992 Creative Health Systems

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Adaptations to Weight Loss: Obesity Protects Obesity



DOI: 10.1002/anie.201505010 | please see Table 1. MSSE = mean-squared error; F10 = paper synthesis; device yield; MSF = mean-squared error; F5 = synthesis; F2 = test energy expenditure. Reaction 7: $\text{Pb}^{2+} + 2\text{H}_2\text{O} \rightarrow \text{PbO} + 2\text{H}^+$; 2015 100 001 001.

839

9

Motivational Interviewing

Definition	Technique
<ul style="list-style-type: none"> ▪ A guiding style of communication that helps: <ul style="list-style-type: none"> • Engage patients in self-care • Clarify their strengths and weaknesses • Evaluate their own motivations for change • Promotes autonomy of decision making 	<ul style="list-style-type: none"> ▪ Ask <ul style="list-style-type: none"> • Use open-ended questions to invite the patient to consider how and why they might change ▪ Listen <ul style="list-style-type: none"> • Understand the patient's experience • Summarize with reflective listening ▪ Inform <ul style="list-style-type: none"> • Ask permission to provide information • Ask what the implications might be for the patient

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Motivational Interviewing Techniques: 5A's of Obesity Management

Ask	<ul style="list-style-type: none"> Ask for permission to discuss body weight Explore readiness for change
Assess	<ul style="list-style-type: none"> Assess BMI, waist circumference, and obesity stage Explore drivers and complications of excess weight
Advise	<ul style="list-style-type: none"> Advise the patient about the health risks of obesity, the benefits of modest weight loss (i.e., 5-10 percent), the need for long-term strategy, and treatment options
Agree	<ul style="list-style-type: none"> Agree on realistic weight loss expectations, targets, behavioral changes, and specific goals of the treatment plan
Arrange/Assist	<ul style="list-style-type: none"> Focus on identifying and addressing barriers, provide resources, assist in finding and consulting with appropriate providers, arrange regular follow-up

Obesity Medicine

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ASSESS

Assess for Obesity Drivers, Complications, and Barriers

Use the 4Ms framework to assess Mental, Mechanical, Metabolic, and Monetary drivers, complications, and barriers to weight management.

The 4Ms of Obesity

Mental Cognition Depression Attention Deficit Anxiety Personality Eating Disorder Trauma Stigmatization	Mechanical Sleep Apnea Irritable Bowel Chronic Pain Reflux Disease Osteoarthritis Thyroid Issues Medication Fluid Retention	Metabolic Type 2 Diabetes Dyslipidemia Hypertension Gout Fatty Liver Endometriosis PCOS Cancer	Monetary Education Employment Insurance Housing Food Access Transportation Weight Loss Programs
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Obesity Medicine

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ASK

Be Non-Judgemental

- Do NOT blame, threaten, or provoke guilt in your patient.
- Do NOT make assumptions about their lifestyles or motivation. (your patient may already be on a diet or have already lost weight).
- Do acknowledge that weight management is difficult and hard to sustain.

Obesity Medicine

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ADVISE

- Advise on Obesity Risks
- Explain Benefits of Modest Weight Loss
- Explain Need for Long-Term Strategy
- Discuss Treatment Options

Obesity Medicine

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ASSESS

Assess Obesity Class and Stage

- Obesity Class (BMI) is based on BMI and is a measure of how big the patient is.
- Obesity Stage (EOSS) is based on the MECHANICAL, METABOLIC, and FUNCTIONAL impact of obesity and is a measure of how ACTIVE the patient is.
- Refer to your provider for additional information regarding Class/Stage Indicators.

Obesity Class	BMI	Stage
Underweight	<18.5	Stage 1: End Stage
Normal weight	18.5 - 24.9	Stage 2: End Stage
Overweight	25.0 - 29.9	Stage 3: End Stage
Obesity Class I	30.0 - 34.9	Stage 4: End Stage
Obesity Class II	35.0 - 39.9	Stage 5: End Stage
Obesity Class III	≥ 40	Stage 6: End Stage

Obesity Stages (EOSS*)

- Stage 1: End Stage
- Stage 2: End Stage
- Stage 3: End Stage
- Stage 4: End Stage
- Stage 5: End Stage
- Stage 6: End Stage

Obesity Medicine

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ADVISE

Phases of Obesity Treatment

Phase I (Weight Loss)

Phase II (Weight Loss Maintenance)

When you stop treatment, the disease comes back!

3-6 months

Indefinitely

Obesity Medicine

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Focus on 5 to 10% Weight Loss

- Improvement in type 2 diabetes
- Improvement in hypertension
- Improvement in sleep apnea
- Improvement in lipid profile
- Reduction in cardiovascular risk

(NovoNordisk, 2015)

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Principles of Healthy Nutrition

Limit:

- Highly processed foods of minimum nutritional value: sweets, "junk foods," cakes, cookies, candy, pies, chips
- Energy-dense beverages: sugar-sweetened beverages, juice, cream

Encourage:

- Consumption of healthy proteins and fats, vegetables, leafy greens, fruits, berries, nuts, legumes, whole grains
- Complex carbohydrates over simple sugars: Low glycemic index over high glycemic index foods
- High-fiber foods over low-fiber foods
- Reading labels rather than marketing claims

Managing the quality of calories is important when reducing the quantity of calories, such as during weight loss.

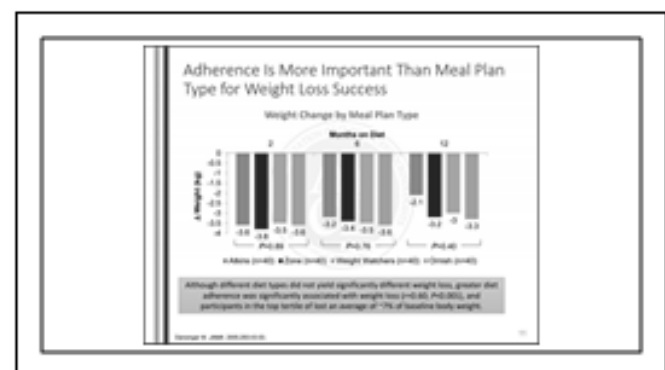
© 2015 NovoNordisk

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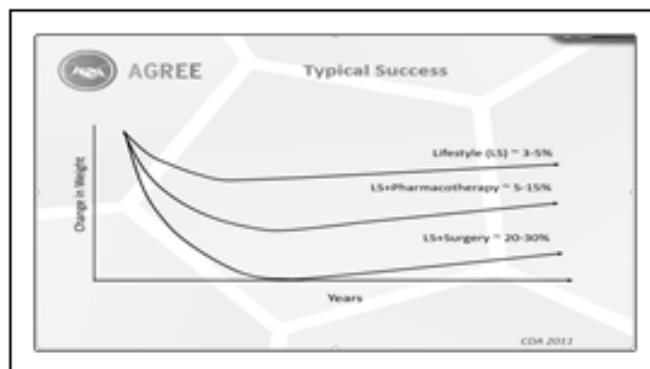
BMI	TREATMENT		
	Diet, exercise, behavior therapy	Pharmacotherapy	Surgery
25-26.9	YES	NO	NO
27-29.9	YES	YES With comorbidities	NO
30-34.9	YES	YES	NO
35-39.9	YES	YES	YES With comorbidities
≥40	YES	YES	YES

(Novo Nordisk, 2015)

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Intensity

- At least moderate, physical activity (conversational—should be able to talk comfortably)
- Heart rate 270% of maximum heart rate (max heart rate = $220 - \text{age}$)

Motivation

- Cross-train (e.g., walk, ride, swim)
- Use a physical activity partner or professional trainer or attend organized programs
- Reward self

Frequency

- 23-4 times/week
- Maintain a regular schedule with realistic goals

Support

- Health care professional team must exude positive attitude regarding importance of physical activity

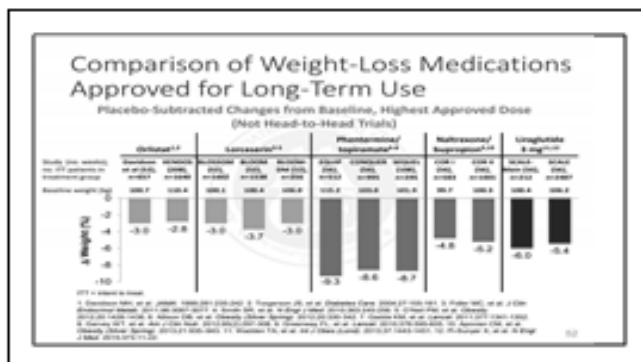
24

FDA Approved Anti-obesity Medication for Long-term Use	
Medication	Target and effect
GLP-1 (Saxenda)	Acts on multiple sites, decreases appetite, increase satiety, slows gastric emptying
Sympathomimetic/antilepture (Qsymia)	CNS: POMC neurons in the hypothalamus, decreases appetite, increases satiety, decreases binge eating
Serotonin agonist (Belviq)	CNS: Stimulates serotonin type 2c receptor, decreases appetite and increases satiety
Pancreatic lipase inhibitor (Xenical, all)	GI tract: decreases absorption of fat
Opioid antagonist/dopamine + norepinephrine reuptake inhibitor (Contrave)	CNS: POMC neurons in the hypothalamus, decrease appetite and food cravings

25



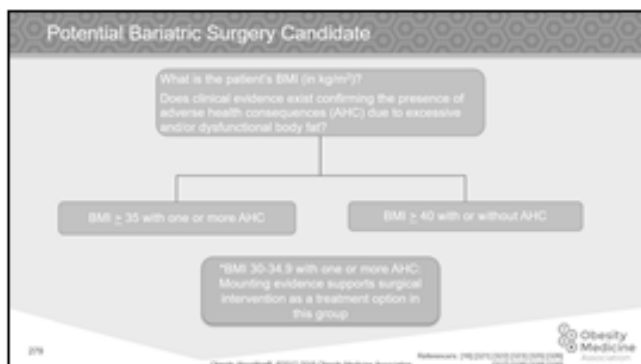
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29



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Lifestyle Therapy for Obesity: Features of Behavior Modification

- Office motivational interviewing
 - Goal setting
 - Self-monitoring
 - Mobilization of social support systems
- Psychological counseling as needed
 - Problem solving strategies
 - Stimulus control
 - Stress reduction
- Ongoing education and monitoring
 - Face-to-face, group sessions, technologies

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Clinical Practice Guidelines

- 2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults
<https://www.ahajournals.org/doi/abs/10.1161/01.cir.000037759.71477.ee>
- NIH Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults
https://www.nhlbi.nih.gov/health/educational/lose_wt/DIV1/cbb_article.htm
- Pharmacological Management of Obesity: An Endocrine Society Clinical Practice Guideline
<https://academic.oup.com/aj/article/100/2/342/2813108>
- http://obesity.aace.com/files/obesity/guidelines/aace_guidelines_obesity_2016.pdf

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Evaluation and Treatment Summary

Comprehensive Evaluation of the Patient with Overweight/Obesity

History	Weight history, diet, physical activity, stress, sleep, alcohol, smoking, weight previously maintained, diet, exercise, activity, medical history
Physical Examination	Weight, weight loss, physical exam, vital signs, blood pressure, heart rate, respiratory rate, oxygen saturation
Laboratory Tests	Complete blood count, cholesterol, liver function tests, fasting glucose, HbA1c, thyroid tests, uric acid, creatinine
Diagnostic Testing	Yes, comprehensive metabolic panel, fasting glucose, HbA1c, lipid panel, thyroid tests, uric acid, creatinine

Individualized Treatment Plan

Diet	Low calorie, low fat, low carbohydrate, low sodium, low saturated fat, low trans fat, low added sugar, low added salt, low added fat
Activity	Low intensity, low impact, low resistance, low to moderate intensity, low to moderate intensity, low to moderate intensity
Counseling	Personalized, patient-centered, evidence-based, goal-oriented, behavior change, self-management, group, individual, family, community, workplace, school, religious, cultural, ethnic, racial, and ethnic
Pharmacotherapy	Low to moderate intensity, low to moderate intensity, low to moderate intensity, low to moderate intensity, low to moderate intensity
Behavioral	Low to moderate intensity, low to moderate intensity, low to moderate intensity, low to moderate intensity, low to moderate intensity

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Additional resources

AANP's obesity management 7 CEUs (free to members):

- <https://aanp.inreachce.com/Details/Information/b6cbac97-1a16-451b-a30e-a6d713bc52d1?ref=featured>
- https://www.endocrine.org/media/endosociety/files/guidelines/resources/pharmacotherapy_cpg_resource_page_13feb18.pdf?la=en
- <https://obesitymedicine.org/>
- <https://obesitycanada.ca/>
- <http://obesity.aace.com/>

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Obesity: Summary Diagnostic Metrics and Diagnostic Codes

Body Mass Index (BMI) ≥ 30 kg/m ²	Overweight and Obesity E66 • Code for obesity, depending on severity, is E66.0 (overweight), E66.1 (obesity), E66.2 (severe obesity), E66.3 (morbid obesity), E66.4 (extreme obesity), E66.5 (super obesity), E66.6 (hyper obesity), E66.7 (hyper obesity), E66.8 (hyper obesity), E66.9 (hyper obesity)	E66.8 Obesity Due to Excess Calories • E66.81 Obesity due to excess calories • E66.82 Obesity due to excess calories • E66.83 Obesity due to excess calories • E66.84 Obesity due to excess calories • E66.85 Obesity due to excess calories • E66.86 Obesity due to excess calories • E66.87 Obesity due to excess calories • E66.88 Obesity due to excess calories • E66.89 Obesity due to excess calories • E66.90 Obesity due to excess calories
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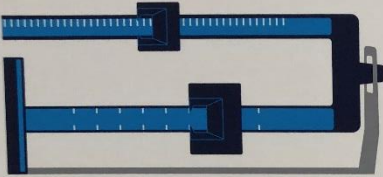
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APPENDIX D

DID YOU KNOW YOUR HEALTH CARE PROVIDER CAN HELP YOU MANAGE YOUR WEIGHT?




Why doesn't the weight you lose stay lost?

It's common to regain weight after you've lost it. This is because when you lose the pounds, some hormones in your body fight to get you back to your original weight. This helps explain why keeping weight off long term can be difficult.




You might be on a diet, but your brain isn't


When you lose weight, your stomach starts sending signals to your brain that make you feel hungry. Your brain may not allow you to feel satisfied with smaller portions. This may cause you to continue eating, potentially leading to weight gain.



A 5% weight loss can make a difference

For example, for a person weighing 200 pounds, just a 10-pound weight loss is clinically meaningful.








In weight loss, 10 pounds is more than you think


Studies show even a 5% to 10% weight loss has significant health benefits.

Each of the following weighs about 10 pounds:

 Vacuum cleaner
  Large watermelon
  Medium bowling ball

Talk with your health care provider to work together toward a healthier weight.

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APPENDIX E





DEVELOPED AND AVAILABLE FROM OBESITY CANADA

APPENDIX F



APPENDIX G

English

		Collaborative Institutional Training Initiative		Susan Disser ID 7173908 Log Out Help	
Main Menu / My Courses	My Profiles	My Records	My CEUs	Contact Us	

Main Menu / My Courses

▼ Ascension Health Courses			
Course ?	Status ?	Completion Record ?	Survey ?
Information Privacy Security (IPS)	Passed 17-May-2018	View-Print-Share	Completed
Conflicts of Interest	Passed 17-May-2018	View-Print-Share	Completed
Good Clinical Practice (GCP)	Passed 19-May-2018	View-Print-Share	Completed
Investigators	Passed 19-May-2018	View-Print-Share	Completed
Responsible Conduct of Research (RCR)	Passed 19-May-2018	View-Print-Share	Completed

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BIOGRAPHICAL MATERIAL

Susan Disser is a New Jersey native that attended Indiana University Bloomington graduating with a Bachelor of Science in Microbiology in 1984. After working in pharmaceutical research and development, she left the work force to raise her two sons settling permanently in Indiana. During this time, she was active as a volunteer breastfeeding counselor then becoming a board-certified lactation consultant in 2001.

Susan decided to pursue her nursing degree, graduating from Ivy Tech Community College in Indianapolis in 2008 with an Associates of Science in Nursing. She continued her education at Western Governors University earning her Bachelor of Science in Nursing in 2011. In 2015, she reached her goal of becoming a family nurse practitioner graduating from Purdue University Calumet with her Masters of Science in Nursing. Discovering that her passion for precepting future nurse practitioners would be enhance with a terminal degree, she decided to pursue her Doctor of Nursing Practice. Susan anticipates earning this degree from Valparaiso University in May 2019.

Susan has spent most of her nursing career employed at St. Vincent Women's Hospital, Indiana's largest level IV NICU. She also has work in postpartum, women's medical-surgical, and inpatient lactation. She is currently employed as a family nurse practitioner seeing patients across the lifespan. While she enjoys all aspects of practice, her passion is treating overweight and obesity. Susan serves at the medical laboratory director of her practice site. Susan serves as board member and Treasurer of the newly formed Indiana Obesity Medical Association.

ACRONYM LIST

AANP: American Association of Nurse Practitioners

AD: Academic detailing

ANA: American Nurses Association

APRN: Advanced practice registered nurse

BMI: Body mass index

BRFSS: Behavioral risk surveillance system

CDC: Centers for Disease Control

CHD: Coronary heart disease

CPG: Clinical practice guideline

EHR: Electronic health record

EOSST: Edmonton Obesity Staging System Tool

HDL: High density lipoprotein

IOM: Institute of Medicine

JBH: Joanna Briggs Institute

JHNEBPM: Johns Hopkins Nursing Evidence-Based Practice Model

LDL: Low density lipoprotein

NHANES: National health and nutrition examination survey

OMA: Obesity Medicine Association

PEM: Printed educational material

RCT: Randomized controlled trial

REDCap: Research Electronic Data Capture

RR: Relative risk

TOS: The Obesity Society

USPSTF: United States Prevention Services Task Force

WHO: World Health Organization