Author: **Simpson, Darby R.**

Title: **An Evaluation of the Effectiveness of Weight Loss Surgery Support Groups on Weight Loss Management and Eating Behaviors Post-weight Loss Surgery**

The accompanying research report is submitted to the **University of Wisconsin-Stout**, **Graduate School** in partial completion of the requirements for the

Graduate Degree/ Major: **MS Food and Nutritional Sciences**
Research Advisor: **Carol Seaborn, Ph.D., R.D., C.D.**

Submission Term/Year: **Spring, 2013**

Number of Pages: **66**

Style Manual Used: American Psychological Association, 6th edition

☒ **I understand that this research report must be officially approved by the Graduate School and that an electronic copy of the approved version will be made available through the University Library website**

☒ **I attest that the research report is my original work (that any copyrightable materials have been used with the permission of the original authors), and as such, it is automatically protected by the laws, rules, and regulations of the U.S. Copyright Office.**

☒ **My research advisor has approved the content and quality of this paper.**

STUDENT:

NAME **Darby Simpson** **DATE: May 15, 2013**

ADVISOR: (Committee Chair if MS Plan A or EdS Thesis or Field Project/Problem):

NAME Carol Seaborn **DATE: May 15, 2013**

This section for MS Plan A Thesis or EdS Thesis/Field Project papers only
Committee members (other than your advisor who is listed in the section above)

1. **CMTE MEMBER'S NAME:** Kerry Peterson **DATE: May 15, 2013**

2. **CMTE MEMBER'S NAME:** Judy Kennedy **DATE: May 15, 2013**

3. **CMTE MEMBER'S NAME:** **DATE:**

This section to be completed by the Graduate School
This final research report has been approved by the Graduate School.

Director, Office of Graduate Studies: **DATE:**

Simpson, Darby R. ***An Evaluation of the Effectiveness of Weight Loss Surgery Support Groups on Weight Loss Management and Eating Behaviors Post-Weight Loss Surgery***

Abstract

This study evaluated the effectiveness of weight loss support groups on weight loss management and eating behaviors of post-weight loss surgery patients. A survey was administered to 41 attendees of local weight loss support groups facilitated by registered dietitians or nurses. Data were analyzed to find if relationships existed between body mass index changes and the following variables: attendance at weight loss support groups, registered dietitian visits, and physical activity. Most subjects were consciously trying to change their eating habits, were following post-surgery guidelines, and claimed to be exercising regularly. A significant correlation was found between the number of weight loss support groups sessions attended and change in body mass index. As the partial correlation accounting for the time elapsed since surgery was significant, attendance at the support group was associated with weight change rather than elapsed time. The majority of the subjects perceived that support groups and visits with a dietitian were beneficial. This study shows that attendance of weight loss support groups is associated with weight loss and increased adherence to post-surgery guidelines.

Acknowledgments

I would like to acknowledge those who have made the completion of this research project possible. Thank you to Dr. Carol Seaborn, committee chair and graduate program advisor, for your devoted time and effort, as well as having the confidence in me to complete this thesis. UW-Stout's Food and Nutritional Sciences program is very fortunate to have such a positive, caring faculty member who shows so much dedication to her students. Also, a sincere thank you goes out to Dr. Kerry Peterson and Judy Kennedy for serving on my thesis committee and volunteering your time to provide valuable feedback for my research work. Another UW-Stout faculty member who has contributed to the accomplishment of this project is Susan Greene. Her assistance and committed time with the data analysis is very much appreciated and I could not have done it without her.

I also would like to thank the Karla Arrigoni, RD, for inspiring me to choose this topic relating to weight loss surgery support groups. I know your nutrition expertise and counseling skills in this field have helped many patients achieve their desired weight, ultimately improving overall health.

I am blessed for having very supportive parents who have provided much encouragement since I decided to change my career and go back to graduate school for my passion in nutrition. Their willingness to babysit my dog, Slim, for all those hours spent in the library, is utmost appreciated! I am also thankful for having Garrett in my life to provide that extra push that led me to achieve my academic goals.

Table of Contents

List of Tables

List of Figures

Chapter I: Introduction

Obesity is a growing epidemic in developed countries throughout the world. It is estimated that 1.7 billion people are obese with the highest adult percentage found in the United States (Beck, Johannsen, Stoving, Mehlsen, & Zachariae, 2012). The obesity epidemic is associated with increased mortality and morbidity rates, reduced life expectancy, and increased healthcare costs (Neff, Olbers, & le Roux, 2013). An individual is considered obese when their body mass index (BMI) is 30.0 kg/m² or higher. There are three classes of obesity: obesity class I (BMI 30.0-34.9 kg/m²), obesity class II (BMI 35.0-39.9 kg/m²), and extreme obesity class III (BMI ≥ 40 kg/m²) (Gee, Mahan, & Escott-Stump, 2008). It is well known that obesity is associated with the increased prevalence of chronic diseases such as diabetes, hypertension, and cardiovascular disease. Weight loss of only 5% to 10% of total body weight has been shown to reduce the risk of these chronic diseases (Maggard et al., 2005). However, some obese people are unable to lose the excess weight on their own after trying many different weight loss methods.

Weight loss surgery, also known as bariatric surgery, is clinically known to be the most effective treatment for extremely obese individuals (BMI ≥ 40 kg/m²) for achieving weight loss, improvement of chronic diseases, and decreasing the risk for mortality (Kendrick & Dakin, 2006). In a meta-analysis of surgical treatment for obesity, Maggard et al. (2005) reported that after two years, 845 patients who had the weight loss surgery had a lower incidence of hypertension, diabetes, and lipid abnormalities compared to 845 matched controls who used nonsurgical methods to lose the weight. Other studies have shown that behavior modification treatment and medications are less effective treatments for sustaining weight loss in those who eventually seek weight loss surgery (Lee, Kelly, & Wassef, 2007).

Weight loss surgery achieves weight loss by two different procedures depending on the type of surgery. These procedures are restrictive, malabsorptive, or both (Lee et al., 2007). Restrictive procedures involve an operation that changes the physiological mechanism of restricting food intake, and the malabsorptive procedures involve inducing malabsorption throughout the intestines (Kendrick & Dakin, 2006). The three most common types of weight loss surgeries are the Roux-en-Y gastric bypass (RYGBP), laparoscopic adjustable gastric banding (LAGB), and the biliary-pancreatico diversion with duodenal switch (BPD/DS) (Lee et al., 2007).

Studies have concluded that about 50% of weight loss surgery patients will experience some sort of weight gain sometime after the operation (Budak, 2012). The most common reasons for postsurgical weight loss and management failure are dietary noncompliance such as increasing intake of calorie-dense foods, candies, or sweets, and other eating or lifestyle behaviors such as chronically overeating and eliminating physical activity (Shikora, Kim, & Tarnoff, 2007). These patients who gain weight are usually the ones who admit to having eating behaviors such as increased appetite, increased meal size tolerance, and changes in dietary habits that lead to increased calorie intake (Shikora et al., 2007).

Weight loss support groups (Wing, Tate, Gorin, Raynor, & Fava, 2006) and meeting with a registered dietitian (Parrott, Parrott, Sowemimo, & Adeyeri, 2012) are shown to provide some success in weight loss and managing weight loss after surgery, but more studies are needed due to the many different variables that should be accounted for weight gain and to add to the body of knowledge in this growing area.

Statement of the Problem

Even though weight loss surgery is shown to be very effective in losing much of the excess weight in obese individuals, keeping the weight off is not guaranteed. While there are studies that indicate weight loss support groups are beneficial in assisting with weight loss and management as well as encouraging compliant behaviors relating to eating and physical activity, more research is needed to continue to assist in validating the benefit of support groups.

Purpose of the Study

Social support after weight loss surgery may help to lose the excess weight and maintain weight loss (Livhits et al., 2010). However, the overall impact of this support, such as weight loss support groups or meeting with a dietitian is not known. This study evaluates whether weight loss support groups have an effect on weight loss, weight loss maintenance, and eating behaviors for those who have undergone weight loss surgery. More specifically, this study addresses the following research questions:

1. Do post-weight loss surgery patients exhibit eating behaviors that may prevent weight loss?
2. Does attending a weight loss support group reflect positively on weight loss/management for those who had weight loss surgery more than six months ago?
3. Does meeting with a registered dietitian on a regular basis reflect positively on weight loss/management for those who had weight loss surgery more than six months ago?
4. For those who have had weight loss surgery at least six months ago, is physical activity related to how much weight the patient has lost in the last three months?

Assumptions of the Study

The main assumption in this study was that all participants have a goal of wanting to lose excess weight and maintain their weight loss throughout the rest of their life. Some questions used in the instrumentation have been used in a previous study with a similar population (Boeka, 2009). Other questions in the instrumentation have not been used before and have not been tested for reliability or validity. It was assumed that these questions did measure the intended behavior and all participants answered all questions truthfully and accurately. It was also assumed that the height and weight values were self-reported accurately by the subjects.

Definition of Terms

Biliary-pancreatico diversion with duodenal switch (BPD/DS). A type of weight loss surgery that is a restrictive and malabsorptive procedure involving the removal of part of the stomach and reconnecting the remaining section to the ileum portion of the small intestine. The small intestine is rearranged to provide a separate flow of pancreatic and bile juices to the ileum (Neff et al., 2013).

Binge eating disorder (BED). The most common eating disorder in the United States that involves regularly eating a large amount of food in a short period of time with a sense of lack of control (Weight-control Information Network [WIN], 2012)

Body mass index (BMI). A mathematical formula that correlates with body fat and is expressed as weight in kilograms divided by height in meters squared (BMI = kg/m^2) (Gee et al., 2008).

Comorbidity. Having two or more medical diseases present such as being diagnosed with type 2 diabetes and hypertension.

Dumping syndrome. A complex physiologic response to the rapid emptying of hypertonic contents (food) into the duodenum and jejunum that includes symptoms such as bloating, nausea, vomiting, abdominal pain, and diarrhea (Gee et al., 2008).

Eating behaviors. Actions that influence weight loss include eating with no control, grazing throughout the day, chewing or spitting out food, emotional eating, and nocturnal eating (de Zwaan et al., 2010).

Laparoscopic adjustable banding (LAGB). A restrictive-only weight loss surgery that involves placing an inner inflatable silicone band around the portion of the stomach nearest to the esophagus that is adjusted by inflation, accessed through a subcutaneous port located on the abdominal wall (Neff et al., 2013).

Roux-En-Y gastric bypass (RYGBP). A restrictive and malabsorptive gastric bypass surgery involving sectioning off the stomach into an upper gastric pouch and reattaching it to the jejunum ("roux limb"). The remaining section of the stomach is still present and is also attached to the jejunum in order to continue to release gastric juices for digestion (Neff et al., 2013).

Weight loss management. Consequence when individuals who have intentionally lost a desired amount of weight and kept it off for a length of time (Wing & Phelan, 2005).

Weight loss surgery. Also known as bariatric surgery, it is a surgical procedure promoting weight loss by changing the anatomy of the stomach and/or intestines either in a restrictive and/or malabsorptive way.

Weight loss support group. A group meeting with a facilitator that provides emotional support and education for patients and their family members considering weight loss surgery or for those who have already had weight loss surgery.

Chapter II: Literature Review

The purpose of this study was to evaluate the effectiveness of weight loss support groups on weight loss management and eating behaviors post-weight loss surgery. This chapter provides background information on weight loss surgery, weight loss, and eating behaviors associated with prevention of weight loss and maintenance.

Background

Weight loss surgery is continuing to grow with the increasing obesity epidemic. In 2007, an estimated 205,000 weight loss surgeries were performed in the United States, showing a 15% growth since 2006 (Budak, 2012). The current criteria for having this surgery recommended by the National Institutes of Health Consensus Development Conference Panel include having a BMI $\geq$ 40 kg/m² with comorbid conditions, proof of failure of nonsurgical weight-loss methods, absence of medical and psychological contradictions, and being well-informed, compliant, and motivated (Collazo-Clavell, Clark, McAlpine & Jensen, 2006). According to the University of Colorado Health (2013), insurance coverage varies for weight loss surgery and most require a pre-surgical program that involves consulting with a registered dietitian on diet modifications, documented increased physical activity in medical records, and some type of behavioral modification intervention, such as attending weight loss support groups.

Common Weight Loss Surgeries

The "gold standard" of weight loss surgeries is currently the roux-en-y gastric bypass (RYGBP). This is a restrictive and malabsorptive gastric bypass surgery involving sectioning off the stomach into an upper gastric pouch and reattaching it to the jejunum ("roux limb") (Neff et al., 2013). The remaining section of the stomach is still present and is also attached to the jejunum in order to continue to release gastric juices for digestion (Neff et al., 2013).

Advantages of the RYGBP surgery are sustainable weight loss, reduced comorbidities, presence of dumping syndrome symptoms that can prevent maladaptive eating patterns, and the reduced likelihood of having to revisit the operation (Kendrick & Dakin, 2006). Disadvantages include risk for obstruction, having to reconnect two structures (anastomosis), dumping symptoms, and surgery complications (Kendrick & Dakin, 2006).

The laparoscopic adjustable gastric banding surgery (LAGB) is a restrictive-only surgery and involves placing an inner inflatable silicone band around the portion of the stomach nearest to the esophagus (Neff et al., 2013). This band is adjusted by inflation, accessed through a subcutaneous port located on the abdominal wall (Neff et al., 2013). Advantages include no surgical connection of organs, low perioperative risks, capability to be adjusted, and being reversible (Kendrick & Dakin, 2006). Disadvantages include low weight loss outcomes, inappropriate requests for adjustment, and long-term band complications such as band slippage or breakage (Kendrick & Dakin, 2006).

Biliary-pancreatico diversion with duodenal switch (BPD/DS) surgery is also a type of gastric bypass that is a restrictive and malabsorptive procedure that involves removing part of the stomach and reconnecting the remaining section to the ileum portion of the small intestine (Neff et al., 2013). This creates the restrictive component. The small intestine is rearranged to provide a separate flow of pancreatic and bile juices to the ileum, creating the malabsorptive component (Neff et al., 2013). Advantages of this surgery include improved weight loss, reduced incidence of dumping syndrome symptoms, and improved reduction in comorbidities (Kendrick & Dakin, 2006). Disadvantages include metabolic and nutritional complications, increased technical difficulties, increased ulcer risk, and symptoms of diarrhea (Kendrick & Dakin, 2006).

Complications of Weight Loss Surgery

Along with the less common technical malfunctions, such as opening of wounds, there are other complications that follow the different types of weight loss surgery, but these complications are very individualized. Abdominal pain is a common symptom after surgery, usually related to consuming too much food, which causes the lower esophageal sphincter to spasm (Lee et al., 2007). Other reasons for abdominal pain include hernias, gallstone formation, ulcers, dumping syndrome, fatty food intolerance, lactose intolerance, adhesions, and bowel symptoms such as constipation (Shikora et al., 2007).

Dumping syndrome is a common side effect seen in most patients after undergoing RYGBP surgery due to decrease in the size of the stomach (Kendrick & Dakin, 2006). It is defined in *Krause's Food and Nutrition Therapy* as a "complex physiologic response to the rapid emptying of hypertonic contents (food) into the duodenum and jejunum (Gee et al., 2008). Common symptoms involving the gastrointestinal tract include bloating, nausea, vomiting, abdominal pain, and diarrhea that may impact nutritional status (Gee et al., 2008).

Post-surgical Nutritional and Physical Activity Guidelines

Post-surgical eating patterns have been recommended by the American Society for Metabolic and Bariatric Surgery to promote healing while still obtaining adequate energy and nutrition, and to minimize symptoms such as reflux, early satiety, and dumping syndrome, while maximizing weight loss and weight maintenance (Aills, Blankenship, Buffington, Furtado, & Parrott, 2008). Depending on the individual's tolerances and type of surgery that was performed, the phases of diet texture post-surgery is recommended as follows: clear liquid diet, full liquid diet, pureed diet, mechanically altered diet, and then a regular diet (Aills et al., 2008). The number of days a post-surgical patient will follow these phases will vary, but some weight loss

surgery programs have reported that patients return to a regular diet six to eight weeks after surgery (Aills et al., 2008). Foods that have been recommended to avoid or delay reintroduction to the diet after the surgery include any sugary food or beverage, carbonated beverages, fruit juice, high-saturated fatty-fried foods, soft "doughy" bread, pasta, rice, dry red meat, nuts, popcorn, fibrous foods, caffeine, and alcohol (Aills et al., 2008). However, it is important to remember that every individual is different in how they handle these foods, and there is little research to support these recommendations (Aills et al., 2008).

Post-surgery, incorporating physical activity into the patient's lifestyle is important for weight loss management, and the recommendation for the amount of activity for every individual is different. Along with the weight loss, physical activity is also beneficial in preventing or decreasing the risk for complications with chronic diseases such as cardiovascular disease, type 2 diabetes, metabolic syndrome, and some cancers, along with strengthening muscles and bones (Centers for Disease Control and Prevention (CDC), 2011). Barriers that prevent the engagement of physical activity for post-surgical weight loss individuals include personal frustration with the recommendations, unwillingness to physical activity in public places, and the difficulties perceived when incorporating physical activity into their lifestyle (McMahon et al., 2006). Weight loss surgery programs vary in the scope of education and physical activity programs for their weight loss surgery patients. The American Society for Metabolic and Bariatric Surgery (ASMBS) (2008) stresses that starting physical activity immediately after surgery is very important to achieving long-term and successful weight loss. They add that prevention of muscle mass loss, enhancing the immune system, reducing appetite, preventing fatigue, and improving overall sense of well-being are all benefits to physical activity (ASMBS, 2008).

A study on the amount of physical activity in relation to weight loss after weight loss surgery was conducted by Evans et al. (2007). The researchers compared weight loss at three, six, and twelve months post-surgery for those who followed their recommendation of 150 minutes of physical activity per week and for those who did not meet this recommendation. There was no significant difference in excess weight loss found between the groups at the three month mark, but there was a significant difference found at six and nine months, which showed that exercising more than 150 min/wk post weight loss surgery, resulted in a higher percentage of excess weight loss (Evans et al, 2007). This is a good indication that making physical activity a priority after the surgery will assist in losing and managing weight loss.

Post-surgery Weight Loss

Following weight loss surgery, most patients will lose weight quickly to start, and then as time passes, the weight loss is expected to gradually slow down at about 18 months (ASMBS, 2008). In RYBGP, physiological mechanisms that aid in this rapid weight loss include reduced hunger and/or increased satiation, increased energy expenditure, and altered taste perception (Laurenius et al., 2012). Different activities can affect weight loss including physical activity and eating behaviors. About 20-25% of RYBGP patients experience weight loss regain, with a bigger incidence seen in LAGB patients, and a smaller incidence in BPD/DS patients (Shikora et al., 2007). A meta-analysis of bariatric surgeries published in 2004 reported the mean percentages of excess weight loss in RYBGP, LAGB, and BPD/DS as 61.6%, 47.5%, and 70.1%, respectively (Buchwald et al., 2004).

Another study conducted by Sjöström el al. (2004), investigated weight loss two to ten years post-surgery compared with a nonsurgical support group. Their findings showed that peak weight loss occurred at about one year in the weight loss surgery groups and at six months in the

non-surgery, control group (Sjöström et al., 2004). The percentage of subjects in the different surgical groups who achieved 20% or more weight loss over the ten year period ranged from 27.6% to 73.5% compared to the 3.8% who achieved 20% or more weight loss in the non-surgical group (Sjöström et al., 2004). These data suggest that weight loss surgery can be very effective in helping people lose weight.

Weight regain post-surgery in bariatric patients is usually observed two years post-surgery, and the lowest weight ever obtained is usually observed between 18 and 24 months (Magro et al., 2008). A five-year prospective study conducted by Magro et al. (2008) investigated weight regain after surgery and found that percent BMI lost was no longer significant ($p < 0.001$) after two years, and that weight regain became significant within four years. However, 50% of the subjects gained some weight within two years after the surgery.

It is important for obese individuals to not regain excess weight because it could lead to problems that affect their mental, metabolic, and psychological health such as increasing blood pressure and cholesterol (Kayman, Bruvold, & Stern, 1990). Also, regaining weight may have consequences that outweigh the benefits of the initial loss such as having detrimental effects on blood pressure and cholesterol (Kayman et al., 1990). In a study conducted by Kayman et al. (1990), weight loss maintainers were surveyed to find out their strategy for successful weight maintenance. The top seven characteristics for those individuals able to achieve weight maintenance were as follows: monitors weight on scale, stays physically active, eats less, watches calorie intake, limits high-fat foods, limits high-sugary foods, and practices good eating habits (Kayman et al, 1990).

Weight Loss Support

Some insurance companies and weight loss surgery programs make it a requirement for weight loss surgery candidates to attend support groups before the surgery occurs. However, there is a paucity of evidence providing that participation in support groups is an effective strategy for losing or managing weight (Parikh et al., 2012). A pilot study was conducted by Parikh et al. (2012) to determine if a pre-surgery, medically-supervised weight management program had an effect on weight loss and weight loss-associated behaviors. There were no significant differences found in these variables comparing those who attended the medically-supervised weight management program before surgery and those who did not attend. This indicates that a weight management program before the surgery may or may not be effective.

Some authors suggest that the success of weight loss surgery support groups should not solely look at the amount of weight lost, but also other factors such as decreases in mortality and morbidity rates due to weight loss, quality-of-life, and ability to work (Hildebrandt, 1998). Having a face-to-face follow-up program with a registered dietitian (RD) or weight loss support group could have beneficial weight loss management outcomes. In a study conducted by Wing, Tate, Gorin, Raynor, & Fava (2006), a group of 314 participants who had lost a mean of 19.3 kg of body weight in the previous two years were split into three groups receiving a quarterly newsletter, face-to-face intervention, or internet-based intervention for weight loss management over a duration of 18 months. Results showed a significant difference in mean weight gain between the face-to-face intervention (2.5±6.7 kg) and newsletter group (4.9±6.5 kg) (Wing et al., 2006).

The role of a RD can also play a big role in the post-surgical patient's weight loss journey. Because nutritional deficiencies can arise after the surgery due to alterations made to

the gastrointestinal tract, an RD can counsel and educate the patient on obtaining the adequate amount of nutrients needed for healthy healing and overall health. Registered dietitians also have a role in helping the weight loss surgery patient to adhere to post-surgical guidelines. Nutrition counseling is used to motivate and hold the patients accountable for their weight loss success (Beckman & Earthman, 2013). Due to a limited number of studies, little is actually known about the benefits of meeting with an RD after weight loss surgery relating to weight loss and weight loss management. A study done by Parrott, Parrott, Sowemimo, & Adeyeri (2012) concluded that the implementation of a specialized weight loss RD before weight loss surgery showed greater pre-surgical weight loss attainment and greater consistency of nutritional counseling compared to general nutritional education. Also, using a specialized weight loss counseling RD was also associated with greater excess weight loss at one and three months following the surgery (Parrott et al., 2012).

Eating Behaviors

Eating behaviors that influence weight loss include eating with no control, picking or nibbling at food throughout the day, in-between meals that are not considered snacks, chewing or spitting out food, emotional eating, and nocturnal eating (de Zwaan et al., 2010). However, little information is known about the prevalence of these eating behaviors that influence weight after weight loss surgery (Laurenius et al., 2012). Binge eating disorder (BED) involves many different eating behaviors such as eating large amounts of food in a short period of time even when hunger feelings are absent, feeling a lack of control when eating, eating until uncomfortably full, and eating alone (Weight-control Information Network (WIN), 2012). This disorder may also involve having feelings of being disgusted, depressed or guilty after overeating (WIN, 2012). Various studies show that the prevalence of BED among those who have had

weight loss surgery ranges from 11% to greater than 50% in the subjects used (Sallet et al., 2007).

Because of the symptoms of BED listed above, losing weight and maintaining weight following weight loss surgery can be difficult to achieve. A study investigating the prevalence of pre-surgical patients with binge eating disorder found that 33.3% had a severe binge eating problem, as indicated on the Binge Eating Scale, and over half engaged in other eating behaviors such as grazing more than two times per week (Saunders, 1999). A study conducted by Sallet et al. (2007) examined how BED related to weight loss following RYGBP surgery. Two years following the surgery, the group that did not have BED prior to surgery (n=33), had a higher percentage of total BMI loss (38.8±6.7 kg/m^2) that was significantly different than the group that did have BED (31.7±8.7 kg/m^2) (Sallet et al., 2007). However, a recent study conducted by Wadden et al. (2011) did not find a significant difference in weight loss after one year between those who were diagnosed with BED before surgery and those who were not. These researchers proposed that although individuals are diagnosed with BED, the condition does not mean the individuals will not be successful at maintaining their weight loss. Further studies on BED being a predictor for weight loss surgery success are recommended.

Snacking and grazing are considered eating behaviors that can prevent weight loss. These behaviors have to do with consuming food throughout the day and in-between regular meals. Snacking is a behavior that could prevent weight loss but has not been well studied in gastric bypass patients (Adams, Salhab, Hussain, Miller, & Leveson, 2013). In investigating grazing before and after surgery, the prevalence of grazing increased after surgery by 11.4%, and showed a close relationship with uncontrolled eating which was associated with poorer weight loss outcomes (Colles, Dixon, & O'Brien, 2007).

Food craving is another eating behavior that can lead to overeating, unwanted snacking, or making unhealthy food choices, but few studies have been conducted regarding this subject. Food craving is defined as a very strong urge or desire to eat certain types of foods (Budak, 2012). There are indications that cravings lead to binge eating behaviors and those who are dieting demonstrate a higher level of food cravings (Budak, 2012). The use of the Food Craving Questionnaire-Trait instrument, used to measure how cravings are found in an individual at any given time, can be used in this population to identify patients who may need specific resources to help manage specific food cravings (Crowley et al., 2012).

Behavioral Compliance

One of the recurring themes found throughout studies on this topic is that behavioral noncompliance is the most common reason weight loss surgeries fail. A secondary cause of noncompliance is tied to the medical complications that can follow the surgery that prevent weight loss or weight loss management. A study by Elkins et al. (2005) evaluated the noncompliance behaviors that were the most common among patients following weight loss surgery. In this study, 81 women and 19 men were followed for one year post-surgery. Results showed that a majority of the patients were noncompliant with post-surgical guidelines. The most common noncompliant behaviors included lack of physical activity (41%) and snacking (37%). One year after follow-up, 25% of the total subjects chose not to attend support groups (Elkins et al., 2005).

Other Factors that may affect Weight Loss Outcomes

Not only do social support and eating patterns and behaviors affect weight loss after surgery, but psychiatric diagnoses such as depression, anxiety, and poor self-esteem can impact weight loss (Livhits et al., 2010). Individuals that have a diagnosis of these syndromes may need

specialized, psychiatric or psychological attention during postsurgical follow-up to assist with weight loss management (Toussi, Fujioka, & Coleman, 2009). According to the Mayo Clinic, many individuals who even consider weight loss surgery have some sort of psychiatric or psychological problem (Collazo-Clavell et al., 2006). There have been numerous studies done on psychological and psychiatric characteristics associated with weight change outcomes, but there have been mixed results regarding weight loss success that warrants for more studies to be done regarding this particular issue (Beck, Mehlsen, & Stoving, 2012). In a study by de Zwaan et al. (2011) anxiety and depression were studied as to see if these disorders had an effect on weight loss after weight loss surgery. The researchers found that having a preoperative diagnosis of an anxiety or depressive disorder did not significantly predict weight loss; however, presence of a depression disorder in patients two to three years post-surgery was significantly associated with lower weight loss (deZwaan et al., 2011). Thus depression and other psychiatric disorders are important to take into consideration when assessing weight loss in postsurgical patients. Investigators note that preexisting major depression does affect the weight loss outcome; however, Hsu et al. (1998) reported that depression may evolve in individuals after surgery. Suicide is a major cause of death after weight loss surgery. Tindle et al. (2010) report an overall suicide rate of 6.6 per 10,000, 13.7 in men, and 5.2 in women within three years since the surgery.

Summary

Many factors affect weight loss post-weight loss surgery. Various studies have been done to determine the best practices to optimize weight loss and weight loss management. Success has been attained for adhering to dietary guidelines, participating in physical activity, and engaging in fewer eating behaviors such as binge eating and grazing. After weight loss

surgery these behaviors can reflect positively on weight loss and weight loss management for the patient. This chapter also explored the literature related to the effectiveness of weight loss support groups and registered dietitians and the roles they play in post-weight loss surgery. Chapter 3 details the methodology utilized to evaluate the effectiveness of weight loss support groups on weight loss management and eating behaviors post-weight loss surgery.

Chapter III: Methodology

The purpose of this study was to evaluate the effectiveness of weight loss support groups on weight loss management and eating behaviors post-weight loss surgery. This study was approved by the University of Wisconsin – Stout Institutional Review Board on February 11, 2013 (Appendix A). During the month of March 2013, surveys were distributed to participants who attended weight loss support groups at local medical clinics in Western Wisconsin. This chapter includes a description of how the subjects were selected, description of the sample, description of the survey instrument that was used, and data analysis. The limitations of the study are also discussed.

Subject Selection and Data Collection Procedures

During the month of March 2013, four weight loss support groups were visited. These support groups were affiliated with a locally-known medical institution that performed the weight loss surgeries. Facilitators of the support groups were employees of the medical institution. Three out of the four facilitators were registered dietitians and one was a registered nurse. The support groups were offered to those who were waiting to have the surgery and to those who had already had the surgery. Participants of the weight loss support group who already had weight loss surgery were asked to volunteer to take part in a paper survey that was distributed to them at the group meeting. Other criteria required to participate in the survey included being over the age of 18 and having had attended at least one weight loss support group session. A convenient sample of 41 participants volunteered to fill out the paper survey. The researcher had an initial goal to receive 20 to 40 participants due to estimating the amount of weight loss support group attendees that would be present that month. A flyer was posted at one of the larger sites to ask for volunteers to participate in the survey (Appendix B).

Those who volunteered to participate were informed about the purpose, risks, benefits, confidentiality, and right to withdraw from this study by reading the IRB approved consent form (Appendix C). By completing the survey, subjects agreed to participate in this research. The participants were informed that they had the right to decline answering any question that they did not feel comfortable answering, and were instructed not to write their name on the paper survey for confidentiality purposes.

Instrumentation

A paper survey (Appendix D) was used to achieve the objectives and research questions of this study and consisted of 38 questions. The questions used were used to determine the amount of weight loss after surgery (using their BMI), to evaluate meal patterns, to show the prevalence of eating behaviors, to assess participation in weight loss support groups, to evaluate dumping syndrome symptoms, to assess physical activity participation, and to examine adherence to post-surgical guidelines as well as to identify the weight loss management practices in the past three months.

All questions relating to eating behaviors on this instrument were adapted from a questionnaire previously used in a similar study that investigated how a psychosocial intervention affected eating behaviors of weight loss surgery patients (Boeka, 2009). These specific questions were chosen, with permission from the original author, to help meet the objectives of this study. However, the reliability or validity of the questions obtained from this adapted survey and additional questions developed for the final survey were not verified.

Data Analysis

All analyses to determine the effectiveness of weight loss support groups on weight loss, weight loss management, and eating behaviors were conducted using the Statistical Program for Social Sciences (SPSS) version 20.0.

Frequencies, using percentages, were reported on gender, age, type of surgery, months since surgery, weight management, eating behaviors, surgery guideline adherence, and physical activity. Descriptive statistics using means, standard deviations, and minimum and maximum values were used to describe the subjects' overall weight loss, BMI change, support group and registered dietitian visits, and amount of physical activity.

Pearson correlation analyses were used to determine relationships between percent BMI change and the number of weight loss support group meetings attended and the number of registered dietitian visits since weight loss surgery. A partial correlation which shows strength of association between ranked variables was used to control for time since surgery for both of these analyses. A Pearson correlation was also used to determine a relationship between weight loss management and amount of time spent exercising each week. A standard of $p < 0.05$ determined significance for all statistical analyses conducted. Subjects who had weight loss surgery less than six months ago were excluded from the correlation analyses. This was because most patients lose weight at a very fast rate within the first six months, and they also have had less time to visit the support groups.

Limitations

As the results of this study may suggest further research on this topic, there are limitations that should be considered. A convenience sample size of 41 participants used in this study is considered small and limits the significance and generalization of the results. Only 31 of

the participants had the surgery six months ago or more and therefore, only these subjects were used to evaluate research questions one, two, and three. As mentioned in Chapter 1, it was assumed that all subjects participating in this survey have the goal of losing weight after surgery and wanted to prevent weight gain. The survey did not ask any questions pertaining to the motives of why the subject's elected to have the weight loss surgery. But it is acknowledged that there could be other underlying reasons and motivations.

It has been suggested that successful weight loss surgery support groups should not solely look at the amount of weight loss, but also other factors such as decreases in mortality and morbidity due to weight loss, quality-of-life, and ability to work (Hildebrandt, 1998). Due to the limited time to gather data, these factors were not evaluated as part of this study. Studies have shown that psychological factors could possibly play a part in the weight loss after the surgery (Beck et al., 2012), but this present study did not factor in the variables related to quality of life.

While there have been other studies conducted that looked at weight loss support groups, this is the first to use this population from these specific support groups in the geographical area of Western Wisconsin. Limitations also include using a convenience sampling as well as only collecting data from weight loss support group participants who were all affiliated with the same weight loss program from one medical institution. The results from this study may not be generalized for the entire population of post-weight loss surgery patients attending weight loss support groups. Lastly, there may be other variables that were not anticipated or accounted for such as complications with surgeries or other medical factors that could have impacted the findings.

Chapter IV: Results

The purpose of this study was to evaluate the effectiveness of weight loss support groups on weight loss management and eating behaviors post-weight loss surgery. This chapter will highlight the results of this study. The following questions will be addressed in this chapter:

1. Do post-weight loss surgery patients exhibit eating behaviors that may prevent weight loss?
2. Does attending a weight loss support group reflect positively on weight loss/management for those who had weight loss surgery more than six months ago?
3. Does meeting with a registered dietitian on a regular basis reflect positively on weight loss/management for those who had weight loss surgery more than six months ago?
4. For those who have had weight loss surgery at least six months ago, is physical activity related to how much weight the patient has lost in the last three months?

Characteristics of the Subjects

Participants of this research study included 41 post-weight loss surgery patients who were attendees of a local weight loss support group. The majority (80.5%) of this population were female (n = 33), and 19.5% were male (n = 8). Age range of the subjects along with type of surgery received is identified in Table 1. Only four of the 41 subjects were under the age of 50. The majority (85.4%) of this population had the RYGBP surgery performed (n = 35) and five, (12.2%) underwent sleeve gastrectomy surgery, another restrictive weight loss procedure. One subject did not indicate what type of surgery was done, however was still included in the analysis. Two groups were created within this population with one representing those who had surgery within the last six months (n = 10) and the other representing those who had surgery six month ago or longer (n = 31). Because limited weight loss occurs in the first six months post-

surgery, those who had surgery within the last six months were excluded in the correlation analysis for research questions 2 through 4 described in the remaining of this chapter.

Table 1

Descriptive Characteristics of Post-weight Loss Surgery Patients

Characteristics (n = 41)	n	%
Male	8	19.5
Female	33	80.5
18-25 yr	1	2.4
26-35 yr	3	7.3
36-50 yr	15	36.6
51-60 yr	12	29.3
61+ yr	10	24.4
Roux-En-Y gastric bypass	35	85.4
Sleeve gastrectomy	5	12.2
Had surgery less than 6 months ago	10	24.4
Had surgery 6 months ago or longer	31	75.6

Weight, Body Mass Index (BMI), and Percent BMI Change

The subjects were asked to recall their highest weight within the month before their weight loss surgery, lowest weight after their surgery, and current weight. Table 2 shows these means and standard deviations, and minimum and maximum numbers of the group. The highest mean weight before surgery was 304.07 lbs (SD = 44 lbs) with a minimum of 208 lbs and a maximum of 422 lbs. Since surgery, the current mean weight was 196.88 lbs (SD = 42.8 lbs) with a minimum of 126 lbs and a maximum of 281 lbs. Using the subjects' self-reported pre-surgery and the current post-surgery weight in pounds as well as self-reported height, the average pre-surgical BMI was calculated (M = 49.57 kg/m², SD = 44.0) along with the current BMI (M =

32.12 kg/m², SD = 7.1). These numbers were then used to calculate change in BMI since surgery (*M* = 35%, SD = 12%). See Table 2.

Table 2

Weight and BMI of Post-weight Loss Surgery Patients

Weight measurements (*n* = 41)	Mean ± SD	Minimum	Maximum
Highest weight before surgery (lbs)	304.07 ± 44.0	208	422
Lowest weight after surgery (lbs)	191.79 ± 46.2	126	307
Current weight (lbs)	196.88 ± 42.8	126	281
Pre-surgery BMI (kg/m²)	49.57 ± 6.98	39.19	70.37
Current BMI (kg/ m²)	32.12 ± 7.1	21.33	47.7
% BMI change	35% ± 12%	13%	57%

Weight management was determined by asking about weight change within the last three months of when the survey was undertaken. The majority (*n* = 16, 39%) have lost more than ten pounds in the last three months and 36.6% have not gained or lost any weight. Only seven of the subjects increased in weight in the last three months. See Table 3.

Table 3

Weight Management in the Last Three Months in Post-weight Loss Surgery Patients

Weight change (*n* = 41)	*n*	%
Decreased by more than 10 lbs	16	39.0
Decreased by 5-10 lbs	3	7.3
Stayed about the same	15	36.6
Increased by 5-10 lbs	3	7.3
Increased by more than 10 lbs	4	9.8

Eating Behaviors

Eating patterns. Skipping meals was not a theme in this population. Some 85.4% (*n* = 35) self-reported eating breakfast every day of the week, 87.8% (*n* = 36) reported eating lunch every day, and 97.5% (41) reported eating dinner every day. There was no pattern or majority of subjects regarding the number of snacks eaten or when the snacks were eaten throughout the day. Fluid consumption was assessed by asking the subjects how many servings of different fluids were consumed on a typical day. The majority of the subjects reported consuming at least one or more servings a day of water (*n* = 34, 82.9%), and over 50% drank a protein shake (*n* = 22, 53.7%) or low fat milk (*n* = 21, 51.2%). Only one subject reported drinking at least one serving of fruit juice per day, and not one person reported drinking other sugar-sweetened beverages such as regular pop or sweetened tea.

Binge eating. Most of the questions on the survey addressed different types of eating behaviors such as binge eating, restricting calories, and giving into food cravings. The behaviors related to binge eating are expressed in Table 4 as the numbers and the percentage of those who indicated participating in these types of behaviors. Over half of the population self-reported having eaten more than they thought they should have in a single setting (*n* = 28, 68.3%), and 15 subjects reported this overeating as less than one day a week (36.6%). It was also reported that many have eaten more rapidly than usual (*n* = 25, 61.0%) and have eaten until feeling uncomfortably full (*n* = 22, 53.7%). Some 29.3% (n = 12) of the subjects reported feeling moderately upset when they have eaten more than they should have.

Table 4

Reported Binge Eating-related Behaviors in Post-weight Loss Surgery Patients

Eating behavior (n = 41)	*n*	%
Eaten more than should have in a single setting	28	68.3
How often felt out of control while eating more than should have:		
< 1 day a week	15	36.6
1 day a week	4	9.8
2-3 days a week	3	7.3
4-5 days a week	1	2.4
Everyday	2	4.9
Does not apply	14	34.1
Eaten more rapidly than usual	25	61.0
Eaten until you felt uncomfortably full	22	53.7
Eaten large amounts of food when not feeling hungry	11	26.8
Eaten alone because of embarrassed by how much was eaten	4	9.8
Feeling disgusted, depressed, or guilty due to overeating	11	26.8
How upset do you get when you eat more than you should:		
Not at all	7	17.1
Slightly	11	26.8
Moderately	12	29.3
Greatly	5	12.2
Extremely	5	12.2
Engaged in regular episodes of eating large amounts of food in single setting in the last 6 months	13	31.7
Felt out of control in amount of food eaten	10	24.4
Afraid of losing control when eating?	16	39.0

Other eating behaviors. Almost all of the participants (*n* = 36, 87.8%) indicated consciously trying to change their eating habits since their weight loss surgery (Table 5). Nibbling on food between meals was self-reported by over half of the subjects (*n* = 24, 58.5%). The most popular foods that were nibbled on included chips, cheese, cookies, chocolate, crackers, nuts, candy, pretzels, fruit, and other salty snacks. The presence of food cravings were reported by 63.4% (*n* = 26). Salty snacks such as chips and crackers, chocolate, cookies, ice cream, and bread were listed as the most popular food cravings. Those that indicated having food cravings were asked to rate the strength of their cravings on a scale from zero to five, with zero meaning no strength, and five meaning an extremely strong craving. The majority rated their strength as a three on the scale (*n* = 10, 24.4%). When asked how often the subjects gave in to their food cravings, the majority indicated a one or a two on a five-point scale, meaning they seldom gave in to their cravings. The behavior of trying to restrict the overall amount of food in their diet was reported by 35 of the 41 subjects (85.4%). Almost a quarter of the subjects self-reported that there have been days when no food was eaten, and 14.6% of those subjects ate no food on these days to avoid feelings of physical discomfort.

Table 5

Other Reported Eating Behaviors in Post-weight Loss Surgery Patients

Eating behavior (n = 41)	n	%
Consciously trying to change eating habits	26	87.8
Think about food, eating, calories between meals	19	46.3
Nibbled at food between meals in unplanned/repetitious way	24	58.5
Cravings for food	26	63.4
Eaten when felt emotional (stressed, sad, angry):		
< 1 day a week	13	31.7
1 day a week	3	7.3
2-3 days a week	4	9.9
4-5 days a week	2	4.9
Everyday	2	4.9
Does not apply	16	39.0
Chewed food and spit out without swallowing	15	36.6
Consciously tried to restrict overall amount of food	35	85.4
Have there been days when you haven't eaten anything	10	24.4
To influence your shape or weight	2	4.9
To avoid episode of overeating	1	2.4
To avoid physical discomfort	6	14.6

Dumping syndrome. Because dumping syndrome can often be a common side effect following weight loss surgery and may affect eating behaviors, the subjects were asked about symptom occurrence following food intake. Stomach cramps (n = 24, 58.5%) and nausea symptoms (n = 23, 56.1) were reported the most (Figure 1). When asked which foods caused these symptoms, it was found that sweets such as ice cream (34.1%), candies (34.1%), baked goods (29.3%), and syrup (12.2%) were the most frequently chosen items by the subjects. Self-reported causes of these symptoms included dairy products, alcohol, meats, starchy foods, and

fried foods and sweetened beverages, although sweetened beverages were not consumed to any great extent.

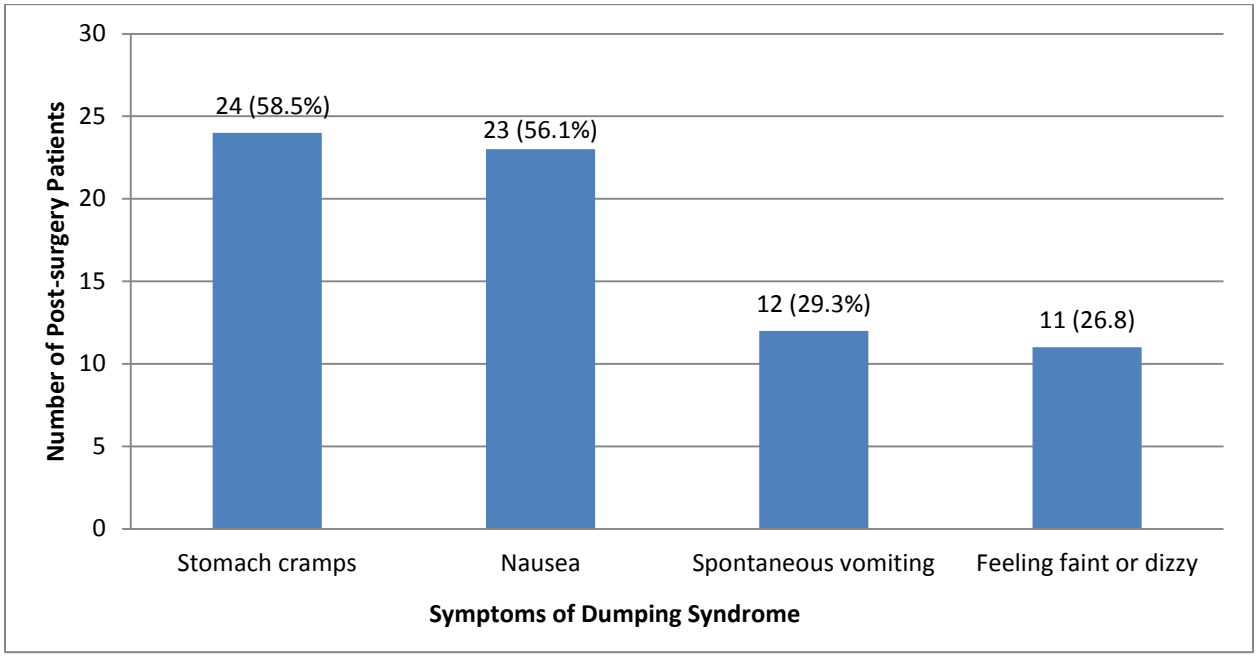


Figure 1. Number of post-weight loss surgery patients with self-reported dumping syndrome symptoms (n = 41).

Weight Loss Support Groups and Registered Dietitian Visits

Because this paper sought to evaluate the effectiveness of weight loss support groups, the subjects were asked to report how many visits they had made to a support group since surgery and how many times they had met with an RD). See Table 6. The average number of months since surgery in this population was 23.3 months (SD = 29). The mean number of support groups attended since surgery was 14.13 (SD = 18.15) with the minimum of one and a maximum of 70, and the mean number of RD visits since surgery was 4.46 (SD = 5.14) with the minimum of zero and the maximum of 30 visits.

Table 6

Weight Loss Support Group Attendance and RD Visits by Post-weight Loss Surgery Patients

Post-surgery visits (n = 41)	Mean ± SD	Minimum	Maximum
No. of months since surgery	23.3 ± 29.0	1	110
No. of support groups attended	14.13 ± 18.15	1	70
No. of RD visits	4.46 ± 5.14	0	30

To address the research question if attending a weight loss surgery support group reflects positively on weight loss, subjects who had surgery within the last six months were not included in the analysis. This was because most patients lose weight at a very fast rate within the first six months, and they also have had less time to visit the support groups. Also, those who did not indicate the number of support groups they attended were not included. The remaining subjects who had surgery more than six months ago (n = 28) were first analyzed by Pearson correlation to determine if a relationship existed between percent BMI change and the number of times participants had visited a weight loss support group. This scatterplot is shown on the left in Figure 2. A Pearson correlation did not show a relationship between variables, $r(26) = -0.65$, $p = 0.741$, but there were obvious outliers present in the graph .

After excluding the five outliers, another Pearson correlation (n = 23) showed that the two variables (change in percent BMI and number of times attending the support group) were strongly correlated and significant, $r(21) = .578$, $p < 0.05$ (right panel, Figure 2). A partial correlation, to control for the time elapsed since surgery, also showed a strong correlation and significance, $r(20) = 0.509$, $p < 0.05$.

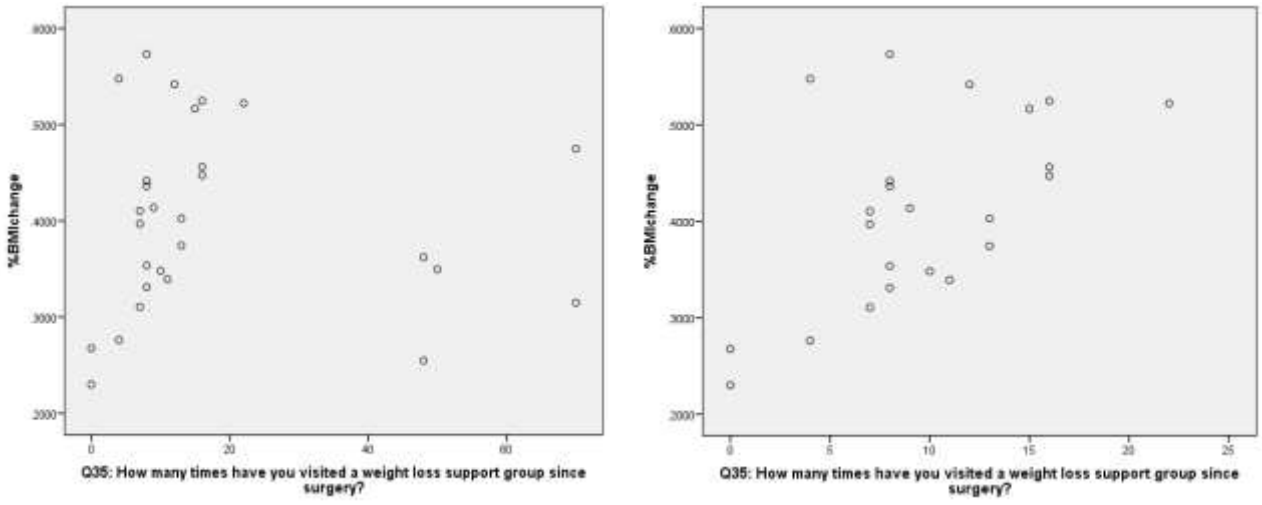


Figure 2. Scatterplots of relationship of percent BMI change and number of times subjects visited a weight loss support group for those who had surgery more than six months ago (n = 28).

To determine if meeting with an RD on a regular basis reflected positively on weight loss for those who had surgery more than six months ago, the group who had surgery within the last six months were omitted from the analysis, as well as two subjects who did not indicate the number of times they met with an RD. A scatterplot of the correlation was graphed (shown in Figure 3 on the left) to show a relationship between % BMI change and the number of times the subject visited an RD for post-surgery follow-up. The two variables showed a small, positive correlation that was not significant, $r(27) = 0.297$, $p = 0.118$. One outlier was filtered out and a second scatterplot was run to see if the outlier affected the relationship (shown in Figure 3 on the right). The correlation that was ran with the two variables without the outlier remained non-significant, $r(26) = 0.09$, $p = 0.649$.

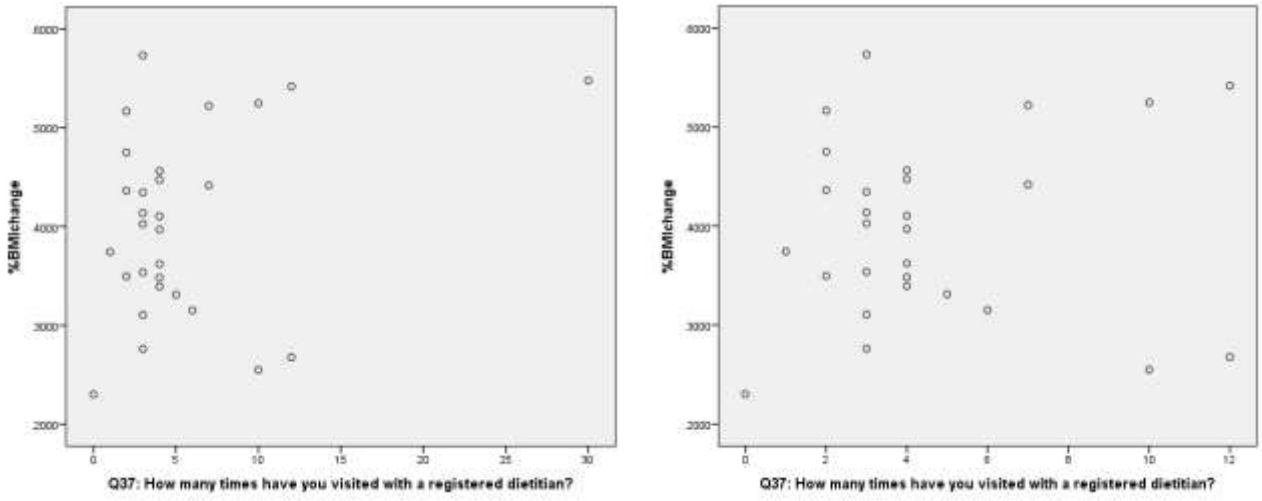


Figure 3. Scatterplot of relationship of percent BMI change and number of times subjects visited a registered dietitian for those who had surgery more than six months ago (n = 29).

The participants were asked to rate how attending a weight loss support group benefited their weight loss management and if it helped with controlling eating behaviors. Over half of the responders rated this question a four (n = 11, 27.5%) or five (n = 19, 47.5%) on a 5-point scale indicating the support group had a very positive impact on their weight loss management and eating behaviors (Figure 4). A similar question asked the participants to rate how visiting an RD benefitted their weight loss management and eating behaviors. Again, over half rated this question a four (n = 10, 26.3%) or five (n = 18, 47.4%) on a 5-point scale meaning that RD visits were perceived to benefit their weight loss and eating behaviors (Figure 5).

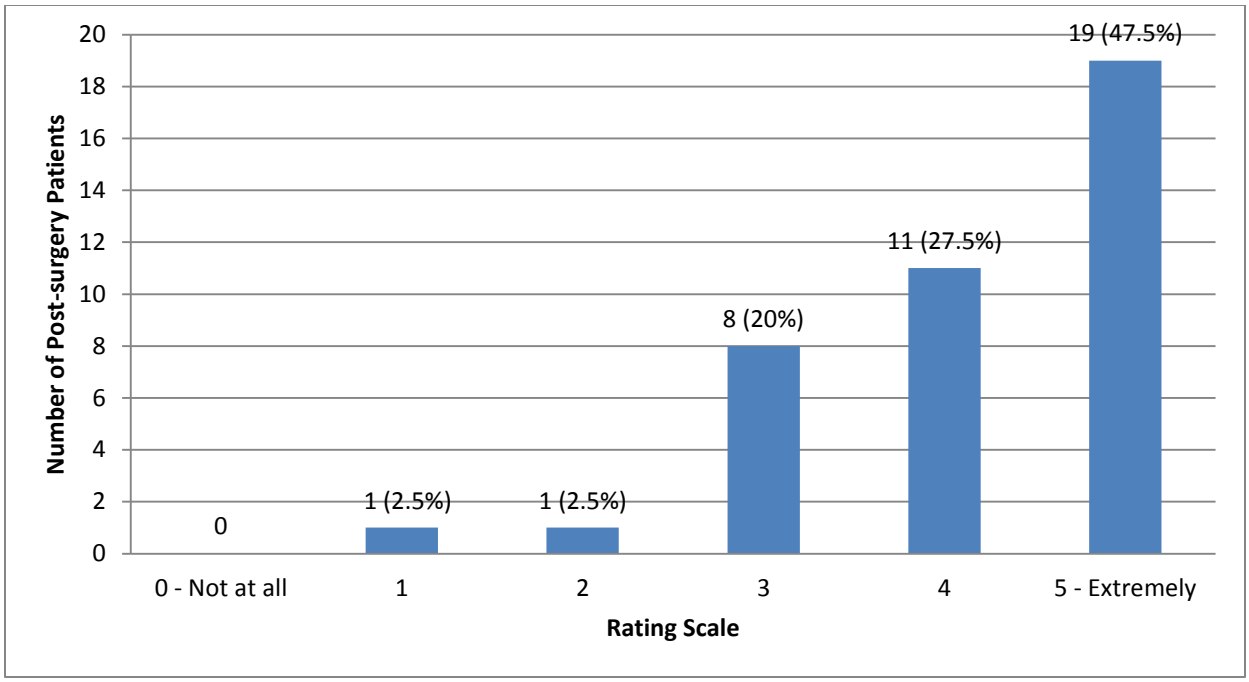


Figure 4. Rating of how attending a weight loss support group has benefited weight loss management and eating behaviors (n = 40).

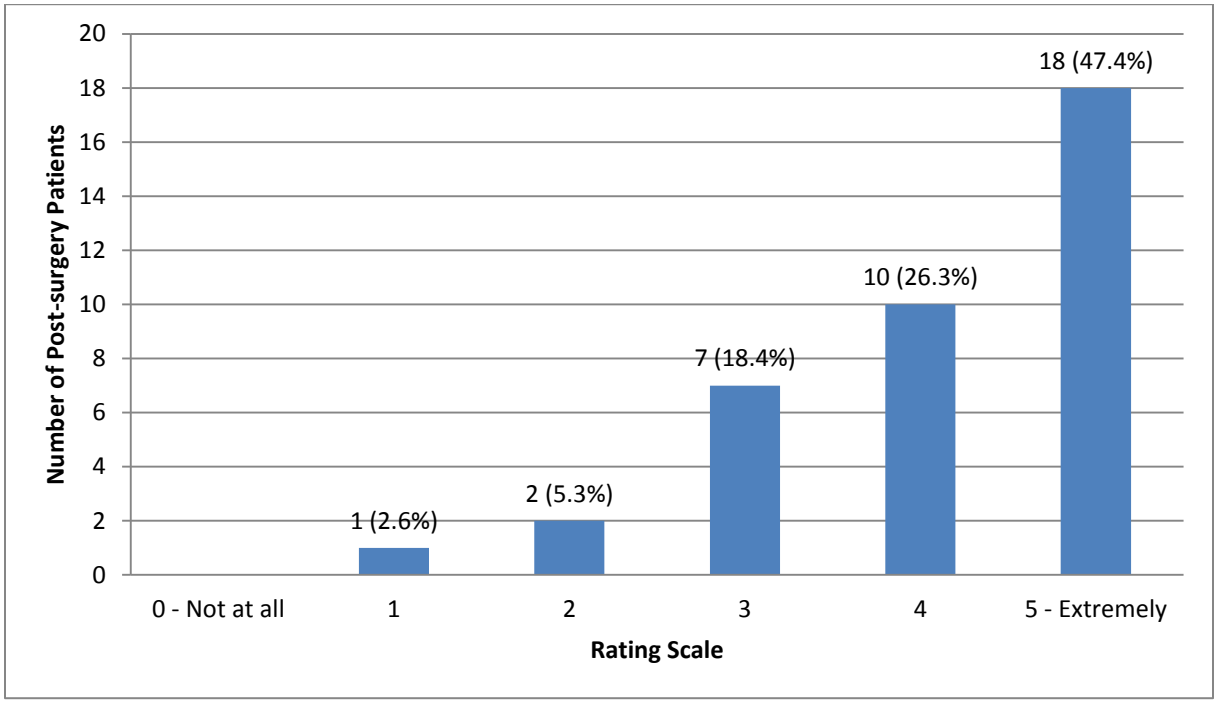


Figure 5. Rating of how visiting with a registered dietitian has benefited weight loss management and eating behaviors (n = 38).

Post-weight Loss Surgery Adherence and Satisfaction

All subjects were asked if they were making a conscious effort to adhere to post-surgery guidelines, and 82.9% (*n* = 34) indicated they were. The majority of the subjects reported following the post-surgery guidelines very well (*n* = 20, 48.8%). Most of this population (*n* = 33, 80.5%) indicated satisfaction with their post-surgery results (Table 7). Thirty-five subjects stated they would choose to have the surgery if they had to make the choice over again. Losing the weight, improving health status, feeling better, and being more physically active were listed as reasons why they would choose to have surgery again. See Appendix E.

Table 7

Adherence to Post-weight Loss Surgery Guidelines and Satisfaction with Results

Adherence and Results (*n* = 41)	*n*	%
Made conscious effect to adhere to post-surgery guidelines	34	82.9
Rate how well you think you adhered to these guidelines**:**		
Not at all	1	2.4
Somewhat	3	7.3
Moderately	15	36.6
Very Well	20	48.8
Rate how satisfied you are with your results**:**		
Not at all	0	0
Somewhat	1	2.4
Moderately	7	17.1
Very Well	33	80.5

Physical Activity

Of the 41 subjects, 37 (90.2%) indicated they were currently exercising. The means and standard deviations of the number of days spent exercising per week, number of minutes spent exercising per day, and the number of months of physical activity since surgery are shown in Table 8. The mean number of days spent exercising per week was 4.7. The mean number of minutes reported per day of physical activity was 45. A Pearson correlation analysis was ran to test the relationship between the amount of physical activity per week and weight management within the last three months. There was no relationship between physical activity and weight change found in this population, $r(26) = 0.085$, $p = 0.67$.

Table 8

Physical Activity Behaviors in Post-weight Loss Surgery Patients

Physical Activity Behaviors	%	Mean ± SD	Min.	Max.
Currently exercising (*n* = 37)	90.2			
No. of days per week of physical activity (*n* = 37)		4.7 ± 1.8	1	7
No. of minutes per day of physical activity (*n* = 37)		45.2 ± 25.5	15	120
No. of months of physical activity since surgery (*n* = 33)		16.1 ± 23.2	<1	108

The types of physical activity the subjects most engage in are shown in Figure 6. Over 50% reported walking and more than 25% reported exercising on treadmill or elliptical equipment. Almost 20% reported weight lifting and/or biking.

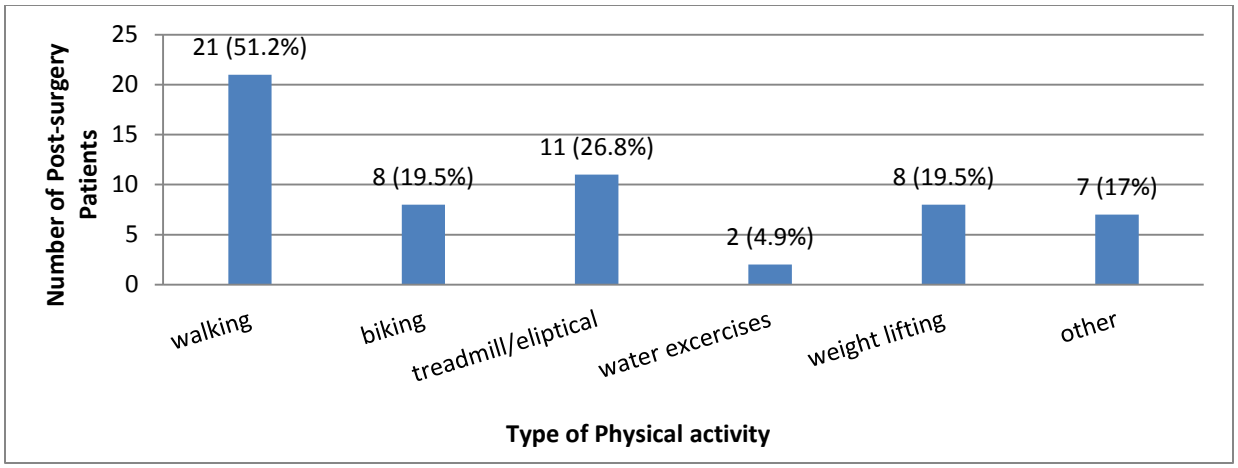


Figure 6. Number of post-weight loss surgery patients who engage in different types of physical activities ($n = 41$).

This concludes the results section. The significance of these findings and an evaluation of the effectiveness of weight loss support groups on weight loss management and eating behaviors are discussed in chapter 5.

Chapter V: Discussion

This study explored the effectiveness of weight loss support groups on eating behaviors, weight loss, and weight loss management in post-weight loss surgery patients. During March of 2013, a 38-question survey was administered to 41 patients at Western Wisconsin support groups that addressed eating behaviors, weight loss, weight loss management, post-surgery guideline adherence, and physical activity engagement. This chapter begins with the limitations to the study, then draws conclusions from the results and compares the findings to other research on this topic, and lastly suggests recommendations for future studies.

Limitations

The limitations of this study were previously discussed in detail in Chapter 3. There are several factors that pose limitations that should be taken under consideration when discussing conclusions and interpretations of the results. The first limitation is the small, convenience sample size of 41 participants that weakens the significance and generalization of the results. After excluding those who had surgery within the last six months and the additional outliers during the correlation analysis, less than 30 subjects were used in the final analyses to find relationships between attending weight loss support groups, registered dietitian (RD) visits, and percentage change in BMI. However, this represents a group of less than 30 subjects upon which the value of support groups and weight loss is reported which is lacking in the literature.

Also, the entire sample population came from recruiting post-surgery patients attending local weight loss support groups that were affiliated with the same weight loss surgery program within the same medical institution. All participants followed the same standard pre-surgical requirements and procedures required in this particular program. This limits the results of this

study to be generalized for the entire population of weight loss surgery patients attending support groups elsewhere.

The self-reported data collected by the survey is considered a limitation due to the likelihood of using biased information. The patients had to recall their highest weight and lowest weight pre- and post-surgery, as well as their current weight. It was assumed all responses were accurate and truthful; however, there is no certainty in these self-reported weights, which limits the precision of the results. A study by Lois, Kumar, and Birrell (2011) showed that self-reported weight and height was more accurate in women than in men. Other researchers found that self-reported weight of overweight and obese individuals in a group setting may be a valid and reliable indicator of actual weight (Rossouw, Senekal, & Stander, 2000). Lastly, Lin, DeRoo, Jacobs, and Sandler (2012) concluded that US women in the Sister Study were reasonably reliable and accurate when reporting height and weight, and obese women rarely under-reported their weight by greater than ten percent. Thus, the researcher is confident that these self-reported weights of this post-weight loss surgery population are realistic.

Some of the questions on the survey asked about certain eating behaviors that the subjects may not have been comfortable answering or admitting to these behaviors, which could have influenced how the questions were answered despite assurance of confidentiality. A few questions on the survey used a rating scale leaving the interpretation of what the ratings meant up to the responder. The survey tool (Appendix D) had not been tested for reliability or validity for any population. Some of the questions were adapted from a previous study as discussed in Chapter 3.

Many other factors play a part in weight loss and keeping the weight off after surgery. This study did not assess the current health of these patients or comorbidities. Complications

from surgery that could prevent weight loss were also not included. Furthermore, the presence of psychiatric or psychological disorders, such as depression or anxiety, was not determined even though the literature indicates these symptoms may affect weight loss. Lastly, data were only collected at one point in time from only four groups. The group members vastly differed in the amount of time elapsed since the surgery. This provides the limitation that some of the subjects had more time to attend the weight loss support groups and meet with an RD thus giving extra time to benefit from participation. There was also no available control group for comparison nor was a pilot study conducted to test for unforeseeable problems.

Conclusions

Even though weight loss surgeries are shown to be effective in helping obese individuals achieve weight loss, the surgery can fail with uncontrolled eating behaviors, lack of support, or patient failure to adhere to post-surgical nutrition and physical activity guidelines. It was enlightening to discover positive findings relating to weight loss and attending weight loss support groups despite uncovering the prevalence of eating behaviors that could have prevented weight loss in this particular population. Despite the limited statistical significance of some of the findings, the majority of the subjects who visited the weight loss support groups and visited with registered dietitians claim to benefit from this support. This coincides with the findings by Livhits el al. (2010) that social support after weight loss surgery may help to lose the weight and keep it off. The most significant finding of this present study showed a significant correlation in the relationship between BMI change and attending more weight loss support groups after controlling for time since surgery.

Eating behaviors. The first research question posed by this study asked: Do post-weight loss surgery patients exhibit eating behaviors that may prevent weight loss? Some of the eating

behaviors that were evaluated during this study, which are known to prevent weight loss, were binge eating, snacking, and emotional eating. Close attention was paid by the researcher towards the behaviors where over 50% of the subjects reported engaging in. However, it is important to take under consideration that the subjects did not report how frequently they engaged in the behaviors. Sallet et al. (2007) discovered post-surgical roux-en-y gastric bypass (RYGBP) patients with binge eating disorder (BED) had a lower percentage of BMI loss two years after surgery compared with a group without BED. In this present study, self-reported binge eating behaviors were predominant among this population. The behaviors included eating too much in a single setting (n = 28, 68.3%), eating more rapidly than usual (n = 25, 61%), and eating until feeling uncomfortably full (n = 22, 53.7%). The percentage of the subjects that exhibited the binge eating behavior was similar in this present study compared to the number reported by Sallet et al. (2007). Attendance to the weight loss support groups and controlling giving in to these urges may be a reason that subjects have been able to lose and maintain their weight.

Nibbling, or grazing, between meals in an unplanned or repetitious way was reported by 58.5% of the subjects in this study (n = 24). A study by Colles et al. (2007) assessed grazing behaviors and found that 38% of post-weight loss surgery subjects (n = 49) reported grazing. These subjects exhibiting grazing lost less weight compared to non-grazers after one year from surgery; however, support group attendance was not mentioned in this study. Although a higher percentage of nibbling or grazing was found in the present study, it did not appear to impact the participants self-reported weight loss. This may show that attending a weight loss support group and meeting with a registered dietitian can aid in weight loss after surgery even when this eating behavior is present. In further support, 58.5 % of the participants attending the weight loss support groups reported suppressing grazing/snacking urges.

Dumping syndrome symptoms were seen among the majority of the subjects with stomach cramps (58.5%) and nausea being (56.1%) the most common. As explained in the literature, dumping syndrome can also include vomiting and feeling faint or dizzy. Some 29.3% and 26.8% of the support group subjects, respectively, experienced these symptoms as well. Consumption of sugar-sweetened food was self-reported as types of food that have caused the dumping syndrome symptoms. The percentage of subjects with dumping syndrome symptoms found in this study are in line with other studies that have found that that dumping occurs in approximately 50% to 70% gastric bypass surgery patients (Sarwer, Wadden, & Fabricatore, 2005).

Weight loss support group attendance. A second question asked in this study was "Does attending a weight loss support group reflect positively on weight loss and weight loss management for those who had the surgery more than six months ago?" It was found that weight loss and a decrease in BMI since weight loss surgery were common among all the subjects. In this population, the mean of the highest weight within the month before surgery decreased by a mean of almost 65% after surgery. With the majority having the RYGBP, this concurs with a meta-analysis by Buchwald et al. (2004) that reported most RYGBP patients lose about 61.6% of excess weight post-surgery. Elakkary et al. (2006) reported that patients who attended weight loss support groups following LAGB surgery had a mean decrease in BMI of 9.7 ± 1.9 kg/m² compared to non-support group attendees with a mean decrease in BMI of 8.1 ± 2.1 kg/m² after a one year period. Another study by Hildebrandt (1998) found that the more support groups attended after weight loss surgery resulted in more weight loss. In the present study, the attendance at more weight loss support group sessions and a decrease in BMI since the surgery showed a strong significant correlation that is in line with previous studies.

Registered dietitian visits. The third research question addressed asked: does meeting with a registered dietitian on a regular basis reflect positively on weight loss and weight loss management for those who had weight loss surgery more than six months ago? In a recent study by Parrott et al. (2012), utilization of specialized registered dietitian services in bariatric counseling was associated with greater weight loss at one and three months post-surgery. Three out of the four support groups visited to collect the data were facilitated by registered dietitians. This study looked at six months out, but did not find a relationship between registered dietitian visits and weight loss. A reason for this is that there could have been some confusion when the subjects answered this question on the survey, which may have led to reporting that attending a weight loss support group was the same as visiting a registered dietitian. This is because a registered dietitian facilitated three of the four support groups. The patients were required to visit the registered dietitian, as well as the support group, before the surgery was performed. Although not required, attendance was also strongly encouraged post-surgery. The registered dietitian's role in weight loss surgery success is crucial for helping with nutritional complications as well as behavioral compliance (Beckman & Earthman, 2012).

Adherence to post-surgical guidelines was also looked at in this study. Almost all, 82.9% (n = 34), indicated they were trying to make conscious effort to adhere to post-surgery guidelines to help aid in weight loss, and 85.4% indicated they were doing quite well at it. Eating at least three meals a day (breakfast, lunch, and supper) was one good indication that these subjects were following post-surgical guidelines (85.4%, 87.8%, and 97.5%, respectively). Minimal consumption of sugar-sweetened beverages was also shown in the data, another indication they were adhering to post-surgical guidelines. Whether this compliance to post-surgery

recommendations is related to support group attendance and weight loss is not known but it is a possibility that should be investigated.

Physical Activity. The last question addressed in this study asked: for those who have had weight loss surgery at least six months ago, is physical activity related to how much weight the patient has lost in the last three months? Surprisingly, almost all subjects reported engaging in physical activity (n = 37, 92.2%). This number is similar to a finding in a comparable study that looked at physical activity of post-weight loss surgery patients, (n = 116, 82.9%) (Silver, Torquati, Jensen, & Richards, 2006). There are currently no set standards for the amount of physical activity needed after weight loss surgery to maximize weight loss; however, the American College of Sports Medicine recommends a minimum of 150 minutes of moderate intensity physical activity per week for overweight and obese adults trying to lose weight or prevent weight gain (Evans et al., 2007). In the current study, the average amount of days spent exercising per week was 4.7 days (SD = 1.8) and the average amount of minutes spent per day was 45.5 (SD = 25.5). This indicates that the subjects are exercising according to the recommended amount. Whether engaging in exercise is related to the support group attendance is not known. A correlation was not found between change in weight during the last three months and the amount of physical activity engaged in per week. However, the findings of almost meeting physical activity recommendations by those attending the support group, are suggestive of an association with support group attendance. The benefits of physical activity such as preventing loss of muscle mass, enhancing the immune system, reducing appetite, preventing fatigue, and improving overall sense of well-being could have also played a part in the subjects' success in weight loss since surgery (ASMBS, 2008).

Recommendations for Future Studies

The importance of weight loss surgery support groups and the utilization of registered dietitians to aide in post-surgical weight loss were evaluated in this research study. Patients studied in this particular weight loss surgery program show that strong attendance at the meetings of the support groups does reflect positively on successful weight loss outcomes.

The subjects of this study included those who had weight loss surgery six months ago or longer. Literature shows that weight after surgery can rapidly decline until about 12 to 18 months. At this time weight loss slows or plateaus. The reported findings in this present study may include subjects that are still rapidly losing weight due to restrictive and malabsorptive mechanisms of the surgery. This implication suggests that future studies should include subjects who are at least 12 months out from the surgery and are still attending the support groups.

This study only reflected one point in time and did not include a control group for comparison. Having a control group would allow comparison between weight loss, physical activity, and eating behaviors between those who did attend weight loss support groups and those who didn't attend the support groups.

This study appears to support the success of losing weight and controlling eating behaviors for post-weight loss surgery patients who attend weight loss surgery support groups. A long term follow-up is needed to confirm these results.

References

Adams, S. T., Salhab, M., Hussain, Z. I., Miller, G. V., & Leveson, S. H. (2013). Roux-en-Y gastric bypass for morbid obesity: What are the preoperative predictors for weight loss? *Postgraduate Medical Journal, March*, 1-6. doi: 10.1136/postgradmedj-2012-131310

Aills, L., Blankenship, J., Buffington, C., Furtado, M., & Parrott, J. (2008). ASMBS allied health nutritional guidelines for the surgical weight loss patient. *Surgery for Obesity and Related Diseases, 4*, S73-S108. doi: 10.1016/j.soard.2008.03.002

American Society for Metabolic & Bariatric Surgery (ASMBS). (2008). Bariatric surgery: Postoperative concerns. Retrieved from http://asmbs.org/2012/01/bariatric-surgery-postoperative-concerns/

Beck, N. N., Johannsen, M., Stoving, R. K., Mehlsen, M., & Zachariae, R. (2012). Do postoperative psychotherapeutic interventions and support groups influence weight loss following bariatric surgery? A systematic review and meta-analysis of randomized and nonrandomized trials. *Obesity Surgery, 22*(1), 1790-1797. doi: 10.1007/s11695-012-0739-4

Beck, N. N., Mehlsen, M., & Stoving, R. K. (2012). Psychological characteristics and associations with weight outcomes two years after gastric bypass surgery: Postoperative eating disorder symptoms are associated with weight loss outcomes. *Eating Behaviors, 13*, 394-397. doi: 10.1016/j.eatbeh.2012.06.001

Beckman, L., & Earthman, C. (2013). Nutritional implications of bariatric surgery and the role of registered dietitians. *Journal of the Academy of Nutrition and Dietetics, 113*(3), 398-399. doi: 10.1016/j.jand.2012.11.017

Boeka, A. G. (2009). *Effects of a psychosocial intervention on eating behavior compliance in bariatric surgery patients.* (Unpublished doctoral dissertation). University of Alabama, Tuscaloosa, AL.

Buchwald, H., Avidor, Y., Braunwal, E., Jensen, M. D., Pories, W., Fahrbach, K., & Schoelles, K. (2004). Bariatric surgery: A systematic review and meta-analysis. *Journal of the American Medical Association, 292*(14), 1724-1737.

Budak, A. R. (2012). A framework of food cravings and weight loss after bariatric surgery: Application of the cognitive processing model. *Bariatric Nursing and Surgical Patient Care, 7*(1), 25-29.

Centers for Disease Control and Prevention (CDC). (2011). Physical activity and health. Retrieved from http://www.cdc.gov/physicalactivity/everyone/health/index.html#ControlWeight

Colles, S. L., Dixon, J. B., & O'Brien, P. E. (2007). Grazing and loss of control related to eating: Two high-risk factors following bariatric surgery. *Obesity, 16*(3), 615-622.

Collazo-Clavell, M. L., Clark, M. M., McAlpine, D. E., & Jensen, M. D. (2006). Assessment and preparation of patients for bariatric surgery. *Mayo Clinic Proceedings, 81*(10, suppl), S11-S17.

Crowley, N. M., LePage, M. L., Goldman, R. L., O'Neil, P. M., Borckardt, J. J., & Byrne, T. K. (2012). The food craving questionnaire-trait in a bariatric surgery seeking population and ability to predict post-surgery weight loss at six months. *Eating Behaviors, 13*, 366-370. doi: 10.1016/j.eatbeh.201207.003

de Zwaan, M., Enderle, J., Wagner, S., Muhlhans, B., Ditzen, B., Gefeller, O., . . . Muller, A. (2011). Anxiety and depression in bariatric surgery patients: A prospective, follow-up study using structured clinical interviews. *Journal of Affective Disorders, 133*, 61-68. doi: 10.1016/j.jad2011.03.025

de Zwaan, M., Hilbert, A., Swan-Kremeier, L., Simonich, H., Lancaster, K., Howell, L. M., . . . Mitchell, J. E. (2010). Comprehensive interview assessment of eating behavior 18-35 months after gastric bypass surgery for morbid obesity. *Surgery for Obesity and Related Diseases, 6*, 79-87. doi: 10.1016/j.soard.2009.08.011

Elakkary, E., Elhorr, A., Aziz, F., Gazayerli, M. M., & Silva, Y. J. Do support groups play a role in weight loss after laparoscopic adjustable gastric banding? *Obesity Surgery, 16*, 331-334.

Elkins, G., Whitfield, P., Marcus, J., Symmonds, R., Rodriguez, J., & Cook, T. (2005). Noncompliance with behavioral recommendations following bariatric surgery. *Obesity Surgery, 15*, 546-551.

Evans, R. K., Bond, D. S., Wolfe, L. G., Meador, J. G., Herrick, J. E., Kellum, J. M., & Maher, J. W. (2007). Participation in 150 min/wk of moderate or higher intensity physical activity yields greater weight loss after gastric bypass surgery. *Surgery for Obesity and Related Diseases, 3*, 526-530. doi: 10.1016/j.soard.2007.06.002

Gee, M., Mahan, L. K., & Escott-Stump, S. (2008). Weight management. In L. K. Mahan, & S. Escott-Stump (Eds.), *Krause's food & nutrition therapy* (12th ed., pp. 540). St. Louis, MO: Saunders Elsevier.

Hsu, L. K. G., Benotti, P. N., Dwyer, J., Roberts, S. B., Saltzman, E., Shikora, S., . . .Rand, W. (1998). Nonsurgical factors that influence the outcome of bariatric surgery: A review. *Psychosomatic Medicine*, 60, 338-346.

Hildebrandt, S. E. (1998). Effects of participation in bariatric support group after roux-en-y gastric bypass. *Obesity Surgery, 8*, 535-542.

Kayman, S., Bruvold, W., & Stern, J. S. (1990). Maintenance and relapse after weight loss in women: Behavioral aspects. *American Journal of Clinical Nutrition, 52*, 800-807.

Kendrick, M. L., & Dakin, G. F. (2006). Surgical approaches to obesity. *Mayo Clinic Proceedings, 81*(10), S18-S24.

Laurenius, A., Larsson, I., Bueter, M., Melanson, K. J., Berteus Forslund, H., . . . Olbers, T. (2012). Changes in eating behavior and meal pattern following Roux-en-Y gastric bypass. *International Journal of Obesity, 36*, 348-355.

Lee, C. W., Kelly, J. J., & Wassef, W. Y. (2007). Complications of bariatric surgery. *Current Opinion in Gasteroenterology, 23*, 636-643.

Lin, C. J., DeRoo, L. A., Jacobs, S. R., & Sandler, D. P. (2012). Accuracy and reliability of self-reported weight and height in the Sister Study. *Public Health Nutrition*, *15*(6), 989-999.

Livhits, M., Mercado, C., Yermilov, I., Parikh, J. A., Dutson, E., Mehran, A., . . . Gibbons, M. M. (2010). Is social support associated with greater weight loss after bariatric surgery?: A systematic review. *Obesity Reviews, 12*, 142-148. doi: 10.1111./j.1467-789X.2010.00720.x

Lois, K., Kumar, S., Williams, N., & Birrell, L. (2011). Can self-reported height and weight be relied upon? *Occupational Medicine*, 61, 590-592.

Maggard, M. A., Shugarman, L. R., Suttorp, M., Maglione, M., Sugerman, H. J., Livingston, E. H., . . . Shekelle, P. G. (2005). Meta-analysis: Surgical treatment of obesity. *Annals of Internal Medicine, 142*(7), 547-559.

Magro, D. O., Geloneze, B., Delfini, R., Pareja, B. C., Callejas, F., & Pareja, J. C. (2008). Long-term weight regain after gastric bypass: A 5-year prospective study. *Obesity Surgery, 18*, 648-651. doi:10.1007/s11695-007-9265-1

McMahon, M. M., Sarr, M. G., Clark, M. M., Gall, M. M., Knoetgen III, J., Service, J., . . . Hurley , D. L. (2006). Clinical management after bariatric surgery: Value of a multidisciplinary approach. *Mayo Clinic Proceedings, 81*(10, suppl), S34-S45.

Neff, K. J., Olbers, T., & le Roux, C. W. (2013). Bariatric surgery: The challenges with candidate selection, individualizing treatment and clinical outcomes. *BMC Medicine, 11*(8). doi: 10.1186/1741-7015-11-8

Parikh, M., Dasari, M., McMacken, M., Ren, C., Fielding, G., & Ogedegbe, G. (2012). Does a preoperative medically supervised weight loss program improve bariatric surgery outcomes? A pilot randomized study. *Surgical Endoscopy, 26*, 853-861. doi: 10.007/s00464-011-1966-9

Parrott, J. M., Parrott, J. S., Sowemimo, O., & Adeyeri, A. (2012). Specialized bariatric RD counseling improves pre-surgery weight loss and post-surgical excess weight loss *Academy of Nutrition and Dietetics, 112*(9), A-69.

Rossouw, K., Senekal, M. & Stander, I. (2000). The accuracy of self-reported weight by overweight and obese women in an outpatient setting. *Public Health Nutrition, 4*(1), 19-26.

Sallet, P. C., Sallet, J. A., Dixon, J. B., Collis, E., Pisani, C. E., Levy, A., . . . Cordas, T. A. (2007). Eating behavior as a prognostic factor for weight loss after gastric bypass. *Obesity Surgery, 17*, 445-451.

Sarwer, D. B., Wadden, T. A., & Fabricatore, A. N. (2005). Psychosocial and behavioral aspects of bariatric surgery. *Obesity Research, 13*(4), 639-648.

Saunders, R. (1999). Binge eating in gastric bypass patients before surgery. *Obesity Surgery, 9*, 72-76.

Shikora, S. A., Kim, J. J., & Tarnoff, M. E. (2007). Nutrition and gastrointestinal complications of bariatric surgery. *Nutrition in Clinical Practice, 22*(1), 29-40. doi: 10.1177/011542650702200129

Silver, H. J., Torquati, A., Jensen, G. L., & Richards, W. O. (2006). Weight, dietary, and physical activity behaviors two years after gastric bypass. *Obesity Surgery, 16*, 859-864.

Sjöström, L., Lindroos, A., Peltonen, M., Torgerson, J., Bouchard, C., Carlsson, B., . . . Wedel, H. (2004). Lifestyle, diabetes, and cardiovascular risk factors 10 years after bariatric surgery. *New England Journal of Medicine, 351*(26), 2683-2693. doi: 10.1056/NEJMoa035622

Tindle, H. A., Omalu, B., Courcoulas, A., Marcus, M., Hammers, J., & Kuller, L. H. (2010). Risk of suicide after long-term follow-up from bariatric surgery. *American Journal of Medicine, 123*(11), 1036-42. doi: 10.1016/j.amjmed.2010.06.016

Toussi, R., Fujioka, K., & Coleman, K. J. (2009). Pre- and postsurgery behavioral compliance, patient health and postbariatric surgical weight loss. *Behavior and Psychology, 17*(5), 996-1002. doi: 10.1038/obj.2008.628

University of Colorado Health. (2013). Insurance and the cost of bariatric surgery. Retrieved from http://pvhs.org/body.cfm?id=366

Wadden, T. A., Faulconbridge, L. F., Jones-Corneille, L. R., Sarwer, D. B., Fabricatore, A. N., Thomas, J. G., . . . Williams, N. N. (2011). Binge eating disorder and the outcome of bariatric surgery at one year: A prospective, observational study. *Obesity, 19*, 1220-1228. doi: 10.1038/oby.2010.336

Weight-control Information Network (WIN). (2012.). Binge eating disorder. Retrieved from http://www.win.niddk.nih.gov/publications/binge.htm#a

Wing, R. R., & Phelan, S. (2005). Long-term weight loss maintenance. *American Journal of Clinical Nutrition, 82*, 222S-225S.

Wing, R. R., Tate, D. F., Gorin, A. A., Raynor, H. A., & Fava, J. L. (2006). A self-regulation program for maintenance of weight loss. *New England Journal of Medicine, 355*, 1563-1571.

Appendix A: Institutional Review Board Approval

February 11, 2013

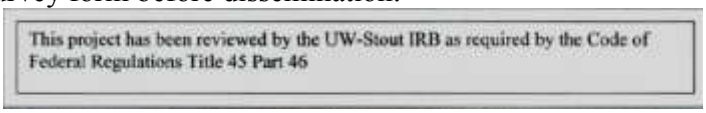
Darby Simpson
Food and Nutritional Sciences Department
UW-Stout

RE: *An evaluation of the effectiveness of weight loss surgery support groups on weight loss management and eating behaviors post- weight loss surgery*

Dear Darby,

The IRB has determined your project, "*An evaluation of the effectiveness of weight loss surgery support groups on weight loss management and eating behaviors post- weight loss surgery"* is **Exempt** from review by the Institutional Review Board for the Protection of Human Subjects. The project is exempt under **Category # 2** of the Federal Exempt Guidelines and holds for 5 years. Your project is approved from **2/8/2013**, through **2/7/2018**. Should you need to make modifications to your protocol or informed consent forms that do not fall within the exemption categories, you will need to reapply to the IRB for review of your modified study.

If your project involved administration of a survey, please copy and paste the following message to the top of your survey form before dissemination:



If you are conducting an **online** survey/interview, please copy and paste the following message to the top of the form:

"This research has been reviewed by the UW-Stout IRB as required by the Code of Federal Regulations Title 45 Part 46."

Informed Consent: All UW-Stout faculty, staff, and students conducting human subjects research under an approved "exempt" category are still ethically bound to follow the basic ethical principles of the Belmont Report: 1) respect for persons; 2) beneficence; and 3) justice. These three principles are best reflected in the practice of obtaining informed consent from participants.

If you have questions, please contact Research Services at 715-232-1126, or foxwells@uwstout.edu, and your question will be directed to the appropriate person. I wish you well in completing your study.

Sincerely,

Susan Foxwell

Susan Foxwell
Research Administrator and Human Protections Administrator,
UW-Stout Institutional Review Board for the Protection of Human Subjects in Research (IRB)

Appendix B: Weight Loss Support Group Flyer

AREA BARIATRIC SUPPORT GROUP

Back By Popular Demand:

, RD

Will Lead

Group Discussion On:

Frequently Asked Questions!

Bring your questions you would like addressed

Evening Group

When: Tuesday, March 12, 2013
Time: 6:30-7:30 pm
Where: Clinic, Center
Rooms: A B C in the Center (main entrance and follow signs)
Evening group ONLY - will be available via Telehealth at:

- ***Mosinee Center*** (Main Entrance, follow signs)

Daytime Group

When: Friday, March 15, 2013
Time: 10:00-11:00 am
Where: Clinic, Center
Rooms: A B C in the Center (main entrance, follow signs)
Daytime group ONLY-will be available via Telehealth at:

- ***Minocqua Center*** (main entry, elevator to the Lower Level, Lg Telecon. Room.)
- ***Merrill Center*** (Tele-Video Room 83869)

****** **Site Only:** **Volunteers Needed! For those of you who have already had bariatric surgery and are willing to volunteer your time to stay after the meeting, you are invited to take a survey about eating practices, etc. Darby Simpson, graduate student at UW Stout is conducting this survey for her thesis project and will provide more information after the meeting.**

Appendix C: Survey Consent Form

Consent to Participate in UW-Stout Approved Research

Title: An evaluation of the effectiveness of weight loss surgery support groups on weight loss management and eating behaviors post-weight loss surgery

Description:
The purpose of this study is to evaluate eating patterns and behaviors of post-bariatric surgery patients participating in bariatric surgery support groups. To participate in this survey, you must be 18 years or older and currently a post-bariatric surgery patient who has attended at least one bariatric support group.

Risks and Benefits:
There is little risk to participate in this survey. You will be asked questions about your weight and eating patterns which might make you anxious or conversely a benefit to help you identify patterns that may be hindering your weight loss progress.

Time Commitment:
The time it takes to complete this survey is short. There are 38 questions that will take 10-15 minutes.

Confidentiality:
You will ***NOT*** include name or any related information on the survey. We do not believe that you can be identified from any of this information.

Right to Withdraw:
This survey is voluntary. You may choose not to complete it without any penalties. You have the right to stop the survey at any time. However, should you complete the survey and later wish to withdraw, there is no way to identify your survey after it has been turned in as your name is ***NOT*** on the survey to enable retrieval.

IRB Approval:
This study has been reviewed and approved by The University of Wisconsin-Stout's Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have questions or concerns regarding this study please contact the Investigator or Advisor. If you have any questions, concerns, or reports regarding your rights as a research subject, please contact the IRB Administrator.

Investigator:	Darby R. Simpson 507-676-3207 simpsond9860@my.uwstout.edu	**IRB Administrator** Sue Foxwell, Director, Research Services 152 Vocational Rehabilitation Bldg. UW-Stout
Advisor:	Dr. Carol Seaborn 715-232-2216 seabornc@uwstout.edu	Menomonie, WI. 54724 715-232-2477 foxwells@uwstout.edu

Statement of Consent:
By completing the following survey, you agree to participate in the project entitled, "*An evaluation of the effectiveness of weight loss surgery support groups on weight loss management and eating behaviors post-weight loss surgery*."

Appendix D: Instrument

Survey on the evaluation of the effectiveness of weight loss surgery support groups on weight management and eating behaviors after weight loss surgery

1. Indicate your gender (circle): Male Female

2. Indicate your age range in years (circle): 18-25 26-35 36-50 51-60 61+

3. Indicate the month and year you had the weight loss surgery: _____(month/year)

4. Indicate the type of weight loss surgery you had (circle):

   Roux-En-Y Gastric Banding Sleeve Gastrectomy Other: (list)_____

5. What was your highest weight within the month *before* your surgery? _____lbs

6. What was your lowest weight *after* surgery?_____lbs

7. What is your current weight?_____lbs

8. What is your current height?____feet_____inches

9. Identify your weight change within the *last 3 months* (circle):

   Decreased by more than 10 lbs Decreased by 5-10 lbs Stayed about the same

   Increased by 5-10 lbs Increased by more than 10 lbs

10. How many days a week do you eat the following meals?
    Breakfast_____days a week Mid-morning snack_____days a week
    Lunch _____days a week Mid-afternoon snack_____days a week
    Dinner/Supper_____days a week Evening snack_____days a week

11. Please specify the amount (in 8 oz servings) of the following fluids that you consume during a *typical day*: Example: Write the number 2 in the blank if you have two 8 oz servings a day (8 oz = 1 cup)
    _____Protein shake _____Whole milk _____Water _____Unsweet tea
    _____Fruit juice _____Lower fat milk _____Coffee _____Sweet tea
    _____Diet soda _____Regular soda _____Beer/wine _____other (list):_____

12. Since your surgery, do you feel that you have eaten more than you should have at one sitting? (circle) .....Yes No

13. Since your surgery, approximately how often have you felt out of control while eating more food than you should have? (circle)

    < 1 day a week 1 day/week 2-3 days/ week 4-5 days/ week Everyday
    Does not apply

14. Do you experience any of the following when you eat more than you think you should? (circle)

    a. Eating much more rapidly than usual.....Yes No
    b. Eating until you felt uncomfortably full.....Yes No
    c. Eating large amounts of food when you didn't feel physically hungry .....Yes No
    d. Eating alone because you were embarrassed by how much you were eating .....Yes No
    e. Feeling disgusted with yourself, depressed, or very guilty after overeating …….....Yes No

15. In general, how upset do you get when you eat more than you should? (circle)

    Not at all Slightly Moderately Greatly Extremely

16. Have you been consciously trying to change your eating habits since your surgery? (circle) .....Yes No

17. Has there EVER been a period of time in your life (lasting six months or longer) when you engaged in regular episodes of eating large amounts of food in a single sitting? (circle) .....Yes No

18. If Yes to question 17, when you ate this way did you feel you couldn't stop eating or control what or how much you were eating? (circle) .....Yes No

19. Are you ever afraid of losing control when eating? (circle).....Yes No

20. Since your surgery have you spent much time between meals thinking about food, eating, or calories? (circle) .....Yes No

21. Since your surgery have you experienced any of the following up to 3 hours after food intake

    Stomach cramps ……Yes No
    Nausea ……Yes No
    Spontaneous vomiting……Yes No
    Feeling faint or dizzy……...Yes No

22. If yes to any of the above, what foods caused the experience? (Check all that apply)

    _____Sweets/candy _____Cakes/bars/cookies
    _____Ice cream _____Soft drinks or sweetened beverages
    _____Other dairy products _____Sweet alcoholic beverages
    _____Syrup _____Other: please list:_____

23. Since your surgery have you picked or nibbled at food between meals and snacks in an unplanned/repetitious way (circle) .....Yes No

    If yes, what have you typically eaten at these times?: (please list food and/or beverages)

    _____
    _____
    _____

24. Do you experience cravings for food? (circle) .....Yes No

    a. If yes, what foods? Please list:_____

    b. How would you rate the strength of your cravings? (circle)

    0 1 2 3 4 5

    None Extreme

    c. How often do you give in to your cravings? (circle)

    0 1 2 3 4 5

    Never Always

25. Since your surgery have you eaten when you are feeling emotional? Examples are eating when you were stressed, sad, angry, etc. (circle)

    < 1 day a week 1 day/week 2-3 days/ week 4-5 days/ week Everyday
    Does not apply

26. Since your surgery have you chewed food and spit it out without swallowing it? (circle) .....Yes No

27. Since your surgery have you consciously tried to restrict (cut back) the overall amount of food you eat?.....Yes No

28. Since your surgery have there been any days when you haven't eaten anything? .....Yes No

    a. If yes, has this been to influence your shape or weight? .....Yes No

    b. If yes, has this been to avoid an episode of overeating? .....Yes No

    c. If yes, has this been to avoid physical discomfort? .....Yes No

29. Since your surgery have you made a conscious effort to adhere to the post-surgery eating guidelines? .....Yes No

30. Please rate how well YOU think you have adhered to the post-surgical eating guidelines: (circle)

    Not at all Somewhat Moderately Very Well

31. Please rate how satisfied YOU are with your surgical results: (circle)

    Not at all Somewhat Moderately Very Well

32. Is there anything that you know now that you wish you would have known prior to getting weight loss surgery? Please describe:_____
_____
_____
_____

33. If you had the choice to make over again, would you choose to have weight loss surgery? Please explain:
_____
_____
_____
_____

34. Are you *currently* exercising? (circle) .....Yes No

    a. If YES: How many days (average) a week?_____day(s)/week
    b. What type of activity(activities) do you engage in?_____
    c. Typically, how much time each *day* is spent exercising?_____minutes
    d. Approximately how long (in months) have you been exercising this amount *since your surgery*?_____month(s)

35. How many times have you visited a weight loss support group *since your surgery*?_____

36. To what extent has participation in a weight loss support group *benefited you* in weight loss management and eating behaviors? (circle)

    0 1 2 3 4 5

    Not at all Extremely

37. How many times have you visited with a registered dietitian *since your surgery*?_____

38. To what extent has meeting with a dietitian *benefited you* in weight loss management and eating behaviors? (circle)

    0 1 2 3 4 5

    Not at all Extremely

Thank you for completing this survey! ☺

Appendix E: Subject Responses to Survey Question Number 33

Responses to Question 33 "If you had the choice to make over again, would you choose to have surgery?" are listed.
"Yes, it has made my life better. I have lost weight and my blood pressure has gone down significantly."
"Yes, I am very satisfied with results."
"Yes, wish I had it 10 years ago, but wasn't ready to be committed."
"Yes, it is the best thing I have ever done for myself. I feel like a new person. I love to buy clothes and jewelry, and enjoy life in general. I feel beautiful again!!"
"Yes, I feel better."
"Absolutely. Greatest thing I ever did. I feel like new person."
"Yes, much better self-esteem and more physically active."
"Yes, but I wouldn't have waited so long. I have wasted so many years of my life being overweight that I can't get back."
"Yes, I love losing the weight. Better health and better for my children."
"Yes, I am healthier in many ways. I can play with my children."
"Glad I had it."
"Yes, if I could, I would have done this earlier."
"Yes, I would and I recommend it if you do if for yourself, not other people."
"Yes, prior to surgery visiting dietitian, control was an issue."
"No."
"I would have had the sleeve right away, not the lap band."
"Most days."
"Yes, my health is so much better. I walk better, and feel great."
"Yes, lost a lot of weight and feel way better."
"Yes, it took me a year to make up my mind. It helped so much."
"Yes, even though it is hard being healthy, is so worth it."
"Yes! Would recommend it and the program highly. However, it's something you have to want to do and change."
"Yes. The best thing I ever did and the only weight loss I have been able to sustain!"
"Yes, definitely!"