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Assessing Perspective of Diet and Exercise in Patients Taking Semaglutide:

An Educational Intervention

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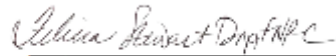
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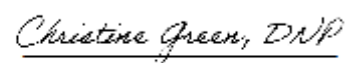

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Abstract

Semaglutide is a prescription medication for weight loss and combating obesity. Current evidence indicates patients are regaining weight after discontinuing the medication unless diet and exercise regimens are sustained. Additionally, there is a lack of evidence regarding specific dietary recommendations for patients taking once-weekly subcutaneous semaglutide injections for weight loss. The purpose of this DNP project was to assess the effectiveness of an educational intervention focused on improving patient knowledge and receptiveness of making diet and exercise changes during their semaglutide treatment plan.

The study included adult patients who were overweight or obese *and* currently taking semaglutide for weight loss at a specified outpatient medical practice in Indianapolis. The study spanned 21 days and included two data collection periods. Data was collected via surveys to assess knowledge, diet and lifestyle habits, and readiness to change utilizing the Readiness Ruler tool. The educational intervention included a video and written information focused on evidence-based diet and exercise recommendations while taking semaglutide.

The project's results indicated the educational intervention was beneficial and positively impacted participant knowledge and perspectives regarding diet, exercise, daily caloric intake, and water intake as recommended while taking semaglutide for weight loss. Recommendations for practice include incorporation of the educational intervention as part of the plan of care for patients prescribed semaglutide at the outpatient practice.

Keywords: obesity, semaglutide, weight loss, weight management, glucagon-like peptide, Mediterranean diet, patient education

Assessing Perspective of Diet and Exercise in Patients Taking Semaglutide: An Educational Intervention

This project was submitted to the faculty of Marian University Leighton School of Nursing as partial fulfillment of degree requirements for the Doctor of Nursing Practice, Family Nurse Practitioner Track.

Semaglutide, a subcutaneous injectable glucagon-like-peptide (GLP-1), is currently being utilized by many Americans to combat obesity. The popularity of semaglutide is leading society toward a misconception that the prescription medication is solely responsible for weight loss without little-to-no regard for making lifestyle modifications such as diet and exercise (Ghusn et al., 2022). Emphasizing the importance of lifestyle changes while taking semaglutide for long-term weight loss is critical. Without adopting and continuing lifestyle modifications such as diet and physical activity, weight can be regained when weight loss medications are discontinued due to metabolic adaptation (Garvey et al., 2016; Rubino et al., 2021; Updike et al., 2021; Wharton et al., 2020).

Background

Obesity is an ongoing public health crisis posing a global health challenge as a multifactorial, complex, and progressive chronic disease with a substantial burden on individuals, society, and the economy (Amaro et al., 2022; Rubino et al., 2021). Obesity is defined as a body mass index (BMI) of $\geq 30 \text{ kg/m}^2$ in adults (WHO, 2020). Individuals with obesity, compared to those with a healthy weight, are at an increased risk of numerous health conditions and diseases including hypertension, hyperlipidemia, type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea and breathing problems, cancer,

low quality of life, mental illness, body pain, and a decreased life expectancy (CDC, 2022; Garvey et al., 2016; Wilding et al., 2021).

The prevalence of obesity in the United States (U.S.) in 2020 was 41.9% and increased 11.4% from 2000 to 2017 (CDC, 2023). The estimated annual medical costs of obesity in the U.S were \$173 billion dollars in 2019, and estimates are that the global health expenditure on obesity-related complications will be 1.2 trillion U.S. dollars by 2025 (CDC, 2023; Updike et al., 2021). The global burden of obesity demonstrates that emphasizing a healthy lifestyle alone has proven insufficient, and efforts to combat the obesity epidemic require a more concerted effort to educate all populations on what constitutes a healthy lifestyle (Updike et al., 2021).

Current recommendations for adults with obesity include being active three to five days each week to reach the goal of least 150 min/week of moderate exercise (U.S Department of Health and Human Services, 2018; WHO, 2020). Resistance training should be prescribed for patients who are overweight or obese and undergoing weight-loss therapy to help promote fat loss while preserving fat-free mass; resistance training should be two to three times per week consisting of single-set exercises that use the major muscle groups (Wharton et al., 2020). Additionally, adults 65 years and older need at least 150 minutes each week of moderate intensity activity (such as brisk walking), at least two days per week of activities that strengthen muscles, and activities to improve balance (U.S Department of Health and Human Services, 2018; WHO, 2020).

Losing at least 5% of body weight is recommended for people with obesity to prevent or improve weight-related health complications (Wharton et al., 2020). However, lifestyle modifications foundational to obesity management, such physical activity and healthy eating habits, may not be enough to achieve long-term health benefits. Up to 90% of individuals with

obesity are unable to keep weight off long term (Bray et al., 2017; Garvey et al., 2016; Kaplan et al., 2018). Regaining weight is impartially due to difficulties adhering to lifestyle interventions and compensatory changes in appetite-regulating hormones, which act to maintain normal weight homeostasis (also known as metabolic adaptation) (Garvey et al., 2016; Rubino et al., 2021; Updike et al., 2021; Wharton et al. 2020).

The United States Food and Drug Administration (FDA) has approved five medications to utilize as adjuncts to a reduced-calorie and increased physical activity regimen for chronic weight management. These include orlistat, phentermine/topiramate, naltrexone/ bupropion, liraglutide, and semaglutide (Amaro et al., 2022). This DNP project was limited to semaglutide.

Semaglutide was introduced into the U.S. market in 2017 in response to the obesity and diabetes epidemics. The role of GLP-1 is to prompt the body to produce more insulin, which reduces blood sugar (glucose). GLP-1 in higher amounts interacts with parts of the brain that suppress the appetite and cause one to feel full (satiety). Common side effects of semaglutide include nausea, diarrhea, vomiting, constipation, abdominal pain, fatigue, dizziness, bloating, belching, gas, symptoms of stomach flu, heartburn, runny nose, or sore throat (Novo Nordisk, 2023a). Current recommendations to help reduce side effects include eating bland, low-fat foods such as crackers, toast, and rice; eating foods that contain water, eating more slowly; and avoiding lying down after eating (Novo Nordisk, 2023a). Semaglutide manufacturer instructions also direct patients to contact their health care provider to help manage side effects.

When semaglutide is used in conjunction with diet and exercise, it can enhance weight loss results and reduce side effects, lead to sustained long-term weight loss, and significantly decrease the risk of developing the common health conditions and diseases associated with obesity (Amaro et al., 2022; Muller et al., 2019; Rubino et al., 2021). Unfortunately, when

semaglutide is discontinued, multiple pathophysiologic mechanisms act to restore weight to its elevated baseline (Garvey et al., 2016). These metabolic adaptations in addition to reduced physical activity; decreased resting energy expenditure; lowered efficiency of muscle metabolism; and changes in leptin, ghrelin, and other gut hormones that augment the appetite and counteract weight loss contribute to weight regain (Garvey et al., 2016; Sumithran et al., 2011). Efforts to sustain lifestyle changes over an extended time should be maintained to counterbalance these mechanisms that drive weight regain as part of the natural pathophysiology of obesity (Garvey et al., 2016).

Problem Statement

The project focused on implementing an educational intervention for improving patient knowledge and receptiveness to making the necessary lifestyle changes during their semaglutide treatment plan. By increasing their knowledge regarding the recommended diet and exercise interventions for patients taking semaglutide, they also improve their understanding of the pharmacological agent's role in weight loss. Additionally, patients may also minimize the medication's side effects, achieve their weight loss goals, and maintain their weight loss results long-term while combating the unavoidable metabolic adaptation. This project aimed to respond to the inquiry, *For patients 18 years and older who have received at least one semaglutide injection for weight loss, will an educational video and written resource enhance patient understanding and perspective of lifestyle modifications necessary during and after treatment with semaglutide?*

Organizational “Gap” Analysis of Project Site

The project site took place at an outpatient medical practice located in Indianapolis, IN that prescribed semaglutide for patients seeking weight loss. The site had been relying on verbal

education regarding diet and exercise recommendations for patients on semaglutide. No educational handout had been made available to patients during the verbal education nor for them to take home for future reference. The site was supportive of the project and its educational intervention for their patients throughout its planning and implementation phases.

Review of the Literature

A comprehensive literature search and review was conducted to gather pertinent evidence applicable to the project. A scoping review methodology was used to identify and analyze the current literature related to semaglutide, weight loss, diet and exercise, and methods recommended for patient education.

The databases searched for the literature were PubMed, MEDLINE, CINAHL, and the Cochrane Library. This search was conducted from May 2023 to July 2023. The keywords utilized included *semaglutide*, *glucagon-like peptide 1*, *GLP-1*, *weight loss*, *obesity*, *anti-obesity*, *pharmacology*, *weight management*, *patient education*, *healthy behavior*, *Mediterranean Diet*. Additionally, BOOLEAN phrases were used to combine keywords such as semaglutide AND weight loss, semaglutide AND weight loss, semaglutide AND diet, semaglutide AND exercise, semaglutide AND side effects, semaglutide AND lifestyle intervention, semaglutide AND obesity, education AND diet AND exercise. In total, the database searches resulted in 903 articles regarding semaglutide associated with weight loss, obesity, diet, exercise, and side effects.

The inclusion criteria established was to consider clinical trials, comparative studies, meta-analysis, observational studies, random control trials (RCTs), and systematic reviews conducted or published between 2018 and 2023. Other inclusion criteria specified patients 18 years of age or older taking semaglutide for weight loss and published in English. Particular

attention was given to published studies focused on semaglutide for weight loss in patients with obesity. Exclusion criteria included studies on patients taking semaglutide for diabetes management or taking other forms of weight loss drugs; studies comparing outcomes with another drug (such as liraglutide), cardiovascular research, or focused on GI intolerability; lower levels of evidence; articles published in other languages; and studies with participants under 18 years of age.

After applying the inclusion and exclusion criteria, 882 of the articles discovered in the database searches were deemed impertinent for the proposed project and eliminated. The remaining 21 articles were contributed to this review of literature. The diagram in Appendix A outlines the literature search process. In addition to the database searches, information regarding the MyPlate diet was sought out to utilize as an educational resource to study participants. The review of literature is organized into three categories: studies focused on semaglutide, obesity and weight loss diet recommendations (the MyPlate diet, the Mediterranean diet), and methods to educate about diet and exercise.

Studies Focused on Semaglutide

Semaglutide Dosing Protocols

In the RCTs reviewed, semaglutide was initiated per manufacturer protocol until the maximum dose was achieved and then maintained for the duration of the trial period. Per manufacturer guidelines, semaglutide should be initiated at 0.25 mg once weekly for 4 weeks (Novo Nordisk, 2021). In 4-week intervals, the dose should be increased until a dose of 2.4 mg is reached (Novo Nordisk, 2021). The maintenance dose is 2.4 mg once weekly.

Semaglutide and Weight Loss

Twelve RCTs reviewed were related to semaglutide and weight loss and without mention of which lifestyle interventions in the study. Weight loss of 5% - 10% or more of baseline weight is desired as it produces greater improvements in several obesity-related risk factors and diseases (Friedrichsen et al., 2021; Wadden et al., 2021). Six of the 12 studies also found improvements in cardiometabolic risk factors, including body weight and waist circumference, decreased A1C levels, fasting blood glucose levels, blood pressure (systolic and diastolic), lipids, urine albumin-to-creatinine ratio, C-reactive protein, and liver parameters with the addition of semaglutide (Arastu et al., 2022; Davies et al., 2021; Kosiborod et al., 2023; Lingvay et al., 2018; Wharton et al., 2023; Wilding et al., 2021).

Kosiborod et al. (2023) found greater improvements in the cardiometabolic risk factors compared to placebo when lifestyle interventions were implemented with administration of 2.4 mg semaglutide once-weekly subcutaneous injections. Four RCTs included adults who did not have diabetes with a BMI ≥ 30 kg/m² or a BMI ≥ 27 kg/m² with one or more weight-related coexisting conditions (n = 2,810 participants). These RCTs concluded patients treated with semaglutide experienced reduced mean body weight, decreased waist circumference, and a lower BMI (Arastu et al., 2022; Friedrichsen et al., 2021; O'Neil et al., 2018; Wadden et al., 2021; Wilding et al., 2021). The systematic review conducted by Arastu et al. (2022) found patients treated with semaglutide experienced a clinically significant reduction in mean body weight of 11.62 kg (95% confidence interval: -13.03 to -10.21, $p < 0.00001$).

Two double-blind studies including weekly 2.4 mg semaglutide injections determined semaglutide reduced hunger and prospective food consumption, while increasing fullness and satiety compared to placebo: Blundell et al. (2016) in their 12-week study with 30 participants

($P = .0023$) and Friedrichsen et al. (2021) in their 20-week study with 72 participants ($P < 0.02$). Of note, Blundell et al. (2016) also found participants indicated a lower explicit liking for high-fat and non-sweet foods with semaglutide compared to placebo ($P = .0016$).

Rubino et al. (2021) conducted a 68-week study with 803 participants who each received a one-weekly 2.4 mg subcutaneous injection of semaglutide coupled with lifestyle interventions. Their findings included a mean weight loss of 10.6% at week 20 and an estimated 17.4% loss from weeks 60 to 68. An interesting discovery from this study revealed participants who switched to placebo at week 20 gradually regained weight, signifying the potential withdrawal effects of obesity medications and the importance of a sustained diet and lifestyle to maintain and maximize weight loss. There was no mention of which lifestyle interventions were used, how they were disseminated to patients, or follow up therapies.

Semaglutide with Specified Diet and Exercise Interventions

Some of the studies reviewed included weekly injections of semaglutide with specific diet and exercise interventions. These specified considerations for liquid shakes, low-calorie diets, food intake tracking, and physical exercise.

According to Friedrichsen et al. (2021), intensive lifestyle intervention and pharmacotherapy are the most effective noninvasive weight loss approaches. Three of the studies suggested a reduced-calorie (500 kcal/d deficit) diet with 150 minutes of physical activity per week for patients taking semaglutide (Davies et al., 2021; Rubino et al., 2021; Wharton et al., 2023). However, two of the three RCTs indicated the addition of health counseling provided by a qualified healthcare professional or dietician (Davies et al., 2021; Rubino et al., 2021). These two also suggested instructing patients how to measure their physical activity and food intake, while encouraging them to keep a food and activity diary daily.

The study by Wadden et al. (2021) included 611 participants without diabetes who were either obese ($\text{BMI} \geq 30 \text{ kg/m}^2$) or overweight ($\text{BMI} \geq 27 \text{ kg/m}^2$) plus at least one comorbidity. They found the greatest weight reduction (16%) with semaglutide, diet, and exercise over a 68-week period compared to placebo (5.7%). This was achieved utilizing a low-calorie diet (1,000-1,200 kcal/day) consisting of meal replacements such as liquid shakes, meal bars, and portion-controlled meals over the first eight weeks, followed by a hypocaloric diet (1,200 – 1,800 kcal/day) of conventional food over the remaining 60 weeks. Physical activity consisted of 100 minutes of physical activity/week (spread across 4-5 days), which increased by 25 minutes every 4 weeks, to reach 200 min/week at week 68. Behavioral counseling was also provided over the 68-week trial period. Such evidence supports the need for coaching in addition to diet and exercise during semaglutide treatment timeframe. Wharton et al. (2023) also noted a preference for connecting with a dietician or healthcare professional during a 30-day follow-up.

Adverse Effects and Side Effects

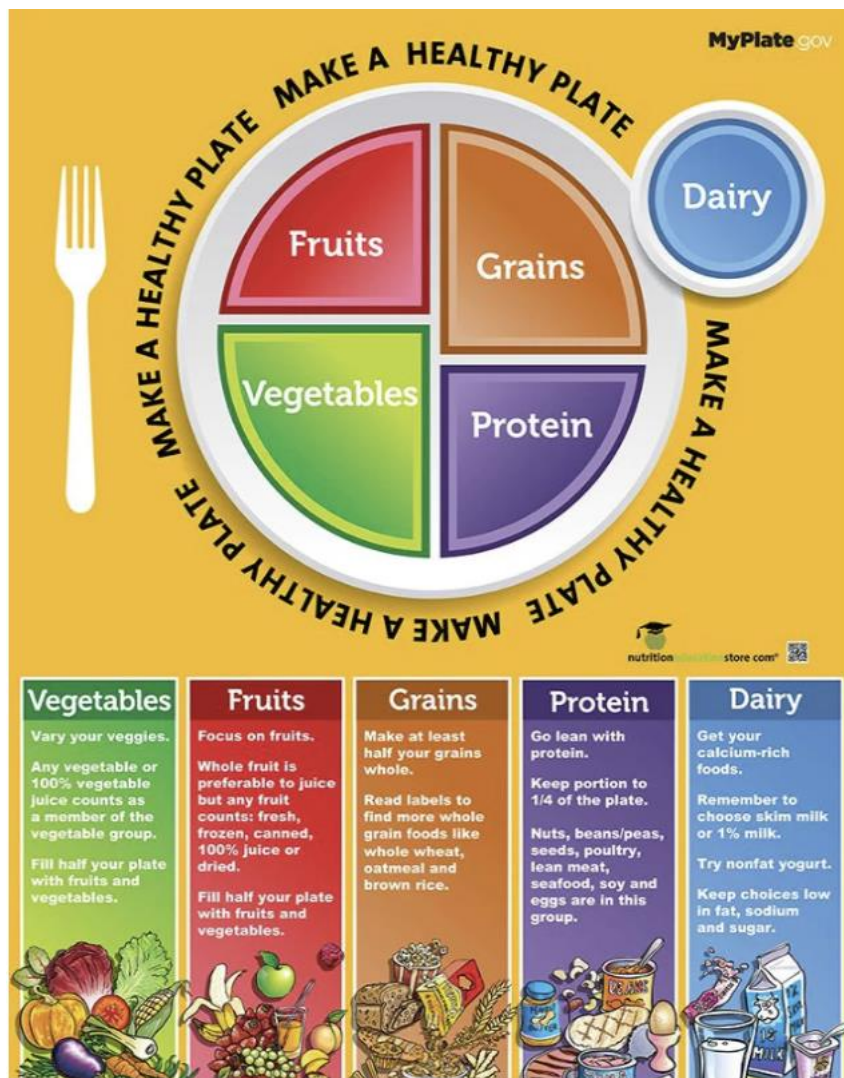
The most common reported adverse effects of semaglutide were nausea and lack of appetite, followed by alternative gastrointestinal (GI) complaints such as diarrhea, constipation, dyspepsia, and abdominal pain (Friedrichsen et al., 2021; O’Neil et al., 2018; Wadden et al., 2021; Wilding et al., 2021). The RCT trial by Rubino et al. (2021) reported GI events in 49.1% of their 803 participants with continued subcutaneous semaglutide compared to 26.1% with placebo. Wilding et al. (2021) mentioned the reported side effects were transient, mild-to-moderate in severity, and subsided with time. Lingvay et al. (2018) mentioned patients reporting adverse events with semaglutide were dose dependent. Notably, none of the articles referred to the importance of diet to help minimize GI events while taking semaglutide.

Obesity and Weight Loss Diet Recommendations

Evidence indicates semaglutide results in weight loss even without diet and exercise interventions; however, weight regain around week twenty can be expected due to the body's natural compensatory mechanisms (metabolic adaptation). This confirms the importance of diet and exercise lifestyle interventions to sustain long-term weight loss over time. Due to the inconclusive diet recommendations for patients taking semaglutide, two diets recommended by one semaglutide manufacturer, the CDC, UpToDate, and clinical practice guidelines were explored for the project's educational intervention. These two diets include MyPlate and the Mediterranean diet. These diets are recommended to aid in weight loss and help reduce the most recurrent GI side effects of semaglutide.

MyPlate Diet

According to Novo Nordisk (2023b), a semaglutide manufacturer, the Plate Method is a recommended diet to assist individuals with type 2 diabetes. It supports portioning out meals while designating how much of each food group is recommended. Figure 1 features the MyPlate diet, a version of the Plate Method.

Figure 1*MyPlate Diet (U.S. Department of Agriculture, 2018)*

This method encourages the modeling of meals as follows: (a) half of the plate is filled with non-starchy vegetables such as lettuce, broccoli, asparagus, peppers, or yellow squash; (b) one-quarter includes protein such as chicken, fish, lean meat or eggs; (c) one-quarter has foods such as brown rice, lavash, peas, or corn; (d) one piece of low-glycemic index fruit and a few teaspoons of a healthy fat such as avocado, nuts, or olives are included with each meal; (e) water, tea, or coffee should have little to no sugar; milk/dairy is limited to one or two servings/day; and

juice is limited to one small glass/day; and (f) sugary drinks and alcohol are avoided (Novo Nordisk, 2023b). Additionally, greasy or fatty foods should be limited with the use of semaglutide as they can increase nausea, one of the most common medication side effects (Blundell et al., 2017; Novo Nordisk, 2023b). Of note, despite providing information about the Plate Method, the manufacturer defers consumers to “talk to your doctor about what nutrition plan is right for you” (Novo Nordisk, 2023b).

Mediterranean Diet

The systematic review conducted by Mancini et al. (2016) determined the Mediterranean diet was superior to low-fat diets for long-term weight loss. The first step to weight loss is evidence-based lifestyle modification through diet, behavioral therapy, and physical activity. Combining diet with physical activity has been found to increase weight loss compared to either of these interventions used alone; specifically, physical activities are unlikely to yield clinically significant weight loss unless it is of a high level or aerobic exercise or is in conjunction with a calorie-restricted diet (Curioni & Lourenco, 2005; Swift et al. 2014; Wu et al. 2009).

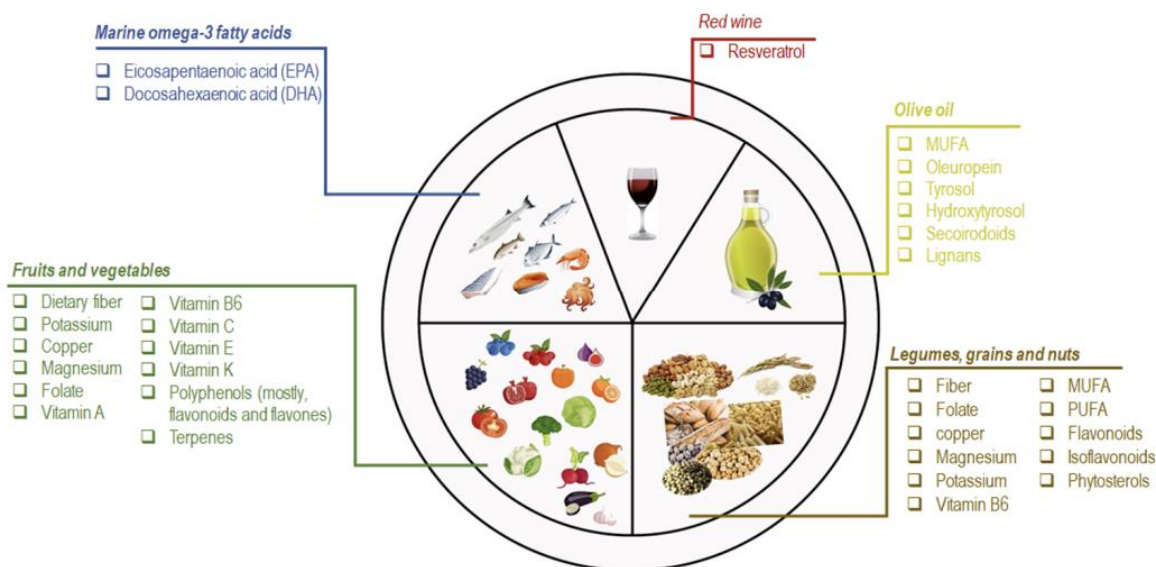
The Mediterranean Diet is a scientifically supported diet for weight loss, improving cognitive health, and risk reduction of cardiovascular disease, vascular diseases, diabetes, and cancer (Davis et al., 2015; Féart et al., 2009; Mancini et al., 2016; Psaltopoulou et al., 2013; Willett et al., 1995). This diet reflects the dietary pattern of the people living on the Mediterranean Sea coast, particularly Greece, southern Italy, and southern Europe (Corella et al., 2018; Finicelli et al., 2019).

Although the Mediterranean countries have some eating habit differences, the common features characterizing the Mediterranean Diet are defined as: (a) daily consumption of non-refined cereals and other products (e.g., whole grain bread, whole grain pasta, and brown rice),

fresh fruits, vegetables, nuts, and low-fat dairy products; (b) olive oil as the principal source of lipids; (c) moderate intake of alcohol, preferably red wine, with meals; (d) moderate consumption of fish, poultry, potatoes, eggs, and sweets; (e) monthly consumption of red meat; and (f) regular physical activity (Finicelli et al., 2019; Gouveri and Diamantopoulos, 2015; Schwingshackl et al., 2020). The beneficial impact of the bioactive molecules found within these food sources is an essential component of the diet. See Figure 2 for an illustration of the components of a Mediterranean diet.

Figure 2

Schematic representation of the nutritional and bioactive characteristics of Mediterranean food components (Finicelli et al., 2022)



Marine omega-3 fatty acids are the most important bioactive molecules in fish and seafood consumed in the diet (e.g., sardines, mackerel, mussels, octopus, salmon, squid, and tuna). Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are the major n-3 fatty acids recognized for their cardioprotective effects and beneficial effects on HDL cholesterol and

triglycerides levels (Schwingshackl et al., 2018; Wang et al. 2022). Olive oil, especially extra virgin olive oil, is the primary source of fat in the Mediterranean Diet, attributed to reducing DNA oxidation and inflammatory markers and decreasing the risk of stroke, chronic heart disease, and diabetes. (Sanchez-Rodriguez et al., 2019; Schwingshackl & Hoffmann, 2014; Schwingshackl et al., 2015; Schwingshackl, Schewedhelm, Galbete et al., 2017).

Fruit and vegetable consumption is also emphasized in the diet. Fruits, such as oranges, pomegranates, berries, figs, and grapes, are a source of fiber, potassium, vitamin C, polyphenols (mostly flavones), and terpenes (Finicelli et al., 2019). Vegetables, such as field greens, tomatoes, eggplants, cabbages, radishes, garlic, onions, spinach, and lettuce, are an excellent source of nutrients (e.g., dietary fiber, potassium copper, magnesium, folate, vitamin A, B6, C, E, and K) (Finicelli et al., 2019). High consumption of vegetables or fruit is thought to lower risk for all-cause mortality, chronic heart disease, stroke, type 2 diabetes, colon rectal cancer, and adiposity (Bechthold et al., 2019; Schwingshackl, Schewedhelm, Galbete et al., 2017; Schwingshackl et al., 2018).

Legumes, grains, and nuts are regularly consumed in the Mediterranean Diet. Grains appear both as a single food (e.g., rice and oatmeal) and as ingredients of processed foods (e.g., bread, pasta, cereal, crackers). Common nuts include almonds, hazelnuts, walnuts, and pistachios. Legumes represent lentils, beans, and chickpeas. These foods are a valuable source of fiber, folate, vitamin B6, magnesium, potassium, and copper (Delgado et al., 2017; Schlesinger et al., 2019). The beneficial effect of nut consumption primarily impacts the incidence of cardiovascular disease, diabetes, and metabolic syndrome (Jiang et al., 2006; Kelly & Sabate, 2006; Schwingshackl, Schwedhlem, Hoffman et al., 2017; Zec & Glibetic, 2018). The beneficial effects of legumes and grains on cardiovascular disease, body weight, and cholesterol (total and

LDL-C) have also been noted. Lastly, red wine is a source of resveratrol, the most abundant polyphenol. The molecule polyphenol has a beneficial effect on several chronic diseases such as cancer, myocardial infarction, and brain disorders (Finicelli et al., 2019; Opie & Lecour, 2007). This diet also limits red meats, refined grains, trans fats, processed meats, added sugar, and other highly processed foods (Willet et al., 1995).

Overall, the five most important influences induced by adherence to the Mediterranean diet can be summarized by the following: (a) its lipid-lowering effect, (b) anti-oxidative and anti-inflammatory actions, (c) modification of key molecules (hormones and growth factors) involved in the pathogenesis of cancer, (d) inhibition of nutrient-sensing pathways, and (e) gut microbiota-mediated production of metabolites influencing metabolic health (Tosti et al., 2018).

Diet and Exercise Educational Methods

Literature was reviewed to determine effective strategies and methods of delivering patient education. Ardoin et al. (2022) concluded that using multiple modalities including a patient-centered video and handouts to educate patients about diet is effective in teaching, motivating change, and encouraging communication between patients and healthcare professionals. Schoeppe et al. (2016) completed a systematic review that included 27 studies (70% of which were randomized controlled trials) comparing the efficacy of interventions that used apps to improve diet, physical activity, and weight loss. They found that multiple interventions such physical education, printed materials, motivational emails, pedometer use, and a website along with use of an application were more effective than use of an app alone. Three systematic reviews or meta-analyses evaluated the effect of verbal information on outcomes related to patient education (Johnson & Sandford, 2005; Theis & Johnson, 1995; Trevena et al., 2006). Johnson and Sandford (2005) found that the combination of written and

verbal information was significantly better than verbal information alone with respect to knowledge. Regarding recall, three of five studies found higher recall with illustrated text compared to text alone in both the young and older participants (Houts et al., 1998; Houts et al., 2001; Winograd et al., 1982). Research indicated that new patient information packages are useful for patients, and all written information should be prepared at a reading level appropriate for the general population.

When considering the review of the literature, the evidence consistently indicates increased weight loss with semaglutide injections when coupled with lifestyle interventions such as diet and exercise. However, the research is lacking regarding specific dietary recommendations for patients taking once weekly subcutaneous semaglutide injections for weight loss. Patients experience decreased appetite and increased satiety while taking semaglutide; however, once patients stop taking the medication, patients can regain weight unless they have sustained diet and exercise regimens. This supports the need for a concerted effort for patient education regarding evidence-based diet and exercise recommendations for patients taking semaglutide. This intervention in the form of an educational video and written resource can help improve perspective, increase knowledge, and sustain long-term weight loss.

Conceptual Model

The ADDIE model for online education was selected to guide the project. The educational intervention included an online educational video and an educational resource for at-home reference. The ADDIE model served to guide both components. The ADDIE model has five distinct steps: Analyze, Design, Develop, Implement, and Evaluate (Patel et al., 2018).

During the *Analyze* stage, the target audience, learning environment, goals and objectives are identified. The target audience for this project was distinguished as adult patients over the

age of 18 who were either overweight (BMI of ≥ 27 kg/m²) with one comorbidity or obese (BMI ≥ 30 kg/m²). Additionally, eligible participants were to have taken at least one semaglutide injection for weight loss at the designated outpatient medical practice in Indianapolis, IN. After completion of the educational intervention, the goal was that participants would have an increased perspective and knowledge of the lifestyle modifications necessary during and after their semaglutide treatment plan for weight loss.

Design is the second step in the ADDIE model. While planning the educational video and handout, it was helpful to create an outline of what information to include. This step also included thoughtful preparation of the pre- and post-assessment survey questions. It was critical that the survey items reflect the best measures of patient perspective and knowledge. This allowed for further refinement of the questions, ensured the educational intervention was meaningful, and the data collected would accurately reflect what was intended to be measured. It was also important to develop the timeline for data collection during this stage.

The third step in the ADDIE model is *Develop*. During this stage, the surveys were finalized into the Qualtrics online application platform. This is also the stage when the educational resources (video and handout) were finalized. As the final part of this step, the educational intervention and surveys were previewed and tested on Qualtrics to ensure accessibility and functionality for participants.

The fourth step of the ADDIE model is *Implement*. This project included two data collection periods. Participants were sent an email via Demandforce at the start of the first data collection period with a link to Qualtrics where they accessed the pre- and post-surveys, educational video, and educational handout. The second data collection period included a final post-survey and was sent to participants using the same method.

The final step in the ADDIE model is *Evaluate*. This is when data collected from the two data collection periods were analyzed and evaluated through Qualtrics. It also starts the process for discerning any changes that should be made if the project is repeated in the future.

Project Design/Methods

The DNP project was a quality improvement project implementing an educational intervention to assess changes in patient knowledge and perspective of lifestyle modifications necessary while taking semaglutide.

Project Site and Population

The project site was an outpatient medical practice in Indianapolis, IN. It is considered an integrative practice specializing in primary care, functional medicine, weight loss, hormone replacement therapy, peptide therapy, and chiropractic care. For the project's purpose, there were two key investigators: a Doctor of Nursing Practice- Family Nurse Practitioner (DNP-FNP), referred to as Investigator One, and a registered nurse (RN), referred to as Investigator Two. These two investigators were actively engaged in the project to recruit participants and send project communications to participants via a HIPAA-protected software platform (Demandforce).

Prior to this project, Investigator One assessed and prescribed qualified patients semaglutide prior to their initial injection. Once the semaglutide order was received, Investigator Two provided verbal education to patients regarding semaglutide, side effects, recommended lifestyle interventions while taking semaglutide, and demonstrated how to properly administer injections. Investigator Two then administered the semaglutide injection. Investigator One reassessed patients at their 30-day follow-up appointment. No educational video or take-home educational handout was being utilized at the practice.

Participant inclusion criteria for the project included: (a) adults 18 years or older without diabetes; (b) must be either overweight ($\text{BMI} \geq 27 \text{ kg/m}^2$) plus at least one comorbidity or obese ($\text{BMI} \geq 30 \text{ kg/m}^2$); (c) be an established patient of the practice and already received an initial evaluation from the DNP-FNP for clearance; (d) has already received at least one semaglutide injection; and (e) has computer or mobile access capable of displaying survey and images. Participants were excluded from the project if they did not meet these requirements.

Stakeholders in the project included participating patients and the practice's healthcare team consisting of Investigator One and Investigator Two at the medical facility. The practice was supportive of the project and the educational intervention as no prior educational video or take-home handout existed for their patients. No barriers were experienced during the DNP project.

Measurement Instruments

The Readiness Ruler tool was used during data collection one to measure motivation to change prior to and after the educational intervention, and again, two weeks later at data collection two. This widely recognized tool added validity and rigor to the project (Appendix B).

To facilitate the data collection and analysis process, surveys were created in Qualtrics, a web-based software platform in which researchers can create and administer surveys as well as collect and analyze data. The surveys created for data collection one and two are shown in Appendix C and Appendix D, respectively. The pre- and post-survey for participants during data collection one assessed current knowledge, diet and lifestyle habits, and readiness to change prior to and direct after the educational intervention. The post-survey on data collection two reassessed knowledge, exercise and diet habits, and readiness to change lifestyle behaviors one

week after the educational intervention. Survey data was analyzed and measured via Qualtrics and Excel after the 21-day data collection period.

In addition to this measurement instruments, additional resources were utilized for the project including PowerPoint and YouTube for the video component of the educational intervention, Canva for designing the educational handout, and Demandforce to send HIPAA-compliant communications to participants. Appendix C includes a visual of the introductory screen of the educational video. Appendix E includes the educational handout provided to participants.

Data Collection Procedures

The timeline for the project was established as 21 days in length with two data collection periods. Investigator One and Investigator Two identified qualified patients in accordance with the established inclusion and exclusion criteria provided by the researcher. After organizing the evidence-based diet and lifestyle information to be included in the educational intervention, the researcher developed the pre- and post-surveys, educational video, and educational handout.

The educational video was created in PowerPoint, converted to an mp3 file, and then uploaded to YouTube. The six-minute video included information about semaglutide, recommendations for diet and exercise while on semaglutide, tips on fitting exercise into a busy lifestyle, common side effects, foods to avoid, recommended diets, and 10 tips to get the best results. The educational handout served as a summarized version of the content from the educational video for participants to utilize as a reference. Participant surveys, the educational video, and handout were uploaded into Qualtrics so participants could access them through a link on the study invitation email.

Data collection one surveys consisted of a pre-test with ten items (seven multiple choice, two select all that apply, and one open-ended) to measure current knowledge and perspective of lifestyle interventions recommended while taking semaglutide for weight loss; an educational presentation; and a seven-item post-test (with one select all that apply and six multiple choice questions) to measure perspectives of likeliness to implement the recommendations and immediate knowledge gained from the educational presentation (see Appendix C). One of the multiple-choice questions helped measure participant knowledge of foods to avoid and how many minutes/week of physical activity is recommended while taking semaglutide for weight loss.

Data collection two surveys consisted of nine items: one open-ended question, one select all that apply, and six multiple choice questions (see Appendix D). The initial question asked participants if they participated in the previous survey with the educational presentation. Subsequent questions measured current level of readiness for change, retention of knowledge gained in the educational intervention, and whether or not participant had begun implementing the recommended lifestyle changes while taking semaglutide for weight loss.

The researcher composed the participant invitation email that Investigator Two sent qualified candidates via Demandforce on the project implementation start date. The educational video, handout, surveys, and emails were reviewed and validated by Investigator One and Investigator Two prior to project implementation.

The initial email to qualified candidates described the purpose of the study, what to expect during participation, assured candidates that participation was voluntary, explained responses would be anonymous, and included the survey deadline. An embedded link was used to redirect participants to Qualtrics for accessing the pre-survey, educational intervention, post-

survey, and educational handout. Project days 1-14 were dedicated to the first email invitations to participate and the initial data collection period. Project days 15- 21 were dedicated to the second round of invitations and the final data collection period. Similar to the first part of the project, the final data collection period included a link embedded in the email redirecting participants to Qualtrics for the post-survey, which reassessed knowledge, exercise and diet habits, and readiness to change lifestyle behaviors.

Ethical Considerations/Protection of Human Subjects

Approval from the Marian University Institutional Review Board (IRB) was sought prior to project implementation. The IRB determined the project was exempt from further review under the federal regulation. See Appendix F for the IRB approval form. Participating in the project posed no additional risk compared to the risks of receiving standard medical care. Participation was voluntary, and no participant identifiers were used.

Data Analysis and Results

Qualtrics was utilized to collect and analyze the data collected. Both quantitative and qualitative data were collected, and sample size was indicative of participant participation. The levels of measurement for the quantitative data were nominal and ordinal. Qualitative data gained from open-ended pre- and post-test questions were categorized by topic to quantify data. Paired samples t-test was conducted to determine the standard deviations, p-values, and to discern differences between the two data collections periods.

Participants ($n = 30$) who met the inclusion criteria were invited to participate in the project. At data collection one, which included the pre-test, educational intervention, and post-test, 18 participants ($n = 18$) responded. At data collection two, 6 participants ($n = 6$) responded. However, three of the six participants for data collection two indicated they did not participate in

data collection one. The results of the data analysis are discussed below, including demographics, missing data, key findings, and a summary of findings related to each measurable outcome.

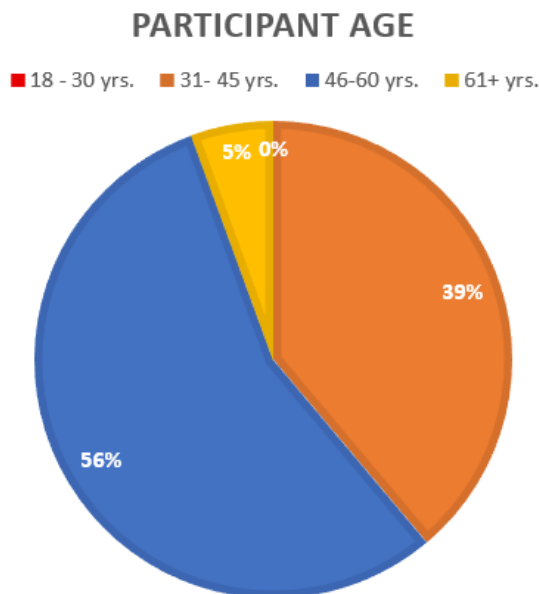
Demographics

Participant Age

Participant age ranges were collected at data collection one. Seven participants were 31-45 years of age, ten were 46-60 years of age, and one individual was 61+ years old (Table 1).

Table 1

Participant Age



Missing Data

There was no missing data for data collection point one. All participants who completed the pre- test also completed the post- test. As previously mentioned, three participants in data collection two indicated on the survey that they did not complete data collection one, and thus, were excluded from the data analysis. There was no other missing data.

Key Findings Regarding Preparation to Make Diet and Exercise Changes

The Readiness Ruler tool utilizes a 0 – 10 scale and was used to assess preparation to make the recommended diet and exercise changes while on semaglutide with 0 indicating *not prepared to change*, and 10 indicating *already changing*. The average rating of these three items in the surveys were 8 at pre-intervention (data collection one), 8.16 post-educational intervention (data collection one), and 8 at the second post-survey (data collection two).

Descriptive statistics

Paired t-test

Paired-samples t-test was conducted to evaluate the pre- and post-intervention means for determining change in perspective after viewing the educational presentation for participant likelihood of drinking half of their body weight (lbs.) in ounces (oz.) of water/day and reduction of caloric intake by 500 kcal/day. When analyzing participant likelihood of drinking half of their body weight (lbs.) in oz. of water/day, there was a significant difference between the pre- ($M = 0.44$, $SD = 0.51$) and post- ($M = 0.77$, $SD = 0.43$) educational intervention (Table 2); $t(17) = 2.91$, $p = 0.01$. When analyzing participant likelihood of reducing caloric intake by 500 kcal/day, there was also a significant difference between the pre ($M = 0.60$, $SD = 0.51$) and post ($M = 0.90$, $SD = 0.32$) educational intervention (Table 3); $t(17) = 2.38$, $p = 0.03$. These results suggest the educational intervention improved participant perspective of making lifestyle and dietary changes directly after the educational intervention (Table 4, Table 5).

Table 2

Paired Samples Statistics for Drinking Half of Body Weight in Ounces of Water

	Mean	N	Std. Deviation	Std. Error Mean
Pre- Intervention	0.44	18	0.51	0.13
Post- Intervention	0.77	18	0.43	0.1

Table 3***Paired Samples Statistics for Reducing Caloric Intake by 500 kcal***

	Mean	N	Std. Deviation	Std. Error Mean
Pre- Intervention	0.60	18	0.51	0.12
Post- Intervention	0.90	18	0.32	0.08

Table 4***Paired Samples Test (Paired Differences) for Table 2 Data***

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	p
				Lower	Upper			
Pre- Intervention	-0.34	0.08	0.02	-0.38	-0.29	2.91	17	0.01
Post- Intervention								

Table 5***Paired Samples Test (Paired Differences) for Table 3 Data***

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	p
				Lower	Upper			
Pre- Intervention	-0.33	0.59	0.14	-0.63	-0.03	2.38	17	0.03
Post- Intervention								

Short Answer Question: Type of Diet

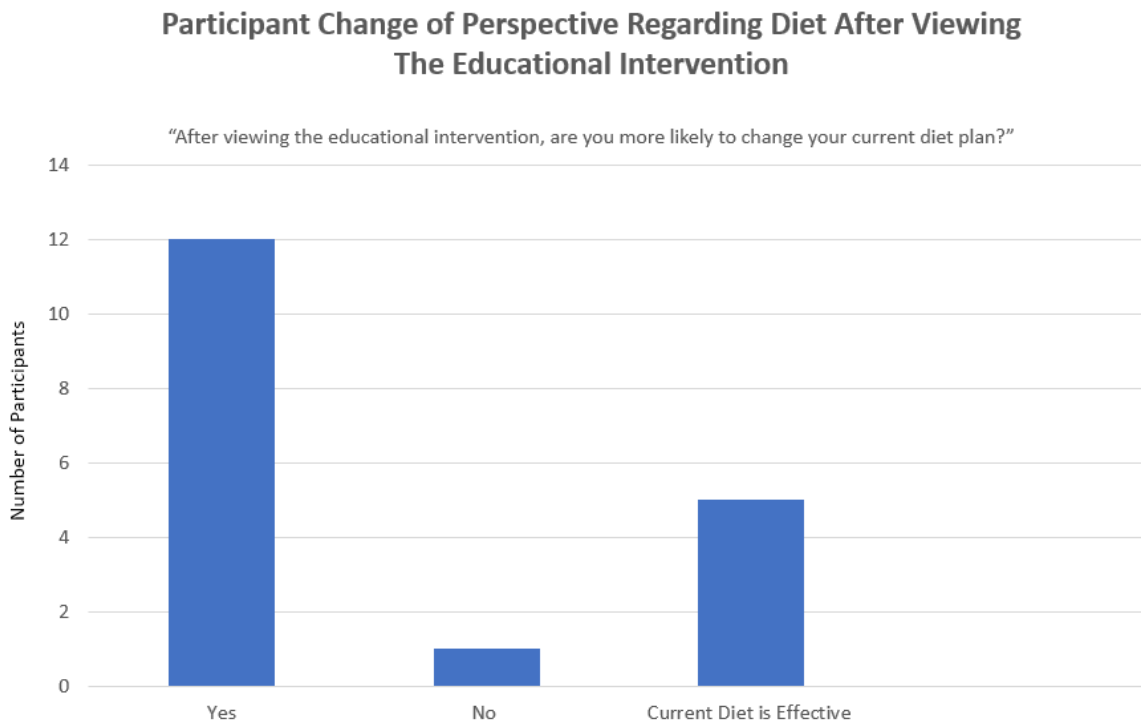
One question on the pre-intervention survey at data collection one and post-intervention survey at data collection two asked participants to describe their current type of diet. Most participants indicated they were not on any particular diet, fasted intermittently, or were on a low

carb diet. Other participants stated they eat according to the mediterranean diet, gluten free, or eat less in general.

At data collection one, post-intervention, participants were asked how likely they were to change their current diet plan after viewing the educational presentation. Twelve participants (67%) selected yes, five stated their current diet plan is effective for them (28%), and only one participant (5%) selected no (Table 6).

Table 6

Participant Change of Perspective Regarding Diet After Viewing Educational Intervention



Select All That Apply Question: Foods to Avoid

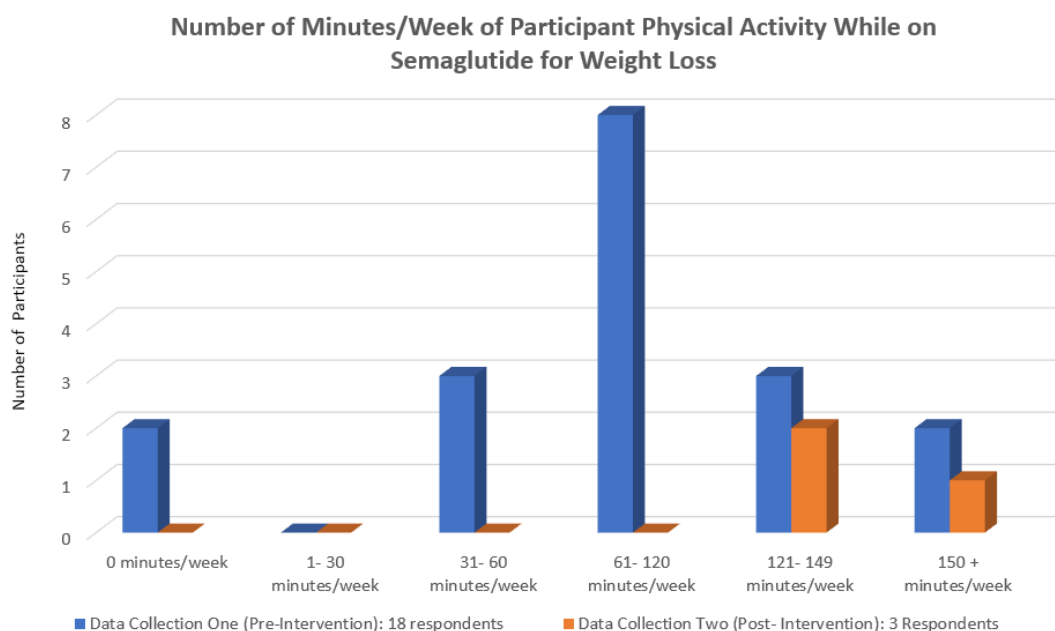
One of the select all that apply questions measured participant knowledge of foods to avoid while taking semaglutide for weight loss. At data collection one, 50% of participants answered the question correctly pre-educational intervention, and 95% of participants answered

the question correctly post-educational intervention. At data collection two, 100% of participants answered the question correctly, indicating the knowledge gained was retained.

Multiple Choice Questions Regarding Physical Activity

One of the multiple-choice questions measured participant knowledge of how many minutes per week of physical activity is recommended while taking semaglutide for weight loss. At data collection one, 22% of participants answered the question correctly pre-educational intervention, and 67% of participants answered the question correctly post-educational intervention. At data collection two, 33% of participants answered the question correctly. These values indicate participants gained knowledge immediately following the educational intervention but may not have retained the knowledge at data collection two.

When asked how many minutes of physical activity participants exercised per week, 11% of participants were already participating in the 150 minutes of recommended exercise per week. At data collection two, no participants indicated they were participating in the recommended 150 minutes of exercise per week. However, two of the three indicated they were exercising 121- 129 minutes/week, and the remaining participant was exercising 61-120 minutes/week (Table 7).

Table 7***Number of Minutes per Week of Participant Physical Activity While on Semaglutide*****Discussion****Limitations**

The project had several notable limitations. The sample size for the project was a small convenience sample recruited from a specific population, and thus, may not be representative of other populations. Second, due to the small number of survey questions and project timeframe of 21 days, limited information was collected. However, some information can still be useful to determine outcomes after viewing the educational presentation.

Data collection two only had six respondents, of which, three of the six were excluded since they did not participate in the first data collection. Data collection two was also conducted during the week of Thanksgiving, a national holiday, which may have limited the number of respondents. Also, during this time, participants could have easily been impacted by the holiday

and distracted from reducing their daily caloric intake, drinking half of their body weight (lbs.) in oz. water, and exercising 150 minutes/week.

The project had a limited timeframe for implementation and evaluation, which could have impacted the results. Data collection two was conducted two weeks after the educational intervention and may not have allowed participants enough time to plan for, implement, or sustain lifestyle changes. This makes it difficult to definitively conclude that the educational intervention was effective or led to a change in patient perspective and knowledge. Lastly, the timing of data collection two being the week of Thanksgiving may have impacted the response rate as well as the participants' answers to questions regarding hydration, eating habits, and physical activity.

Strengths

The project's strengths include the ability to utilize evidence-based guidelines to implement and provide educational resources to patients, further assisting with current and long-term weight loss efforts. Such at-home resources can aid in patient receptiveness of making lifestyle changes recommended for sustained weight loss. The educational video and handout can also continue to be used as a resource provided to patients engaged in weight loss at the project site, serving as an educational tool. The project also provided the opportunity to measure patient perspective and knowledge utilizing a small sample size.

Implications for Practice and Future Research

Findings from the project support use of the educational intervention to increase education and awareness regarding recommended lifestyle changes for weight loss while taking semaglutide and after discontinuation of the medication. Findings also suggest implementing the educational intervention into practice can promote continued utilization of recommended

guidelines in practice. Such recommendations could be incorporated in healthcare facilities for patients taking semaglutide for weight loss.

Opportunities for further research include repeating this study with a larger group of patients taking semaglutide for weight loss and measuring data at two, four, and six weeks after the educational intervention. Implementing the project amongst a larger group of patients will also allow for greater generalizability of the results and greater understanding of how the project impacts patient perspective and knowledge of the recommended lifestyle changes during and after treatment with semaglutide. Further research should also be done to measure how educational material can be used to enhance patient outcomes. Lastly, ongoing education for patients and providers regarding the lifestyle changes necessary while taking semaglutide can be important to improve weight loss outcomes in the long term. Future studies are recommended.

Conclusion

The purpose of the evidence-based project was to assess the effectiveness of an educational intervention focused on improving patient knowledge and receptiveness of making necessary diet and exercise changes during patient's semaglutide treatment plan. The clinical question prompting the project asked if an educational intervention would enhance patient understanding and perspective of lifestyle modifications necessary during and after treatment with semaglutide. The findings of the project indicate the educational intervention was beneficial and positively impacted participant knowledge and perspectives regarding diet, exercise, daily caloric intake, and daily water intake as recommended while taking semaglutide for weight loss. By increasing the knowledge of recommended lifestyle interventions for patients taking semaglutide, they may have enhanced their understanding of the pharmacological agent for

weight loss. This information may assist patients in minimizing side effects, reaching their weight loss goals, and promote long-term weight loss while combating metabolic adaptation.

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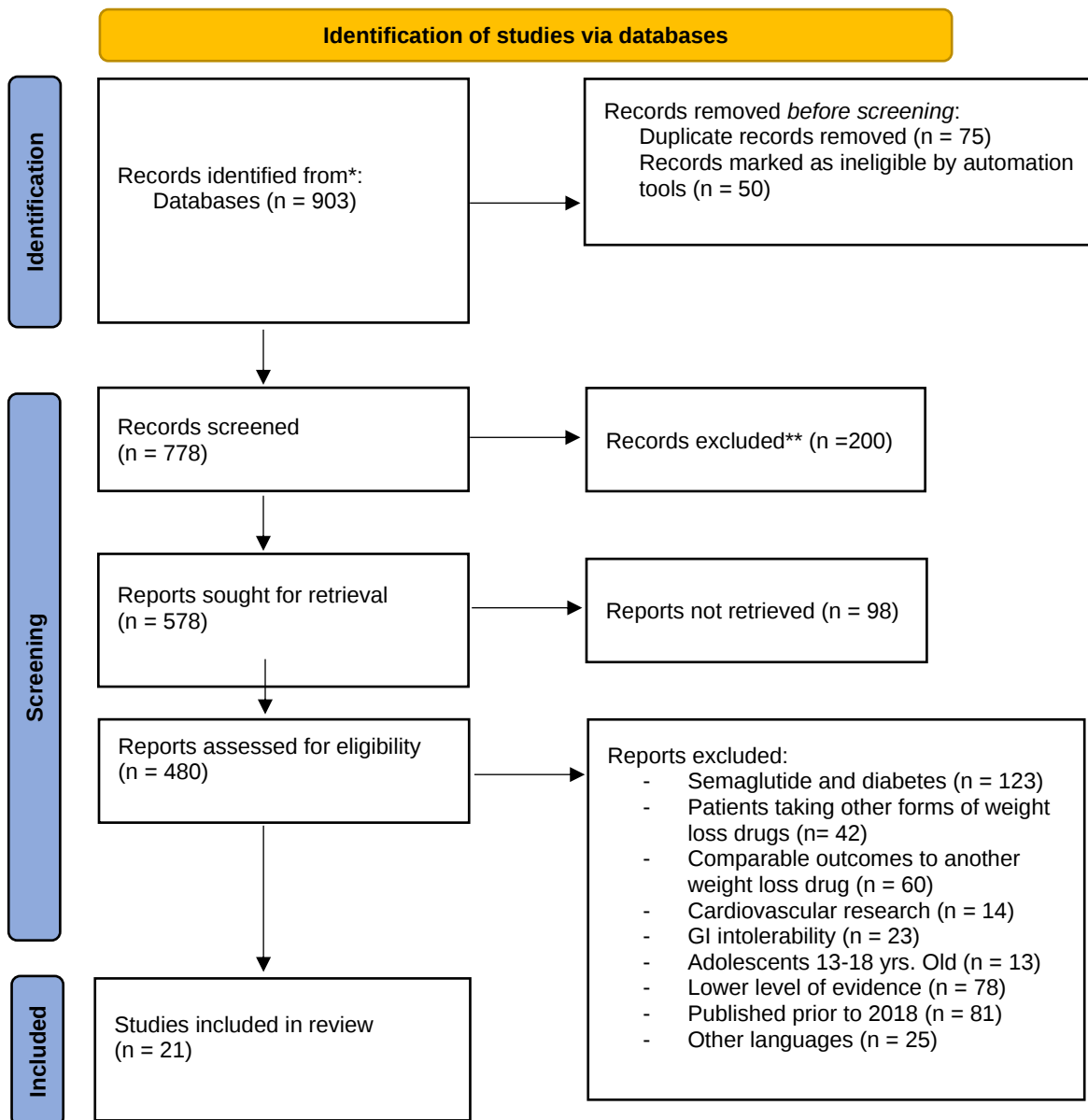
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Appendix A



Reference: Page et al. (2021)

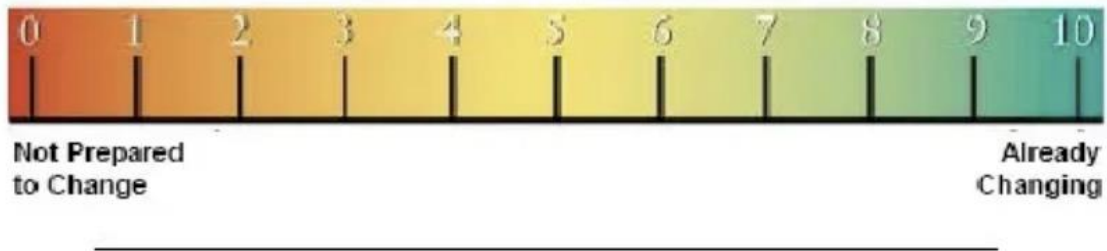
Appendix B

The Readiness Ruler Tool

Readiness Ruler

On the line below, mark where you are now on this line that measures your change in _____

Are you not prepared to change, already changing, or somewhere in the middle?



Reference: Weissbein, C. (2015)

Appendix C

Data Collection One Surveys

Data Collection One:

Pre-Survey



Q1. What is your age?

- ☐ 18- 30 years old
- ☐ 31- 45 years old
- ☐ 46- 60 years old
- ☐ 61+ years old

Q2. On the scale of 0 to 10, what is your current level of readiness for applying the recommended diet and exercise changes while on semaglutide for maximum weight loss and to maintain your weight loss?

Please select a response from 0-10 based on the scale shown below:

Readiness Ruler

On the line below, mark where you are now on this line that measures your change in

Are you not prepared to change, already changing, or somewhere in the middle?



Q3. Approximately how many minutes per week do you exercise?

- ☐ 0 minutes/ week
- ☐ 1- 30 minutes/ week
- ☐ 31- 60 minutes /week
- ☐ 61- 120 minutes/ week
- ☐ 121- 149 minutes/ week
- ☐ 150+ minutes/ week

Q4. How many minutes of exercise per week is recommended while on semaglutide?

- ☐ 0 minutes/ week
- ☐ 1- 30 minutes/ week
- ☐ 31- 60 minutes/ week
- ☐ 61- 120 minutes/ week
- ☐ 121- 149 minutes/ week
- ☐ 150+ minutes/ week
- ☐ Unsure

Q5. Do you drink half of your body weight (lbs.) in ounces of water per day?

- ☐ Yes
- ☐ No
- ☐ Unsure

Q6. Briefly describe the type of diet plan you're currently on. (Examples include: high protein, low carb, keto diet, intermittent fasting, fasting, Mediterranean diet, gluten free). If you're not on a specific diet plan, please type none.

Q7. Have you reduced your daily caloric intake by 500 kcal (calories) while on semaglutide?

- ☐ Yes
- ☐ No
- ☐ Unsure

Q8. Approximately how many meals do you eat daily consistently? If its variable, please response based on how many meals you eat the most consistently.

- ☐ 0 meals
- ☐ 1 meal
- ☐ 2 meals
- ☐ 3 meals
- ☐ 4 meals
- ☐ 5 meals
- ☐ 6 meals
- ☐ More than 6 meals/day

Q9. What side effects you've experienced while on semaglutide? Please select all that apply.

- ☐ Lack of appetite
- ☐ Nausea
- ☐ Vomiting
- ☐ Diarrhea
- ☐ Constipation
- ☐ Abdominal pain
- ☐ Reflux
- ☐ Other (please type response)

Q10. Which of the following should you avoid for increased weight loss and decreased side effect(s) while on semaglutide? Please select all that apply.

- ☐ Saturated fats
- ☐ Processed food
- ☐ Fried, greasy food
- ☐ Sugar
- ☐ Alcohol
- ☐ None of the above

Educational Intervention



Q11.

Please watch this video prior to the brief post-survey. Thank you.

Link: [Semaglutide \(GLP-1\) Educational Intervention - YouTube](#)

Post-Survey

Q1. What is your age?

- ☐ 18- 30 years old
- ☐ 31- 45 years old
- ☐ 46- 60 years old
- ☐ 61+ years old

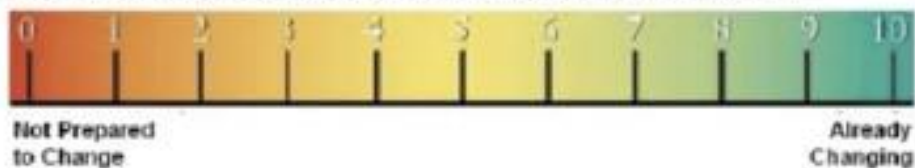
Q2. On the scale of 0 to 10, what is your current level of readiness for applying the recommended diet and exercise changes while on semaglutide for maximum weight loss and to maintain your weight loss?

Please select a response from 0-10 based on the scale shown below:

Readiness Ruler

On the line below, mark where you are now on this line that measures your change in

Are you not prepared to change, already changing, or somewhere in the middle?





Q3. How many minutes of exercise per week is recommended while on semaglutide?

- ☐ 0 minutes/ week
- ☐ 1- 30 minutes/ week
- ☐ 31- 60 minutes/ week
- ☐ 61- 120 minutes/ week
- ☐ 121- 149 minutes/ week
- ☐ 150+ minutes/ week
- ☐ Unsure

Q4. After viewing the presentation, are you likely to drink half of your body weight (lbs.) in ounces of water per day?

- ☐ Not applicable, I'm already drinking half of my body weight (lbs.) in oz. of water/ day
- ☐ Yes
- ☐ No
- ☐ Unsure

Q5. After viewing the presentation, are you likely to change the current diet plan you're on?

- ☐ Not applicable, my current diet plan is effective for me
- ☐ Yes
- ☐ No
- ☐ Unsure

Q6. After viewing the presentation, are you likely to reduce your daily caloric intake by 500 kcal (calories)/ day while on semaglutide?

- ☐ Not applicable, I've already reduced my daily caloric intake by 500 kcal
- ☐ Yes
- ☐ No
- ☐ Unsure

Q7. Which of the following should you avoid for increased weight loss and decreased side effect(s) while on semaglutide? Please select all that apply.

- ☐ Saturated fats
- ☐ Processed food
- ☐ Fried, greasy food
- ☐ Sugar
- ☐ Alcohol
- ☐ All of the above
- ☐ None of the above

Appendix D

Data Collection Two Survey

Data Collection Two:

Q1. Did you participate in the previous survey with the educational presentation?

- ☐ Yes
- ☐ No

Q2. On the scale of 0 to 10, what is your current level of readiness for applying the recommended diet and exercise changes while on semaglutide? Please select a response from 0-10 based on the scale shown below:

Readiness Ruler

On the line below, mark where you are now on this line that measures your change in

Are you not prepared to change, already changing, or somewhere in the middle?



Q3. Approximately how many minutes per week do you exercise?

- ☐ 0 minutes/ week
- ☐ 1- 30 minutes/ week
- ☐ 31- 60 minutes /week
- ☐ 61- 120 minutes/ week
- ☐ 121- 149 minutes/ week
- ☐ 150+ minutes/ week

Q4. How many minutes of exercise per week is recommended while on semaglutide?

- ☐ 0 minutes/ week
- ☐ 1- 30 minutes/ week
- ☐ 31- 60 minutes/ week
- ☐ 61- 120 minutes/ week
- ☐ 121- 149 minutes/ week
- ☐ 150+ minutes/ week
- ☐ Unsure

Q5. Since the previous survey, have you been drinking half of your body weight (lbs.) in ounces of water per day?

- ☐ Yes
- ☐ No
- ☐ Unsure

Q6. Briefly describe the type of diet plan you're currently on. (Examples include: high protein, low carb, keto diet, intermittent fasting, fasting, Mediterranean diet, gluten free). If you're not on a specific diet plan, please type none.

Q7. Since the previous survey, have you reduced your daily caloric intake by 500 kcal (calories) while on semaglutide?

- ☐ Yes
- ☐ No
- ☐ Unsure

Q8. Approximately how many meals do you eat daily consistently? If it's variable, please response based on how many meals you eat the most consistently.

- ☐ 0 meals
- ☐ 1 meal
- ☐ 2 meals
- ☐ 3 meals
- ☐ 4 meals
- ☐ 5 meals

Q9. Which of the following should you avoid for increased weight loss and decreased side effect(s) while on semaglutide? Please select all that apply.

- ☐ Saturated fats
- ☐ Processed food
- ☐ Fried, greasy food
- ☐ Sugar
- ☐ Alcohol
- ☐ All of the above
- ☐ None of the above

Appendix E

Educational Handout

SEMAGLUTIDE EDUCATION

While taking semaglutide it is recommended to:

- 1. Engage in 150 min. of physical activity/week**
Exercising plays a large role in successful weight loss with semaglutide. If a workout plan is not put in place while taking this medication and maintained after, your weight can come back. This is called "metabolic adaptation."
Average weight loss with diet and exercise is 10-20% of bodyweight. 5-10% without exercise.
- 2. Reduce daily caloric intake by 500 kcal/day**
Check the nutrition facts label for serving sizes and number of calories.
- 3. Drink half of your body weight (lbs.) in ounces of water/day**
Drinking water can boost your metabolism and help you feel fuller.

Common Side Effects:	Foods to AVOID:
Decreased appetite Nausea Vomiting Diarrhea Constipation Abdominal pain Reflux	Saturated fats Processed food Fried, greasy food Sugar Alcohol

Food Suggestions:

Non-starchy vegetables: These include leafy greens, broccoli, zucchini, brussels sprouts, asparagus, cabbage, cucumber, cauliflower, squash, tomatoes, peppers, and mushrooms. They are low calories and carbohydrates and high in fibers, vitamins, and minerals.

Whole grains: These include brown rice, quinoa, whole wheat bread, and oatmeal. They are high in fiber, giving you energy without elevating your blood sugar.

Lean protein: This includes chicken, fish, tofu, and legumes. They are low in fat and can help you feeling full.

Healthy fats: These include nuts, seeds, avocado, and olive oil. They are high in monounsaturated and polysaturated fats, which can help lower cholesterol.

Fruits: These include berries, apples, oranges, and bananas. They are high in fiber and vitamins and can help satisfy your sweet tooth.

Low-fat dairy: This includes fat-free milk products, less butter, or low-fat cheese.

10 Tips to Get the Best Results:

1. Minimize daily caloric intake by 500 kcal/day.
2. Make sure you get in your exercise. Walking is a low-impact exercise that yields high results.
3. Stay hydrated.
4. Eat slowly- this gives your brain time to tell your body that you are full, so you do not overeat.
5. Be mindful of portion control. Sometimes using a smaller plate will help keep you from taking too much food.
6. Do not skip breakfast or avoiding eating at night. Eating throughout the day boosts your metabolism for fat and calorie burn.
7. Stay on a consistent schedule.
8. Avoid purchasing food or beverages that you are not supposed to eat. This way, you won't have access to them, and you won't be tempted.
9. Spend time prepping meals and snack so they are ready to eat and easily accessible.
10. Avoid getting bored of eating the same things by getting creative with your food choices. Explore low-calorie recipes online or join a social media group dedicated to healthy eating and weight loss.

Appendix F



Institutional Review Board

DATE: 11-2-2023
TO: Alexis Young, Felicia Stewart, Tara Fox
FROM: Institutional Review Board
RE: S23.208
TITLE: Assessing patient perspective of diet and exercise in patients taking Semaglutide: an educational intervention
SUBMISSION TYPE: New Project
ACTION: Determination of EXEMPT Status
DECISION DATE: 11-2-2023

The Institutional Review Board at Marian University has reviewed your protocol and has determined the procedures proposed are appropriate for exemption under the federal regulation. As such, there will be no further review of your protocol and you are cleared to proceed with your project. The protocol will remain on file with the Marian University IRB as a matter of record.

Although researchers for exempt studies are not required to complete online CITI training for research involving human subjects, the IRB **recommends** that they do so, particularly as a learning exercise in the case of student researchers. Information on CITI training can be found on the IRB's website: <http://www.marian.edu/academics/institutional-review-board>.

It is the responsibility of the PI (and, if applicable, the faculty supervisor) to inform the IRB if the procedures presented in this protocol are to be modified or if problems related to human research participants arise in connection with this project. Any procedural modifications must be evaluated by the IRB before being implemented, as some modifications may change the review status of this project. Please contact me if you are unsure whether your proposed modification requires review. Proposed modifications should be addressed in writing to the IRB. **Please reference the above IRB protocol number in any communication to the IRB regarding this project.**

A handwritten signature in blue ink, appearing to read "Christina Pepin".

Christina Pepin, Ph.D., RN, CNE
Chair, Marian University Institutional Review Board