BARIATRIC PATIENTS’ KNOWLEDGE OF POSTOPERATIVE
COMPLICATIONS AND LIFESTYLE CHANGES

by

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ABSTRACT

Obesity is a growing epidemic in the United States. With obesity comes the comorbidities associated with this disease such as hypertension, diabetes and sleep apnea. To help combat this growing epidemic bariatric surgery has become an acceptable and widely used procedure for the severely obese. Although bariatric surgery can help mitigate the comorbidities, there are many possible complications and lifestyle changes that are associated with this surgery.

Healthcare providers provide a critical role in educating bariatric patients about the process of the surgery, lifestyle changes, and possible complications that can occur postoperatively. The primary purpose of this study is to explore the extent of bariatric patient’s knowledge related to specific post-surgical considerations associated with gastric bypass surgery. This study examined their knowledge of the postsurgical complications, postsurgical diet, fluid intake, and medication preparation following surgery.

A descriptive, cross-sectional survey design was used to explore bariatric patient’s knowledge related to specific post-surgical considerations associated with gastric bypass surgery in a Central Montana facility. Bariatric patients were given a twelve question quiz regarding possible complications from surgery, lifestyle changes, and diet regimes postoperatively. None of the patients answered all of the questions correctly. Areas where patients had the most knowledge were questions pertaining to home medication doses and preparation, signs of infection, normal drain color, pain that is not controlled by pain pills being uncommon, and pain, redness or swelling in the legs being abnormal. Questions answered incorrectly included minimum fluid intake, protein intake, when the greatest weight loss would occur, and avoidance of fluids before and after meals. Demographic data explored age, occupation, educational materials received and sources of materials given.

The results of this study demonstrated that bariatric patients in this Central Montana facility may not have sufficient knowledge regarding postoperative care and lifestyle changes. The data also suggests that more emphasis needs to be placed on using different types of educational materials and individual learning preferences to facilitate improving patient outcomes.
CHAPTER 1

INTRODUCTION TO THE STUDY

Introduction

The Center for Disease Control (2003) found that obesity increases the risk of numerous health conditions and diseases including hypertension, osteoarthritis, high cholesterol, type two diabetes, coronary heart disease, stroke, gallbladder disease, sleep apnea, bladder control problems and psychological disorders such as depression and some respiratory diseases. “Although one of the national health objectives for the year 2010 is to reduce the prevalence of obesity among adults to less than 15%, current data indicate that the situation is worsening rather than improving” (CDC, 2007). The CDC (2005) also estimated that 112,000 adults in the United States die from obesity related causes such as heart disease, diabetes, and cancer each year. Finkelstein, Fiebelkorn, and Wang (2003) calculate that 9.1% of U.S. healthcare expenditures are consumed by the direct cost of obesity and people being overweight.

Obesity can be defined “by a body-mass index (BMI) (the weight in kilograms divided by the square of the height in meters) of 30.0 or more” (Adams et al., 2006). There are many ways to manage obesity, including diets, exercise, and medications, but when all of these forms fail, surgery can be a reasonable option for the severely obese. Reuters News Service reported in 2007 that the number of bariatric procedures, including stomach stapling and bypass surgery, has been on the incline in the last few years. Reuters found that there was an estimated rise of 200,000 surgeries in 2006 up from
13,000 surgeries in 1998. This is a 93.5% increase from 1998 to 2006. When a patient chooses surgery there are numerous things to consider. These include deciding on the type of surgery and the life-changing implications of this choice. “The average weight loss resulting from gastric bypass surgery is 60% to 70% of excess weight after 5 years and 55% to 60% after 10 years, with 90% of patients expected to achieve this result” (Furtado, Shikora, and Saltzman, 2004).

With the possibility of alleviating some of the comorbidities associated with obesity such as diabetes or hypertension, bariatric surgery may seem like the solution, but with any surgery comes possible complications such as malabsorption, dehydration, or an anastomotic leak. Morbidly obese patients are at even a higher risk of having difficulty during and after surgery because bariatric patients often have multiple comorbidities which involve every organ system: cardiovascular, respiratory, metabolic, musculoskeletal, gastrointestinal, endocrine, and reproductive, dermatologic, neurologic, and psychological. These complications and difficulties can make the healing even more challenging.

Bariatric postoperative care is uncommon in many ways from other surgical patients. The gastric bypass patient starts on a very strict diet that is followed for the duration of the patient’s lives and they must be educated on the signs and symptoms of nutritional complications from having the procedure. Malabsorption, dehydration, vitamin and nutritional deficits can happen years after having the surgery, so it is important to know what to look for related to these complications. “Common nutritional
deficits include protein, iron, vitamin B-12, folate, calcium and fat soluble vitamins (A, D, E, K) and other micronutrients” (Alvarez-Leite, 2005).

It is up to the surgeon and nurses, but ultimately the patient, to make sure that as a patient they fully understand the implications of having this procedure. Having bariatric surgery is a life altering event. Without the proper knowledge, surgery is futile and the patients could end up in a greater dilemma than if the patient had elected not to have the surgery. As Buchwald (2005) states, bariatric patients are best evaluated and cared for “by a team approach involving the surgeon, a nurse practitioner or nurse, a dedicated dietician, office personnel (scheduling and triage), and other specialist needed” (pg 378).

**Background and Significance of Study**

In 2007, Reuters News Service reported that “people who were 100 pounds (45 kg) or more overweight were the fastest-growing group of overweight people in the United States.” This was 50 percent higher than it had been in 2000. Harrington (2006) concurs stating “Obesity is a growing epidemic in the United States. It is associated with an increase in morbidity and mortality.” Second only to cigarette smoking, obesity is the leading cause of preventable deaths in the United States (Grindel and Grindel, 2006).

Gastric bypass surgery can have positive effects on the comorbidities of the patient. For example, people with type 2 diabetes mellitus can have vast improvements in their disease. According to Furtado et al. (2004), 83% of gastric bypass patients who had the Roux-en-Y procedure had fasting plasma glucose and glycosylated hemoglobin concentrations return to normal. Hypertension can also be markedly improved. Dixon and
O’Brien (1999) reported “83% of patients undergoing gastric banding surgery who had hypertension experienced normal blood pressure readings after 17 months.”

Sleep apnea can also be corrected with gastric bypass surgery. One study by Surgerman, Fairman, Sood, Engle, Wolfe, Kellum (1992) examined the long-term implications of bypass surgery and effects on sleep apnea. The researchers found significant improvements in sleep apnea, arterial blood gases, pulmonary hypertension, left ventricular dysfunction, lung volumes, and polycythemia following surgery.

Negative ramifications can also occur after having bariatric surgery. The U.S. Department of Health and Human Services (2006) found that “four of every ten patients who have obesity surgery (also known as bariatric or weight loss surgery) develop complications within six months of leaving the hospital.” The two most feared complications are pulmonary embolism and anastomoses leaks (Livingston, 2004). Nausea, vomiting, malnutrition, and dumping syndrome are also common complications after bariatric surgery. Long-term difficulties include calcium, iron, and vitamin B12 deficiencies. The inadequate vitamins and minerals can result in anemia, osteoporosis, and osteomalaci (Pieper et al., 2006). Malnutrition is another adverse effect that can occur for many bariatric patients. When educated on the proper amount of food and water intake required, malnutrition can usually be avoided. Poor calcium absorption can result in bone fractures or breaks. Bowel obstructions related to internal hernias and dumping syndrome can also develop.

Thus, there are many things to consider when making choices related to bariatric surgery. Bariatric patients need to consider the possible development of nausea, vomiting,
vitamin and mineral deficiencies and the possibility of an anastomoses leak. Patients are given information regarding these issues preoperatively and postoperatively. The bariatric patients are educated on portion sizes when eating, exercise requirements and warning signs of infections andastomotic leaks. Diet, exercise, and lifestyle changes are all things that the patient has full control over following the procedure. It is up to the bariatric patient to comply with these requirements so that they lose the weight and have minimal complications. Having a positive attitude and an increased knowledge base regarding bariatric surgery postoperatively is vital to preventing negative comorbidities following surgery.

**Purpose and Aims**

The primary purpose of this study was to explore the extent of bariatric patients’ knowledge related to specific post-surgical considerations associated with gastric bypass surgery. This study examined their knowledge of the postsurgical complications, postsurgical diet, fluid intake, and medication preparation following surgery. The study was completed in order to assist bariatric centers in providing helpful information regarding bariatric preoperative and postoperative education to avoid complications. The aims of this study were to:

1. Explore the degree of bariatric patients’ postsurgical educational knowledge.
2. Identify types of educational sources provided to and used by patients.
3. Identify patient’s perceptions of any additional information that would have been helpful prior to surgery or postoperatively such as more education time with the nurse, dietitian or more time consulting with their physician.

Research Questions

This study will attempt to answer the following questions:

1. Postoperatively, what is the level of bariatric patient’s knowledge related to specific postoperative considerations associated specifically with a gastric bypass?

2. In which content areas did patients have the most and least knowledge?

3. From what sources did patients obtain their information?

4. Did the patients feel prepared for the surgery and their after care?

5. In retrospect, did the bariatric patients identify any additional information that would have been helpful?

Demographic information will also be collected including age, gender, race, distance away from bariatric facility and so forth.

Theoretical Framework

The adult learning theory was the theoretical framework used for this study. For there to be effective communication it is imperative to understand how the sample group (for this particular study, adults) learns. Malcolm Knowles first explained how adults learn by introducing the concept that adults and children gain knowledge differently
Knowles stated that adult learning is a process of self-directed inquiry. A key concept with adult learners is to assess what they already know. This way new information can build on previous information. There are six elements that Knowles’ outlines for optimal learning for adults. They are:

1. A need to know
2. A responsibility for one’s own learning
3. The role of experience as a resource in one’s learning
4. A readiness of applicability of the information to one’s life situation
5. Motivation to learn
6. Problem-centered learning with real-life problems (Mitchell & Courtney, 2005, p. 258)

Applying adult educational elements to bariatric surgery, the educator needs to assess the learner’s understanding of the surgery and refine any questions or concerns that need to be addressed before the surgery. Risks, benefits, and possible complications of the surgery need to be considered. The after care of the surgery also needs to be managed. For bariatric surgery the aftercare considerations include diet and fluid changes, exercise requirements, possible postoperative complications and life altering changes that will happen after completing the surgery.

Another aspect of the adult learning theory is motivation. “Often a life-experience or situation stimulates the motivation to learn” (Russell, 2006, p.349). This life experience or situation could be severe weight gain or comorbidity associated with the obesity that is making the patient’s life a struggle. Most bariatric patients are suitable for
the adult learning theory framework because there is an assumption that they have some
degree of motivation to change their lifestyle and body to reach a better quality of life.
Patients also have a need to know and a responsibility for one’s own learning since they
requested the help of their surgeon to partake in the procedure. It is unknown if bariatric
patients are able to apply the information obtained regarding their own life situation and
if they understand the implications related to their decision. It is also unclear if patients
understand the extent of knowledge required to partake in this surgery regarding
complication management and lifestyle changes required after having this procedure.

Finally there are implications an educator needs to consider when using the adult
learning theory. An educator needs to build a mutually trusting relationship with the
patient. When a patient believes that a healthcare provider has taken a vested interest in
their well-being they are more likely to listen to the information being presented apply it
to their own situation and learn from it. The educator also needs to ensure that the patient
understands the information presented to them and has a motivation to learn. A teacher
needs to evaluate the patient’s readiness to apply the information to their own life
situation and assess the patient’s responsibility for one’s own learning.

Assumptions

Assumptions help form the basis of the investigation. In the planning of this study
it was assumed:

1. Patients received pre-operative and post-operative education on bariatric
   surgery and a variety of forms of education were received.
2. Patients might also seek out information on their own.

3. Patients receiving care from this regional medical clinic included individuals living in rural and urban areas.

4. Identifying educational needs and preferences improve the worth of bariatric surgery education.

5. Bariatric patients have some degree of motivation to change their lifestyle and body to reach a better quality of life.

6. A returned quiz warranted that the patients could read and write English.

Definitions

For the purpose of this study, the following definitions are used:

1. Bariatric: originated from the Greek word “baros” meaning heavy and “iatrics” (medical treatment). It means the science of providing healthcare for the treatment of obese patients.

2. Bariatric complications: any issue or problem caused from having bariatric surgery.

3. Educational materials: Any written or verbal instruction provided to or self-selected by the patient prior to surgery.

4. Obesity: “any condition in which weight gain has reached the point of seriously endangering health with some people being more susceptible than others” (National Institute of Clinical Excellence (2001). When intake (food) is greater than energy expenditure, energy storage is promoted resulting in increased weight.
Summary

Obesity has become an epidemic with significant implications. It has led to increased health conditions including hypertension, type two diabetes and coronary heart disease. Ways to manage obesity incorporate diet, exercise, and medications, but when these forms fail bariatric surgery can become a reasonable option. Bariatric surgery has increased 93.5% from 1998 to 2006 in an attempt to cure the comorbidities associated with this disease. It can help to control hypertension, diabetes, and sleep apnea but it also comes with the possibility of complications. Proper education can help to alleviate the possible complications associated with surgery and mitigating the life-altering ramifications related to their decision to proceed with having the surgery. It is up to the health care team but ultimately the patient to ensure that the patient understands the implications and possible complications of having this procedure.

Few studies have been conducted related to patient’s extent of knowledge related to bariatric surgery. This study’s primary purpose was to explore the extent of bariatric knowledge related to specific post-surgical considerations associated with gastric bypass surgery. It examined patient’s postsurgical educational knowledge, identified types of educational sources provide to the bariatric patients, and where the patients received their information. The study was conducted to attempt to answer what the level of bariatric patient’s knowledge was regarding postoperative considerations associated specifically with a gastric bypass. It was also conducted to find the areas that patients had the most and lease knowledge, where patients obtained their information, and if they felt prepared for surgery.
The theoretical framework used for this study was the Malcolm Knowles adult learning theory. The theory introduced the idea that children and adults learn differently and adult learning is a process of self-directed inquiry. There are six key elements outlined to promote adult learning and they include a need to know, a responsibility for one’s own learning, the role of experience as a resource in one’s own learning, a readiness and motivation to learn, and problem-centered learning with real-life problems. Most bariatric patients are suitable for the adult learning framework due to the fact that they have some degree of motivation to change their lifestyle and body to reach a better quality of life.

Finally, there were six assumptions to help form the basis for this investigation. The first assumption was that bariatric patients had received pre-operative and post-operative education and a variety of forms of education were received. Secondly, patients may seek out information on their own. The third assumption was that patients receiving care from this regional medical clinic included individuals living in rural and urban areas. The fourth was that educational needs and preferences improve the worth of bariatric surgery education. The fifth assumption was that bariatric patients have some degree of motivation to change their lifestyle and body to reach a better quality of life and lastly it was assumed that patients could read and write English if they returned a quiz.
CHAPTER 2

REVIEW OF LITERATURE

Introduction

A review of the literature on bariatric surgery, the adult learning model and surgical education in general is presented in this chapter. The bariatric literature reviewed included the three types of surgery, diet and exercise requirements after surgery. The adult learning section reviewed articles that explained adult learning techniques and ways on how adults learn best. Finally, the postoperative education section looks at surgical education in general and possible barriers to this education. A broad search utilizing Montana State Library Indexes and Data Bases provided a starting point for this study. PubMed Central (PMC) and the Cumulative Index to Nursing Allied Health Literature (CINAHL) were also utilized for the literature review.

Incidence and Prevalence

Reuters (2007) reported that people who are in the category of one hundred pounds overweight or more are the fastest growing group of overweight people in the United States. “The prevalence of morbid obesity is increasing worldwide at a pace that is even more accelerated than for obesity overall” (Busetto et al., 2007). According to the U.S. Department of Health and Human Services, (2001) morbid obesity has been defined as the first epidemic of the twenty-first century. Approximately 300,000 deaths per year
were associated with obesity or overweight, compared to about 400,000 deaths annually associated with cigarette smoking, stated the Food and Drug Administration (2002). Bariatric surgery has been a lifesaver for people who fit into this category. They are able to decrease their weight at a staggering rate and, in the process, decrease their chances of comorbidities associated with this disease. “The use of bariatric surgery to combat obesity increased approximately 34% between 2002 and 2004” (“Bariatric Surgery”, 2007).

Types of Bariatric Surgery

There are three different types of bariatric surgery. They can be classified as restrictive, malabsorptive, or both. In restrictive surgery the goal is to limit the amount of food that can be consumed at one time. This type of surgery does not interfere with the normal digestion. Harrington (2006) states,

“Restrictive surgeries can be either the adjustable-banded gastroplasty, or the vertical-banded gastroplasty. With the adjustable band there is a hollow inflatable band that is wrapped around the top of the stomach. The band is then attached to the abdominal wall. The band can inflate or deflate in diameter by injecting sterile saline depending on how much food the patient wants to pass through to the stomach. The vertical banded gastroplasty is an older procedure that is rarely used at the present time. It is referred to as stomach stapling and restricts the amount of food consumed at one time.”

Restrictive procedures are sometimes preferred by patients as opposed to the malabsorptive procedures because they are easier to perform and they are also reversible. The restrictive procedures are normally performed laparoscopically, which tends to be a safer procedure for the patient and it is less painful with a faster recovery time. The
drawback to this type of procedure is that patients lose weight at a slower pace compared to the malabsorptive procedures. “Patients typically lose 50% of excess weight the first year, but tend to regain the weight at 3-5 years; by 10 years, only about 20% of patients have maintained the weight loss” (Harrington, 2006). Grindel & Grindel (2006) stated that the “band gives the stomach the appearance of an hourglass.” The small opening into the stomach creates an early feeling of fullness, which decreases food intake.

The most common type of malabsorptive procedure is called the Roux-en-Y gastric bypass (RGB). The RGB is the most common bariatric procedure performed in the United States and is considered the “gold standard” in bariatric surgery (Grindel, and Grindel, 2006). Other types of procedures include the biliopancreatic diversion and the duodenal switch. The malabsorptive procedures are chosen over the restrictive surgeries because they produce quicker results. They are usually the first choice for patients with severe obesity and comorbidities.

The RGB is done by making a small stomach pouch (approximately 30 ml or less) that restricts the amount of food that can be ingested. The small pouch is attached to a Y shaped section of the small bypass creating a complete bypass of the main part of the stomach. This is beneficial for a person with obesity because there is only a limited amount of food that is able to be absorbed (Harrington, 2006). The surgery can be performed as an open procedure or laparoscopically (Grindel and Grindel, 2006, p. 130).

The biliopancreatic diversion is the complete removal of the lower portion of the stomach. The small portion of the stomach that remains is attached to the small intestine. This type of surgery is rarely done due to the nutritional deficiencies that can result. The
variation of the biliopancreatic diversion is the duodenal switch. With the duodenal switch “the surgeon leaves a larger portion of the stomach as well as a small portion of the duodenum intact. This larger portion allows the patients to eat more after surgery” (Harrington, 2006). A longer follow-up duration is required with the malabsorptive procedures because there is a greater chance in long-term nutritional deficiencies. For biliopancreatic diversion follow-up includes working with the patient to get the correct nutritional supplements, and to make sure that the patient is following a correct and individualized medical regimen.

**Diet**

“Nutritional needs vary depending on the degree of restriction and the degree of malabsorption caused by the surgery as well as the specific area of the intestine bypassed. Individual nutrients generally have a specific site of absorption along the small intestine” (Elliot, 2003). Dietary guidelines vary depending on surgeon preference and type of surgery as to when the patient can start eating and how long they have to stay on a certain phase of the guideline. The commonalities are that every diet is started with clear liquids. Clear liquids are considered any liquids that are transparent. These include Jell-O, chicken or beef broth, popsicles, or tea. It is up to the surgeon to decide when to advance the patient. Approximately 1-2 weeks post surgery the patient is started on a pureed diet and advanced to a soft diet in two to four weeks afterward. In any surgery one of the main components that is encouraged in the diet is protein. Protein is needed to make immune cells and antibodies. It helps to reduce inflammation and to heal the wound at the
site of the incision. Without adequate protein the body has to make its own protein by breaking down muscle and organ tissue. This can cause delayed wound healing. (Pifer 2008). Fluid intake is also monitored. Patients are to consume 32 ounces of fluid each day and begin working up to 64 ounces slowly.

**Exercise**

Exercise should be started before having gastric bypass surgery. It is recommended that patients participate is some mild exercise (20 minutes, 3-4 times a week) before surgery to reduce “surgical complications, facilitate healing, and enhance post-operative recovery” (American Society of Metabolic and Bariatric Surgery, 2006). Some examples of exercise are walking, swimming, or riding a bike further each day. Blowing up balloons can help to increase lung capacity and lifting light weights can increase strength.

After having surgery it is vital that patients exercise. The American Society for Metabolic and Bariatric Surgery recommends walking from day one, starting with short distances and increasing the distance every time. They also recommend incorporating other aerobic activities into the exercise program and to start light weight training and advancing slowly. The American Society for Metabolic and Bariatric Surgery also recommend hiring a personal trainer to help achieve goals and to make sure that the patients are doing the activities correctly. Little data is available regarding the requirements and considerations regarding exercise regimes for bariatric patients postoperatively. Collazo-Clavell, M., Clark, M., McAlpine, D., and Jensen, M., (2006)
state that patients should initiate physical activities that they are able to perform comfortably with their physical limitations. The American College of Cardiology and American Heart Association practice guidelines recommend screening for coronary artery disease in individuals with multiple risk factors before initiation of an exercise program. The challenge often lies in which functional cardiac assessment study to pursue in view of the weight limitations imposed by the available technologies and the patient’s limitation to exercise.

**Potential Postoperative Complications**

“Bariatric surgery has risks including respiratory, cardiac, and bleeding complications. Bariatric procedures have many serious side effects and a reported mortality rate of approximately one percent in the year following the procedure” (Zingmond, McGory, Ko, CY, 2005). The Agency for Healthcare Research and Quality estimates that four of every 10 patients who undergo bariatric surgery develop complications within six months after the procedure” (2007). Many complications can occur during surgery. Bariatric patients are at even greater risk of having complications during surgery and postoperatively because of the patient’s comorbidities.

The most common life-threatening complication is intra-abdominal infection from an anastomotic leak. Signs and symptoms include tachycardia, dyspnea and restlessness that are unexplained. This is managed by completing a swallow study where a person swallows gastrographin in front of a computer tomography scan to make sure that food is being properly digested and that there are no potential leaks.
Another common side effect of the surgery is vomiting. Initially post surgery vomiting can occur from the anesthesia or from medications. Later postoperatively when the person starts to eat, the vomiting happens because the person ate too much at one time or the food was too large and became lodged in the restricted area of the stomach.

Dumping syndrome is a common adverse effect of the Roux-en Y gastric bypass and the biliopancreatic diversion. Signs and symptoms of this syndrome include “nausea, bloating, abdominal pain, weakness, faintness, and diarrhea” (Harrington, 2006) that occurs after eating a meal high in simple carbohydrates. Elliot (2003) explains the syndrome by stating:

“When sugar is consumed, it is dumped into the small intestine, causing an osmotic load, which results in a fluid shift from the blood into the intestine. The decrease in blood volume increases the heart rate; resulting in the individual’s feeling like they need to lie down (which would improve cardiac output). The insulin response causes symptoms of hypoglycemia. The influx of fluid into the intestine, due to the osmotic load, can lead to a watery diarrhea. Dumping Syndrome is a blessing in disguise as it is such a negative feedback to eating sugar.”

Dehydration can also occur as a result of gastric bypass surgery. This can happen for multiple reasons. For one, the gastric pouch is extremely small and makes it difficult to hold a lot of fluid at one time. Another reason for a patient to become dehydrated is because a person must eat foods and drink separately to prevent the dumping syndrome. As Fujioka (2004) states “fluid with a meal can solubilize food and increase osmolality.” For these reasons patients must be diligent to make sure that they are sipping fluids throughout the day to meet the daily requirements. Since many of the gastric pouches are less than or equal to 50 ml in size it is vitally important that patients learn to constantly sip liquids and not take large swallows of fluid.
Another adverse effect from the Roux-en Y gastric bypass and the biliopancreatic diversion is malabsorption. Patients are at risk of having deficiencies in iron, B-12, folate, and calcium. “Iron deficiency is common secondary to decreased intake of heme iron and the decreased acid in the pouch does not allow the ferrous iron to be converted to the more absorbable form of ferric iron” (Elliot, 2003). The duodenum is also bypassed which is where some of the iron is absorbed. Iron supplements are recommended. Folate deficiency is the least common but can happen with a decrease in dietary ingestion.

B-12 absorption is extremely impaired after a malabsorption surgery. “B-12 deficiency is reported to occur in approximately 33% of patients after Roux-en Y gastric bypass surgery” (Elliot, 2003). Post gastric bypass diets restrict the portion sizes of foods consumed that have good sources of B-12 such as beef, salmon, milk, and some cheeses. There is also a decreased amount of acid in the pouch which makes it “difficult to release protein-bound B-12 from foods ingested” (Elliot, 2003). Sublingual B-12 daily is recommended to decrease the chances of becoming deficient. Calcium is also not as readily ingested as before the surgery making a potential long-term risk for bone disease. After bariatric surgery there is a “dramatic decrease in the production of hydrochloric acid, affecting the absorption of calcium and iron.” Miller, A., and Smith, K., (2006). Absorption can be increased by using forms of calcium such as calcium carbonate or calcium.

Gallstone formation is also a very common complication after surgery. This is due to the fact that gallstone formation is very common with weight loss and since this surgery causes such rapid weight loss there is a very good chance that there will be
gallstone formation. Gallstones form due to a shift in the balance of bile salts and cholesterol in the gallbladder. The cholesterol level is increased and the amount of bile salts is decreased causing stones. The stones can also form if the gallbladder does not contract often enough to empty the bile forming stones. Chiang, Lee, and Santen, (2010).

Although there are many positive outcomes from having bariatric surgery there are always risks and complications that can arise. Some of the complications can be life threatening such as pulmonary embolisms and anastomoses leaks. Many people are opting to have this life altering change to help improve their quality of life. The question remains, do these patients understand the implications of their choice to have surgery? It is unclear if they understand the possible postsurgical complications and lifestyle changes that are apart of having this surgery.

Literature Related to Education and Patient Outcomes

Discharge teaching can have a great impact on patient’s perceptions of self-care once they get home. Galloway, Bubela, McKibbon,, McCay, and Ross (1993) conducted a study with forty patients following hospital discharge for lung cancer surgery. The researchers looked at the learning needs related to self-management after discharge from having surgery. Patients were interviewed twice, once 48-72 hours prior to discharge and then again approximately 24.5 days after discharge. The study found the greatest self-care needs of the patients prior to discharge were related to prevention and recognition of the signs and symptoms of complications. The patients of Galloway’s study were also interested in activity guidelines, incision care and the impact of the cancer on their
present and future life. Once home, patient’s informational needs changed, and they were more interested in the importance of symptom management (loss of appetite, cough, fatigue, pain, and breathlessness). There was an increase interest in other aspects of care as well. These included self-care activities, fatigue, and pain. “Patients were concerned about optimizing patient functioning” (Pieper et al., 2006). The primary needs and concerns of the patient changed based on where they were in their healing trajectory.

Like Galloway’s study participants, bariatric patients also have some of the same self-care needs. Bariatric patients must be able to prevent and recognize the signs and symptoms of complications. They also must understand the activity guidelines, incisional care and impact of their decision to have surgery. Patient’s self-care activities such as food and drink portions and exercise requirements are also concerns for gastric bypass patients.

According to Russell, in the ideal situation, discharge teaching actually starts prior to surgery at the time of consultation. If the patient understands the possible surgical complications, dietary and activity guidelines, and has the proper resources for follow-up care and postoperative questions, he or she may feel more confident in going home. The discharge teaching is considered a “teaching-learning” relationship where the healthcare provider is the teacher and the patient is considered the student (Russell, 2006). Russell (2006) also stated “adults learn best when convinced of the need for knowing the information (Russell, 2006)” Motivation, readiness, stress and environmental influences all impact how well a person comprehends what they are being taught.
As Malcolm Knowles first explained, adults and children have different learning styles. Adults are usually more autonomous and self-directed (Mitchell & Courtney, 2005). They are able to build off information and experiences from their past to influence future learning (Mitchell & Courtney, 2005). Adults want to see a reason for learning something because, unlike children, they are relevancy-oriented (Mitchell & Courtney, 2005). Each person has individual learning preferences but adults learn best when teaching strategies combine visual, auditory, and kinesthetic approaches (Russell, 2006). “Data from studies of patient education indicate that patients are most likely to achieve the goals of educational interactions when they receive well thought-out, strategically planned educational interventions combining several methods of teaching” (Donaldson, Rutledge, & Pravikoff, 2000, p.73). Therefore it is important to present information such as discharge teaching in many different approaches. This can include verbal and written instruction along with pictures to facilitate the learning process. Since everyone learns differently it is recommended that the patient and a supportive friend or family member be present during the teaching session to make sure that the information is comprehended. This way if the patient forgets an aspect of their postoperative teaching they have another person and other resources available to assist them.

Another possible barrier to effective communication is stress. This could be either emotional or physical stress, or a combination of both. Unlike children, adults have many responsibilities that they must balance against the demands of learning (Mitchell & Courtney, 2005). Donaldson, Rutledge, and Pravikoff (2006) indicates “at a time in which patients are most unable to learn optimally because of conditions affected by their
health, they are confronted with huge informational needs such as new and sometimes frightening self-care routines” (p.74). With bariatric surgery there is a large change to the patient’s way of thinking in regards to diet, exercise and self-care routines. Patients can be under both emotional and physical stress related to this surgery.

It is important to make sure that patients understand the medical terminology that is being presented to them and to have “patience in limitless quantities” (Masek, 2000, p.32). The patient must have ample time to discuss everything and to ask questions. Patients should not be given information in a hurried fashion. Information needs to be given to patients and then they should have time to absorb the content and think of any questions that they may have. Information should be given at the very first preoperative visit and reemphasized throughout the whole surgical experience into postoperative visits.

Pieper et al. (2006) did a review of the literature and found that “hospitalized surgical patients identified the following as critical discharge knowledge: recognizing complications, activity guidelines, diet, symptom management, and wound care” Jacobs (2006) concurred with his study where he used questionnaires that were mailed home to surgical patients. The purpose of his study was to explore the patient’s perceptions of information needed to manage care following discharge, report any information that was and was not given at the time of discharge, and to rate the satisfaction of the discharge information. They reported that they placed a high level of importance on information regarding activity, wound care, postsurgical complications, pain management,
elimination, and personal care. Other concerns included suture removal, how to improve physical condition, medications, fatigue, and bowel habits.

**Barriers to Learning/Postoperative Teaching**

Madan and Tichansky (2005) tested how much patients retained in relation to bariatric education. They tested 63 patients preoperatively and postoperatively using a true and false test. It was mandatory that the patients scored one hundred percent before they could have surgery. They then tested patients 8 months after surgery. The mean score of the same test eight months postoperatively was a 96% and one year postoperatively only 36% of the patients were able to scored one hundred percent on the quiz. The authors of this study concluded that patients forget critical information about their surgery over time.

Williams (2007) conducted a meta analysis on self-care of patients following general abdominal surgery and found that in general patients and their caregivers were dissatisfied with their discharge instructions. This dissatisfaction caused increased anxiety, decreased coping skills, decreased adherence to treatment and increased admission rates. Alternately, a positive experience with discharge teaching created an increased satisfaction of care, increased compliance to treatment, acceptance of responsibility of self-care and an easier transition from the hospital to home (Williams, 2007).
Summary

Obesity is increasing at an accelerated rate. To help combat this growing epidemic bariatric surgery has become an acceptable and widely used procedure for the severely obese. Bariatric surgery can be an overwhelming decision due to the fact that there are several different types of bariatric surgery such as the adjustable-banded gastroplasty or the Roux-en-Y gastric bypass. These surgeries can be classified based on if they are restrictive, malabsorptive, or both. There are many things to take into consideration such as which type of surgery is right for the patient, what risks and possible complications go with this surgery choice, and lifestyle changes based on the decision. Nutritional needs can also vary based on the degree of restriction and the degree of malabsorption created by the surgery. Protein intake and fluid intake are closely monitored postoperatively with all gastric bypass surgeries. Exercise is also recommended postoperatively for bypass patients. Bariatric patients need to be assessed postoperatively to decide on their functional level and exercise limits so the patients do not harm themselves. Potential postoperative complications following bariatric surgery can include respiratory, cardiac, and bleeding complications. Nausea, vomiting, and dumping syndrome can also occur following bypass surgery. Vitamin and mineral deficiencies also need to be closely monitored. Common mineral and vitamin deficiencies include iron, B-12, and calcium.

Discharge teaching can have a large impact on patient’s perceptions of self-care once they are arrive home. One study conducted by Galloway et al. (1993) looked at patients following lung cancer surgery. They found that patient’s learning needs changed
based on where they were in their healing trajectory. Discharge teaching should start prior to surgery at the time of consultation to help facilitate the learning process. Educational materials need to combine visual, auditory, and kinesthetic approaches. There can be many barriers to effective education including anxiety, decreased coping skills, or stress. This can be emotional, physical or a combination of both. It is unclear how well bariatric patients in the state of Montana retain crucial discharge information that will facilitate long-term recovery and well-being. As Russell (2006) stated, adults all learn differently and it is important to individualize their preoperative and postoperative information to cater to their own learning style.

There is a growing amount of information related to the types of surgeries and possible complications that can arise from having bariatric surgery, but few studies have been completed to explore bariatric patient’s knowledge related to specific post-surgical considerations associated with gastric bypass surgery.
CHAPTER 3

METHODOLOGY

Purpose and Aims

The primary purpose of this study was to explore the extent of bariatric patients’ knowledge related to specific post-surgical considerations associated with gastric bypass surgery. This study examined their knowledge of the postsurgical complications, postsurgical diet, fluid intake, and medication preparation following surgery. The aims of this study were to:

1. Explore the degree of bariatric patient’s postsurgical educational knowledge.
2. Identify types of educational sources provided to and used by patients.
3. Identify patient’s perceptions of any additional information that would have been helpful prior to surgery or postoperatively such as more education time with the nurse, dietitian or more time consulting with their physician.

Design

A descriptive, cross-sectional survey design was used to explore bariatric patients’ knowledge related to specific post-surgical considerations associated with gastric bypass surgery. The small questionnaire and quiz chosen for this study was used to explore the participants understanding of the Roux-en-y surgery.
Setting and Usual Bariatric Process

The bariatric institute is located in Central Montana at a regional hospital. There are three facilities encompassing the institute: the doctor’s office, the hospital where the procedure is performed, and the bariatric center where classes are attended preoperatively and postoperatively. At this facility approximately 300 bariatric surgeries are performed each year (D. Black, personal communication, March 13, 2008). This is a combination of gastric bandings and gastric bypasses. The routine process for preoperative teaching includes multiple visits with the healthcare team. There are three surgeons who are qualified to perform bariatric surgery at this facility. Many staff members are involved with the preoperative teaching including nurses and a dietitian. Each surgeon has a slightly different teaching process that patients have to go through before having the surgery. They explain to the patients the procedures and lifestyle changes that will take place after having the surgery.

When a person decides to have bariatric surgery he or she must first meet with a surgeon for a consultation at the doctor’s offices. The surgeon performs a history and physical assessment on the patient. The consultation provides an opportunity for the patient to learn about the different options for bariatric procedures, possible risks and benefits of surgery, and lifestyle changes postoperatively. If the patient decides to proceed with surgery they then have an appointment with the bariatric center. This is actually located in the same building as the doctor’s offices. At this appointment the patient is appointed a bariatric counselor, talks with a dietician, and discusses the surgery procedure with a bariatric nurse. Patients are also highly advised to attend educational
classes before their surgery date for instructions on diet, lifestyle changes following surgery, Jackson-Pratt drain care, and possible complications following surgery.

Preoperative evaluation is also completed prior to surgery. This includes psychological, pulmonary, cardiac, and possibly other assessments based on surgeon preferences and recommendations. At the bariatric center appointment Roux-en-y patients are given a bariatric surgery binder that contains a step by step guide for surgery. This binder contains information regarding preparation for surgery, Jackson-Pratt drain care, medical concerns, diet expectations after surgery, exercise requirements, and long term success strategies. The time between the first contact with the surgeon and surgery can be between one and six months depending on patient demand and surgical caseload expectations. On the surgery day the patients arrive at the regional hospital where the procedure is performed. Patients’ average length of stay for bariatric surgeries can range from one to three days depending on the type of gastric surgery performed barring no complications. After surgery patients have a postoperative visit with their surgeon ten to fourteen days after discharge in the doctor’s office. They are also scheduled for a follow-up visit at the bariatric center on the same day fifteen to thirty minutes prior to their doctor’s appointment. Follow-up after the initial appointment includes several scheduled clinical visits with regular support-group meetings as well.

Population and Sample

A convenience sample of Roux-en-y patients on their first postoperative visit at a bariatric facility in Central Montana was targeted for the study. Roux-en-y patients were
chosen for this study because it is the procedure with the least variation in postoperative care. Gastric banding patients were not chosen for this study because postoperative care differed considerably based on surgeon preference. The other types of bariatric surgery are not performed at this regional hospital. Eligible participants were both men and women and were adults over the age of eighteen. Participation was voluntary and based on if the patient had received Bariatric surgery, specifically Roux-en-y, and was at the first postoperative visit. Additional inclusion criteria included the patient’s ability to read, understand, and write in English. The sample was self-selected and completion of the questionnaire implied consent. Access to study participants was obtained with the assistance of the Bariatric Institute employees. The invitational letter described the study’s purpose and its importance to the advancement in education of the bariatric population. It also included all of the components of an informed consent (Appendix A). The returned completed quiz and questionnaire constituted the participants willingness to participate. No identifying information such as name, address, or social security number was collected in order to protect confidentiality. This study was conducted in compliance with HIPPA standards and at no time did the researcher have any direct access to the patients.

**Procedures for Data Collection**

The data collection took place over a six week period between January 7, 2010 and February 18, 2010. The manager of the Bariatric Institute was contacted and consent was received to do the research at the facility based on approval from the hospital IRB.
The Bariatric Institute staff was educated before starting the study about the reason for the study and requirements for their involvement. The staff was asked to identify all patients who had a Roux-en-Y and who were coming in on their first post-operative appointment. The staff was then asked to hand out the research packet when the patient checked in at the main desk and have the patient hand the packet back in before they went in for the appointment. The patients were not permitted to take the packet home and bring it in at a later time.

The packet contained a letter explaining the purpose of the study and invitation to participate in the study (Appendix C). The packet contained a questionnaire pertaining to demographic information and a small quiz that related to their recent procedure. There was a sealable envelope also supplied in the packet for confidential return of the completed questionnaire and quiz. The quiz had an area where the participants could decline to take the quiz but it was requested that the participants place the information in the sealed envelope even if they decided not to participate. The questionnaire had to be completed in the office and returned to the Bariatric Institute staff before leaving the appointment. The original goal was to stop when an N of twenty was reached but due to time constraints the study was stopped after six weeks.

The researcher provided follow up with the staff four times during the study. The first time was when the study was introduced and the packets were given to the staff. An introduction of the research topic and request of staff involvement was conducted during this visit. The second time was a week after the study started to ensure staff’s questions were answered and that procedures were being followed. The third time was half way
through the study to pick up all of the returned packets and then a final time at the end of the study.

**Instrumentation**

A questionnaire, modeled on Albert, Collier, Sumodi, Wilkinson, Hammel, Vopat, Willis, and Bittel (2002) work of heart failure guidelines, was developed by the researcher for this study. The first section was designated to demographics and sociodemographics questions (Appendix D). The second section was the quiz (Appendix E) that was developed from reading the bariatric handbook that every patient reads before having surgery. The handbook contains a vast amount of information including preoperative and postoperative information, drain care, diet, exercise information and education on complications that could arise after surgery.

Sample questions from the instrument include:

1. Patients should wait two months before resuming any home medications, vitamins, calcium, or protein supplements.

   True or **False**

2. A diet consisting of 40-55 grams of protein should be the goal for the first six months following surgery.

   True or **False**
Discussion of Rights of Human Subjects and Consent Process

The study was approved by Montana State University Institutional Review Board (IRB) (Appendix F). Permission to conduct the study was also obtained from the Institutional Review Board at Benefis Healthcare System (Appendix B). Participants were informed that this study was voluntary and self-selecting. No risks were identified for participation and participants were informed that they could opt out of the study without retribution. Participants were given a consent form with the researcher’s contact information for questions or concerns. No identifiable markers were placed on the questionnaire to maintain anonymity. The completed questionnaires were kept in a locked file cabinet at the Bariatric Institute until obtained by the researcher. After the data was analyzed and the thesis was completed the questionnaires were destroyed.

Summary

The primary purpose of this study was to explore the extent of bariatric patient’s knowledge related to specific post-surgical considerations associated with gastric bypass surgery. A descriptive, cross-sectional survey design was used to explore bariatric patient’s knowledge related to specific post-surgical considerations associated with gastric bypass surgery. This study used a convenience sample of Roux-en-y patients on their first postoperative first postoperative visit in a Central Montana facility. Participation was completely voluntary and based on if the patients had received bariatric surgery, specifically Roux-en-Y, and was at the first postoperative visit. The sample was
self-selecting and completion of the questionnaire implied consent. The study was completed in compliance with HIPPA regulations and at no time did the researcher have direct contact with the patients. The instrumentation used for the study was modeled on Albert’s work on heart failure and contained sections designated to demographics/sociodemographics, and a quiz that was developed from reading the bariatric handbook that every patient receives prior to surgery. The quiz developed contained questions regarding preoperative and postoperative information including drain care, diet, exercise, and possible postoperative complications that could arise after surgery. The study was approved by both Montana State IRB and Benefis Healthcare System IRB. No risks were identified for participation and no identifiable markers were placed on the questionnaire to maintain anonymity. The following chapter explains the results from the study.
CHAPTER 4

RESULTS

Introduction

The purpose of this study was to explore the extent of bariatric patient’s knowledge related to specific post-surgical considerations associated with gastric bypass surgery. Knowledge of the postsurgical complications, postsurgical diet, fluid intake, and medication preparation following surgery was examined. The demographic and sociodemographic information will be presented first and the results from the survey will be presented afterward.

Twenty questionnaires and surveys were given to a bariatric facility in Central Montana. The study was to be completed when an N of twenty surveys was completed or six weeks was reached. At the end of six weeks, nine surveys and questionnaires were completed.

Demographics and Sociodemographics

Nine patients completed this study. There were no uncompleted surveys returned. The total number of Roux-en-Y patients during the time frame is unknown. The percentages and frequencies for the nominal and ordinal scaled demographics and the sociodemographics are presented in Table 1. The study was evenly dispersed with male (N=5) and female (N=4) participants. The most common age group was between 31 and 40 years (N=4) and the second most common age group was 41-50 years of age (N=3).
All the patients were Caucasian/White (N=9). Four (44.4%) patients indicated that they were divorced with three (33.3%) stated that they were married and two (22.2%) stated that they are single. Three (33.3%) patients stated that their highest level of education was a high school diploma, while two patients (22.2%) indicated that their highest level of education was a bachelor’s degree. Four patients (44.4%) indicated that their highest level of education was some other form such as an associate’s degree or a degree from a trade school. Three (33.3%) participants indicated that they were disabled when asked what their occupation was while the rest of the patient’s answers ranged from claims analysis to being a teacher. Only two answers were chosen for the question regarding size of community. Six out of nine patients stated that they lived in a community greater than 10,000 people, while three patients stated that they lived in a community size of 2,500 to 10,000 people. Only three people lived outside the city of the study. One person was 50-99 miles away and two people were greater than 100 miles from Great Falls.
Table 1. Descriptive Statistics for the Participants’ Demographics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
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<tr>
<td>Gender</td>
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</tr>
<tr>
<td>Female</td>
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</tr>
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<td>Male</td>
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<td>44.4</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 – 40 years</td>
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<td>44.4</td>
</tr>
<tr>
<td>41 – 50 years</td>
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<td>51 – 60 years</td>
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<td>Greater than 60 years</td>
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<td>11.1</td>
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<td>Marital Status</td>
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<tr>
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<td>Single</td>
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<td>Highest Level of Education</td>
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<td>High-School Diploma</td>
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<tr>
<td>Bachelor’s Degree</td>
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<td>Other</td>
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<td>Teacher</td>
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</tr>
<tr>
<td>Size of Community</td>
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</tr>
<tr>
<td>2,500 to 10,000 people</td>
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<td>Greater than 10,000 people</td>
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<tr>
<td>Miles from Great Falls</td>
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<tr>
<td>50 to 99 miles</td>
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<td>2</td>
<td>22.2</td>
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</table>
Table 2 depicts the descriptive statistics for the surgical educational information that patients received prior to surgery and after surgery. Prior to surgery two-thirds of the patients (66.7%) were given pamphlets and other materials. The other material that was listed included the bariatric surgery guide given to patients. None of the patients stated that they received any information from magazines, video/DVD, verbal instructions, or phone conversations. After surgery about half (55.6%) of participants stated that they received pamphlets related to bariatric surgery, and all of the participants (100%) stated that they received verbal instructions after surgery. Again none of the patients stated that they received any information via magazines, Video/DVD or phone conversations.

Table 2. Descriptive Statistics for Surgery Educational Materials Received.

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<th>Materials Received Prior to Surgery</th>
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<td>%</td>
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<td>Magazines</td>
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<tr>
<td>%</td>
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<td>100</td>
</tr>
<tr>
<td>Video/DVD</td>
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</tr>
<tr>
<td>%</td>
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<td>100</td>
</tr>
<tr>
<td>Verbal Instruction</td>
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<tr>
<td>%</td>
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<td>100</td>
</tr>
<tr>
<td>Phone Conversation</td>
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</tr>
<tr>
<td>%</td>
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<td>100</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>%</td>
<td>66.7</td>
<td>33.3</td>
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</table>

<table>
<thead>
<tr>
<th>Materials Received After Surgery</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Educational Material</td>
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<td></td>
</tr>
<tr>
<td>Pamphlet</td>
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<tr>
<td>%</td>
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<td>Magazines</td>
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<td>%</td>
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<td>Video/DVD</td>
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<tr>
<td>%</td>
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<tr>
<td>Verbal Instruction</td>
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</tr>
<tr>
<td>%</td>
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<tr>
<td>Phone Conversation</td>
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</tr>
<tr>
<td>%</td>
<td>0.0</td>
<td>100</td>
</tr>
</tbody>
</table>
Sources of Bariatric Surgery Information

Table 3 depicts the sources of bariatric surgery information that patients received. Eight (88.9%) out of nine patients stated that they received information from the bariatric institute. All of the patients (100%) stated that they received information from their physician. Only three (33.3%) out of nine patients indicated that they received information from a nurse in any of the three settings. Eight (88.9%) patients sought out the internet for information regarding the surgery. Three patients (33.3%) looked to family for information and four (44.4%) patients indicated that they received information from other sources.

Table 3. Sources of Bariatric Surgery Information.

<table>
<thead>
<tr>
<th>Source</th>
<th>Yes</th>
<th>%</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials provided by the Bariatric facility</td>
<td>8</td>
<td>88.9</td>
<td>1</td>
<td>11.1</td>
</tr>
<tr>
<td>Physician</td>
<td>9</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nurse</td>
<td>3</td>
<td>33.3</td>
<td>6</td>
<td>66.7</td>
</tr>
<tr>
<td>Internet</td>
<td>8</td>
<td>88.9</td>
<td>1</td>
<td>11.1</td>
</tr>
<tr>
<td>Family</td>
<td>3</td>
<td>33.3</td>
<td>6</td>
<td>66.7</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>44.4</td>
<td>5</td>
<td>55.6</td>
</tr>
</tbody>
</table>

Descriptive Statistics for Bariatric Quiz Responses

Table 4 depicts the bariatric quiz responses. All patients responded correctly on question number 1 regarding when they can continue taking their home medications, vitamins, calcium and protein supplements. They also indicated the correct answer was false for if persistent vomiting is normal following surgery. Question number 3 (patients can stop taking vitamins B-12, calcium citrate and protein supplements six months after
(surgery) was also answered correctly by all of the individuals. Question 4 was answered correctly by only 66.6% of patients. Three of the patients did not know that the minimum fluid intake with small, frequent sips in a day is 1 ½ to 2 liters a day. All nine of the patients answered question 5, 6, 7, and question 8 correctly regarding normal healing at an incision site, normal Jackson-Pratt drainage color, pain, redness, and swelling in the legs, and if pain is normal that is not controlled by pain pills after surgery. Question 9 was only answered correctly by 77.7% of participants. Seven patients knew that a diet consisting of 40-55 grams of protein should be the goal for the first six months following surgery was false. A little over half (55.5%) of the patients knew that the greatest weight loss would not happen in the first two months following surgery. Approximately 67% of individuals knew that the correct answer to Question 11 was true when talking about when liquids should be avoided after eating meals. All of the nine patients answered Question 12 correctly regarding the size of medications that needed to be crushed.

Table 4. Descriptive Statistics for Bariatric Quiz.

<table>
<thead>
<tr>
<th>Question</th>
<th>True</th>
<th>False</th>
<th>Correct Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patients should wait two months before resuming any home medications, vitamins, calcium or protein supplements.</td>
<td>0</td>
<td>9</td>
<td>False</td>
</tr>
<tr>
<td>2. Persistent vomiting is normal following Bariatric surgery.</td>
<td>0</td>
<td>9</td>
<td>False</td>
</tr>
<tr>
<td>3. Patients can stop taking vitamins B-12, calcium citrate and protein supplements six months after surgery.</td>
<td>0</td>
<td>9</td>
<td>False</td>
</tr>
<tr>
<td>4. The minimum fluid intake with small, frequent sips in a day is 1 ½ to 2 liters a day.</td>
<td>6</td>
<td>3</td>
<td>True</td>
</tr>
</tbody>
</table>
Table 4. Descriptive Statistics for Bariatric Quiz (continued).

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>True</th>
<th>False</th>
<th>Correct Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Normal healing at the incision site consists of a large amount of redness and swelling.</td>
<td>0 0.0</td>
<td>9 100</td>
<td></td>
<td>False</td>
</tr>
<tr>
<td>6. Jackson-Pratt drain fluid is normally bright red.</td>
<td>0 0.0</td>
<td>9 100</td>
<td></td>
<td>False</td>
</tr>
<tr>
<td>7. Pain, redness or swelling in the legs is normal after surgery.</td>
<td>0 0.0</td>
<td>9 100</td>
<td></td>
<td>False</td>
</tr>
<tr>
<td>8. Pain that is not controlled by the pain pills prescribed by your doctor is common and normal after surgery.</td>
<td>0 0.0</td>
<td>9 100</td>
<td></td>
<td>False</td>
</tr>
<tr>
<td>9. A diet consisting of 40-55 grams of protein should be the goal for the first six months following surgery.</td>
<td>2 22.2</td>
<td>7 77.7</td>
<td></td>
<td>False</td>
</tr>
<tr>
<td>10. The greatest weight loss will occur in the first two months following surgery.</td>
<td>4 44.4</td>
<td>5 55.5</td>
<td></td>
<td>False</td>
</tr>
<tr>
<td>11. Liquids should be avoided 15-30 minutes before and after eating meals.</td>
<td>6 66.6</td>
<td>3 33.3</td>
<td></td>
<td>True</td>
</tr>
<tr>
<td>12. All medications bigger than a pencil eraser must be crushed after having bariatric surgery.</td>
<td>9 100</td>
<td>0 0.0</td>
<td></td>
<td>True</td>
</tr>
</tbody>
</table>

Additional Information

Three out of nine patients answered the question regarding if any additional information would have been beneficial prior or postoperatively. The patients that did answer this question did not feel that any additional information would have been helpful for this surgery. Some patients even stated that they felt very prepared for surgery. One patient commented that they “covered everything completely. Very informative doctor and hospital staff.”
Summary

The data presented in this chapter represented the demographic and sociodemographic information regarding bariatric patients. A small quiz was also administered and the descriptive statistics of these results were also presented. Results showed that no patient could correctly answer all questions regarding postoperative knowledge needed following bariatric surgery.
CHAPTER 5

DISCUSSION

The purpose of this study was to understand the extent of bariatric patient’s knowledge related to post-surgical issues associated with gastric bypass surgery including postsurgical complications, diet, fluid intake and medication preparation. The research was designed to answer the following five questions: 1) What is the level of bariatric patient’s knowledge related to specific postoperative considerations associated specifically with a gastric bypass? 2) In which content areas did patients have the most and least knowledge? 3) From what sources did patients obtain their information? 4) Did the patients feel prepared for the surgery and their after care? 5) In which, if any, did patients identify needing or desiring additional information. Demographic and sociodemographic information was also obtained. The evaluation of these results is presented below.

The study subjects were an evenly dispersed group of individuals based on gender with five individuals being female and four individuals being male. Based on race the individuals were white/Caucasian (100%). This statistic was expected given that the community that this study was conducted in is predominately Caucasian (90%) according to the United States Census Bureau (2007). The most common age group was between 31-40 years of age with the next most common being from 41-50 years of age. Three out of the nine patients were disabled which was not unexpected since being morbidly obese causes physical limitations.
When reviewing the educational information given to the patients prior to and after surgery it was found that a little over half the patients received pamphlets prior and after surgery. When reviewing the surveys the same patients that received the pamphlets prior to surgery prior to surgery were the same patients who received the pamphlets postoperatively. It is unknown if the patients who received the pamphlets had the same surgeon to see if this was doctor specific. It is also unknown if the pamphlet referred to preoperatively are the same as the pamphlets referred to postoperatively. None of the patients received any of their information from magazines, video/DVD or phone conversations. Six out of nine patients received information from some other source prior to surgery and all nine patients received verbal instruction after surgery. The other sources that the patients identified were the bariatric classes and the bariatric surgery guide given to patients preoperatively. It is unknown what the other three people used for other sources. In retrospect adding an area where patients could have stated which internet sites they used may have added value to the study. The internet is a widely used source for people to obtain information and this information may have made the study more comprehensive. Zero out of nine patients indicated that they had any verbal instruction prior to surgery. This is an interesting finding since all patients have a preoperative visit with their doctors prior to surgery and all nine of the patients implied that they received information regarding bariatric surgery from their surgeon. It is unclear if the patients did not view this as verbal instruction or if the instruction did not include the topics presented in the quiz so they did not choose this as a choice.
The findings from the quiz portion of the packet suggest that bariatric patients in Central Montana may not have satisfactory knowledge regarding postoperative care and complications. None of the patients answered all twelve questions correctly. Each person got at least one question wrong. Areas where patients had the most knowledge were questions pertaining to home medication, supplements and medication preparation. Patients also answered questions correctly with regards to signs of infection, normal drain color, pain that is not controlled by pain pills being uncommon, and pain, redness or swelling in the legs being abnormal.

Questions on which patients had the least success and least knowledge included minimum fluid intake, protein intake, when the greatest weight loss would occur, and avoidance of fluids before and after meals. Although there were only a few questions that were answered incorrectly by patients, these were questions that could have negative ramifications for patients in the future. Patients need to have an understanding regarding these questions because these are problems that could result in serious health conditions and could potentially require hospitalization. This is in agreement with Pifer (2008) work explaining that without adequate protein the body has to make its own protein by breaking down muscle and organ tissue. This can cause delayed wound healing. Fluid intake also needs to be monitored. Patients are to consume 32 ounces of fluid each day and begin working up to 64 ounces slowly. Dehydration is also a major concern of gastric bypass surgery. This can happen for multiple reasons. For one, the gastric pouch is extremely small and makes it difficult to hold a lot of fluid at one time. Another reason for a patient to become dehydrated is because a person must eat foods and drink
separately to prevent the dumping syndrome. As Fujioka (2004) states “fluid with a meal can solubilize food and increase osmolality.” For these reasons patients must be diligent to make sure that they are sipping fluids throughout the day to meet the daily requirements. Since many of the gastric pouches are less than or equal to 50 ml in size it is vitally important that patients learn to constantly sip liquids and not take large swallows of fluid.

The overall response rate for taking this quiz was also low. It is uncertain why this was the case. One possibility may be that there were a low number of surgeries done during this time period causing a low patient pool to choose from. Another possible reason could be that the bariatric staff may have forgotten to give the survey out when patients came in on their first postoperative visit. Another possible reason may be that patients did not show up at the bariatric center for their postoperative visit and instead went right to their follow-up appointment with their doctor. In retrospect, it would have been better to have the survey given out in the doctor’s office instead of at the bariatric institute. There is a higher compliance rate for patient’s to show up at their doctor’s appointment than at the center. The postoperative visit at the doctor’s office and the appointment at the bariatric center were scheduled closely together and this may have placed a time constraint on completing the survey prior to their appointments making patients choose not to participate. The very small sample size makes generalizing the findings to a larger population imprudent.
Implications

When educating bariatric patients preoperatively and postoperatively more emphasis needs to be placed on areas regarding minimum fluid intake, protein intake, when liquids should be avoided and when the greatest weight loss will occur. These are all areas that patients struggled with when completing their quizzes. It is unknown if this information was presented to the patients or if they did not understand these questions. The whole surgical team including doctors, nurses, and dietitians need to be educating these patients on these topics. As Russell (2006) points out, in the ideal situation, discharge teaching actually starts prior to surgery at the time of consultation. This can help the patient to understand the possible surgical complications, dietary and activity guidelines, and help patients to have the proper resources for follow-up care and postoperative questions.

Nurses need to play a larger role in the aftercare of postoperative teaching. When patients were asked who they received their discharge teaching from three out of the nine patients chose receiving information from a nurse. This was very astonishing since a nurse has to do discharge teaching with patients before they can leave the hospital. This teaching includes medication preparation, signs and symptoms of infections drain care and diet instructions. It is unclear whether patients did not think of this when taking their quiz, if they did not realize that it was a nurse explaining the instructions to them, or if the instructions were not reviewed with the patients. Education on proper discharge instruction needs to be reviewed with the staff to ensure that the proper information is covered prior to patients leaving the hospital.
Reviewing the materials that were given preoperatively and postoperatively, emphasis could be placed on giving different types of information to patients to help solidify the information learned. Each person has individual learning preferences, but adults learn best when teaching strategies combine visual, auditory, and kinesthetic approaches (Russell, 2006). Only verbal and written approaches were used to teach patients about their discharge teaching. A broader spectrum of information could be used to facilitate the learning of these topics. Additionally, it may be beneficial for patients to be assessed for specific learning styles and learning needs prior to starting discharge teaching and consultation. This could guide the healthcare team and provide improved and refined teaching for patients. A poor understanding or inability to recognize early signs and symptoms of contraindications and complications could cause complications to a patient’s health and potentially cost the patient thousands of dollars in healthcare bills.

Nurses could also strive to increase motivation for bariatric patients. As noted in Knowels’ Adult Learning Theory, adult learners are self-motivated to learn when they have a need to know. Nurses could play a role in helping patients identify the importance of having this knowledge and facilitating motivation to learn. Russell (2006) found that people’s life experiences and or situations stimulate motivation to learn. Bariatric patient’s life experiences could be used to help maximize motivation for patients helping them to achieve their weight loss goals and helping gastric bypass patients to understand the ramifications if they do not follow postsurgical diet, exercise, and fluid requirements. Nurses could also assist patients by using individual learning preferences to ensure that each patient understands the information presented to them. These approaches could
include verbal and written instruction along with pictures to facilitate the learning process. Nurses also need to be cognizant of the fact that patients could be under emotional or physical stress when they are trying to communicate with their patients. As Donaldson et al. (2006) found “at a time in which patients are most unable to learn optimally because of conditions affected by their health, they are confronted with huge informational needs such as new and sometimes frightening self-care routines” (p.74). With bariatric surgery there is a large change to the patient’s way of thinking in regards to diet, exercise and self-care routines. Patients can be under both emotional and physical stress related to this surgery.

A Clinical Nurse Specialist (CNS) also needs to be added to the team of experts caring for bariatric patients. A CNS operates within the three spheres of influence: patients and families, care providers, and an organization (system). This allows the CNS to function on a larger scale and help to influence organizational outcomes. The CNS can assist bariatric patients as an educator, change agent, researcher, consultant, and work directly with patients to give high quality care, increase patient outcomes, and assist in reducing health expenses. Because CNSs has an advanced nursing education they can be instrumental in assisting staff with bariatric assessment and evaluation of bariatric patients. They can assist patients and nurses with education of potential interventions to create positive outcomes for gastric bypass patients. This can help to decrease negative patient outcomes and potentially save the patient and organization money by decreasing length of stay.
Finally, further research on this topic should be completed with a larger sample group and possibly in another region with other healthcare facilities to get a more diverse population base. It would also be recommended to complete this study preoperatively to ensure that patients understand the ramifications and possible complications that can occur with this surgery.

**Limitations**

A small convenience sample of bariatric patients in Central Montana was used for this study and therefore cannot be generalized to all bariatric patients during their first postoperative visit. This is a small sample size of bariatric patients in Montana and therefore the study may be limited to one geographical area. A better representation would have included bariatric patients from across the state instead of just one facility. It would have been helpful to achieve a higher response rate. This could have strengthened the study.

Additionally all of the patients were either white/Caucasian. This also limits the ability to apply this to other populations. The patients who chose to answer the survey and questionnaire were self-selecting and it is possible that that the patients who chose to participate were more receptive.

The type of tool used may also have led to limitations. The tool was a true and false quiz and therefore participants may have guessed the right answer instead of actually knowing the correct answer. The amount of time needed to complete the questionnaire and survey may also have been a limitation. Patients were to complete the
survey on their first preoperative visit before visiting with the bariatric staff. This could have caused patients to become stressed about the amount of time needed to complete the survey and therefore they choose not to take the quiz or may have been rushed through the questions and did not answer the questions correctly. The questionnaire and quiz may have not been all-encompassing for postoperative care of bariatric patients and therefore may not have been a true representation of bariatric patient’s knowledge of postoperative complications and considerations. Lastly, the quiz was developed by the researcher and no psychometric properties have been established that address its validity or reliability.

Lessons Learned

There were many lessons learned by this researcher in completing the thesis and research process. For one, it is very important to use the correct wording when having patients fill out a survey. An example of this was using the wording pamphlets in the questionnaire. This word may have been perceived many different ways. Patients may have thought of the word pamphlets as the bariatric handbook or they could have taken it as a threefold piece of paper. Therefore, it is unknown what type of pamphlet information patients received. In retrospect this issue may have been avoided by having a nurse from the facility or possibly even a prior patient look over the questions to see if there was any unclear wording in the questionnaire. Another example of this was using the option of other in the questionnaire when asking about where information was obtained. Approximately 44% of participants chose this for an option. Therefore, it is unclear where patients obtained their information when they chose this option.
Another recommendation for future studies would be to evaluate the process completely. For example, the data collection for this study was completed at the bariatric facility prior to the patient’s appointment at the facility and bariatric patients also had an appointment thirty minutes after the facility appointment with their surgeon. Patients were not allowed to take the survey and quiz home so there was limited time to complete the survey. Looking back, it may have been beneficial to reevaluate the process that patients go through for surgery to see if there would have been a more opportune time for the survey to be completed.

Lastly, this researcher has gained an enormous amount of respect for people who complete this process on a daily basis. Before starting on this thesis it was unclear how much time and energy goes into a research study. This researcher now understands what a tedious process this can be and how any hours are put into any given study. This researcher has truly been humbled by this experience.

Conclusion

Given that bariatric surgery has risen 93% from 1998 to 2006 it is important that patients understand the postoperative care and possible complications associated with bariatric surgery. The U.S. Department of Health and Human Services (2006) found that “four of every ten patients who have obesity surgery (also known as bariatric or weight loss surgery) develop complications within six months of leaving the hospital.” Given this statistic, it is imperative that bariatric patients are educated on these possible complications and know what to do if a problem arises.
This primary purpose of this study was to explore the extent of bariatric knowledge related to specific post-surgical considerations associated with gastric bypass surgery. The study examined patient’s postsurgical educational knowledge, identified types of educational sources provide to the bariatric patients, and where the patients received their information. A descriptive, cross-sectional survey design was used to explore bariatric patient’s knowledge related to specific post-surgical considerations associated with gastric bypass surgery in a Central Montana facility.

The findings from the study suggest that bariatric patients in Central Montana may not have satisfactory knowledge regarding postoperative care and complications. Areas where patients had the most knowledge were questions pertaining to home medication doses and preparation, signs of infection, normal drain color, pain that is not controlled by pain pills being uncommon, and pain, redness or swelling in the legs being abnormal. Questions answered incorrectly included minimum fluid intake, protein intake, when the greatest weight loss would occur, and avoidance of fluids before and after meals. These questions are worrisome because patients need to have an understanding of serious health conditions and could potentially arise from having bariatric surgery.

Analysis of the data found that the most common source of information received was verbal instruction. Other sources included pamphlets and other types such as the bariatric handbook. None of the patients received any of their information from magazines, video/DVD or phone conversations.

Healthcare providers play a pivotal role in providing crucial information for bariatric patients preoperatively and postoperative. Implications from this study have
found that more emphasis needs to be placed on areas regarding minimum fluid intake, protein intake, when liquids should be avoided and when the greatest weight loss will occur. Proper education can help patients understand the possible surgical complications, dietary and activity guidelines, and provide the proper resources for follow-up care and postoperative questions. Further research needs to be conducted to gain an understanding of patient’s knowledge of bariatric patient’s postoperative complications, lifestyle changes, and individual learning preferences to facilitate better patient outcomes.
REFERENCES


Overweight and Obesity. Department of Health and Human Services Center of Disease Control and Prevention.


APPENDIX A

SUBJECT CONSENT FORM FOR PARTICIPATION IN HUMAN RESEARCH AT MONTANA STATE UNIVERSITY
SUBJECT CONSENT FORM FOR PARTICIPATION IN HUMAN RESEARCH
AT MONTANA STATE UNIVERSITY

Title: Bariatric Patients Knowledge of Postoperative Complications and Lifestyle Changes

Principal Investigator: Sarah Herzog, RN, BSN

Committee Advisor: Susan Luparell, PhD, RN, CNS.

A. Introduction and Purpose

You are being asked to participate in a research study conducted by a graduate nursing student from Montana State University, College of Nursing. The purpose of this study is to explore bariatric patients' knowledge of signs and symptoms of the possible postsurgical complications from having a gastric bypass. It also tests their knowledge of the postsurgical diet, fluid intake, and medication preparation following surgery.

B. Procedure

If you agree to participate you will be asked to complete the questionnaire and quiz that has been handed to you by the nurse at the bariatric institution where you are receiving treatment. The estimated completion time for this instrument is 10 minutes.

C. Benefits

There is no direct benefit to you if you participate in this study. The results from this study will provide information that may be used to help increase knowledge of bariatric pre operative and post operative education and provide appropriate helpful information for future patients.

D. Risks

No risks or additional effects are likely to result from your participation in this study.

E. Voluntary Participation/Withdrawal

Your participation in this study is completely voluntary and you are free to withdraw at any time. Completion of the questionnaire will serve as consent to participate. You are free to decide not to participate in the study or to withdraw at any time without adversely affecting your relationship with the
investigators, Montana State University College of Nursing or with the Bariatric Institute.

F. Costs

There are no costs involved in your participation in this study.

G. Compensation

There is no compensation being offered for your participation in this study.

H. Confidentiality

To maintain your confidentiality no personal identifying information will be included on the questionnaires. All information collected from the course of this study will be kept confidential to the extent permitted by law. The completed questionnaires will be stored in a locked file cabinet that will be accessible only to the investigator and instructor. All results will be summarized and presented in aggregate; no individual participant will be identifiable.

I. Questions

If you have any questions about the items on the questionnaire, quiz, or the purpose of the study, please feel free to contact the investigators at your earliest convenience. Ms. Herzog or Dr. Luparell can be contacted at 406-771-4450. If you would like information regarding your rights as a research participant, please feel free to contact Dr. Mark Quinn, chairman of Montana State University, Internal Review Board 406-994-4707.

I have read the above and understand the discomforts, inconvenience and risk of this study. I, ____________________________ (name of subject), agree to participate in this research. I understand that I may later refuse to participate, and that I may withdraw from the study at any time. I have received a copy of this consent form for my own records.

Signed: ____________________________________________

Witness: ____________________________________________ (optional)

Investigator: ________________________________________

Date: _____________________________.

APPROVED
MSU IRB
11/7/2009
Date approved

N/A
Expiration date
APPENDIX B

BENEFIS IRB NOTIFICATION
November 30, 2009

Sarah Herzog
Student, MSU College of Nursing
400 15th Ave South Suite 106
Great Falls, MT  59404

Re: Notification of Institutional Review Board (IRB) Action

Dear Sarah Herzog:

I have reviewed and determined that the following studies and/or protocols are exempt from IRB review:

    Bariatric Patients Knowledge of Postoperative Complications and Lifestyle Changes

Please note that the IRB can not grant access to Benefis Healthcare Hospital records or patients. All necessary administrative approvals must still be obtained.

Sincerely,

[Signature]
IRB Chair
IRB Registration #1975
APPENDIX C

SUBJECT CONSENT FORM FOR PARTICIPATION IN HUMAN RESEARCH AT MONTANA STATE UNIVERSITY
SUBJECT CONSENT FORM FOR PARTICIPATION IN HUMAN RESEARCH AT MONTANA STATE UNIVERSITY

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B. Procedure

If you agree to participate you will be asked to complete the questionnaire and quiz that has been handed to you by the nurse at the bariatric institution where you are receiving treatment. The estimated completion time for this instrument is 10 minutes.

C. Benefits

There is no direct benefit to you if you participate in this study. The results from this study will provide information that may be used to help increase knowledge of bariatric pre operative and post operative education and provide appropriate helpful information for future patients.

D. Risks

No risks or additional effects are likely to result from your participation in this study.

E. Voluntary Participation/Withdrawal

Your participation in this study is completely voluntary and you are free to withdraw at any time. Completion of the questionnaire will serve as consent to participate. You are free to decide not to participate in the study or to withdraw at any time without adversely affecting your relationship with the
investigators, Montana State University College of Nursing or with the Bariatric Institute.

F. **Costs**

There are no costs involved in your participation in this study.

G. **Compensation**

There is no compensation being offered for your participation in this study.

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To maintain your confidentiality no personal identifying information will be included on the questionnaires. All information collected from the course of this study will be kept confidential to the extent permitted by law. The completed questionnaires will be stored in a locked file cabinet that will be accessible only to the investigator and instructor. All results will be summarized and presented in aggregate; no individual participant will be identifiable.

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I have read the above and understand the discomforts, inconvenience and risk of this study. I, _____________________________ (name of subject), agree to participate in this research. I understand that I may later refuse to participate, and that I may withdraw from the study at any time. I have received a copy of this consent form for my own records.

Signed: _________________________________________________

Witness: _________________________________________________ (optional)

Investigator: ______________________________________________

Date: ____________________________________________________
APPENDIX D

DEMOGRAPHICS AND SOCIODEMONGRAPHICS
Please fill in the blank or circle answer

1. What is the size of community in which you live?
   a) Less than 500 people
   b) 500 to 2499 people
   c) 2500 to 10,000 people
   d) Greater than 10,000 people

2. If you live outside the city limits of Great Falls, how many miles away do you live?
   a) Less than 10
   b) 10 to 49
   c) 50 to 99
   d) Greater than 100

3. Gender
   a) Male
   b) Female

4. What is your age?
   a) Less than 20 years old
   b) 20-30 years old
   c) 31-40 years old
   d) 41-50 years old
   e) 51-60 years old
   f) Greater than 61 years old

5. What is your Occupation/Profession? ___________________

6. What is your Highest Level of Education?
   a) High-school diploma
   b) Bachelor’s degree
   c) Master’s degree
   d) PhD
   e) Other (explain) __________________

7. With which Race do you identify?
   a) African American
   b) Asian
   c) Caucasian
   d) Hispanic or Latino
   e) American Indian or Alaskan Native
   f) White
   g) Other (explain) __________________
8. What is your current marital status?
   a) Single
   b) Married
   c) Divorced
   d) Widowed

9. What types of educational material did you receive from your provider prior to surgery (circle all that apply):
   a) Pamphlet
   b) Magazines
   c) Video/DVD
   d) Verbal Instruction
   e) Phone Conversation
   f) Other (explain) ______________________

10. What types of educational material did you receive after surgery (circle all that apply):
    a) Pamphlet
    b) Magazines
    c) Video/DVD
    d) Verbal Instruction
    e) Phone Conversation
    f) Other (explain) ______________________

11. From which sources did you learn what you currently know about bariatric surgery (circle all that apply)?
    a) Materials provided by the Bariatric facility
    b) Physician
    c) Nurse
    d) Internet
    e) Family
    f) Other (explain) _______________

12. Did you feel prepared for the surgery and the after care of the surgery?
    a) Extremely prepared
    b) Mostly prepared
    c) Somewhat prepared
    d) Not prepared at all

13. Was there any information that would have been helpful to have known?
    __________________________________________________________________________
    __________________________________________________________________________
APPENDIX E

BARIATRIC QUIZ QUESTIONS
Please circle whether you think each statement is TRUE or FALSE. (The correct answer is bolded.)

1. Patients should wait two months before resuming any home medications, vitamins, calcium or protein supplements.  
   True or False

2. Persistent vomiting is normal following Bariatric surgery.  
   True or False

3. Patients can stop taking vitamins B-12, calcium citrate and protein supplements six months after surgery.  
   True or False

4. The minimum fluid intake with small, frequent sips in a day is 1 ½ to 2 liters a day  
   True or False

5. Normal healing at the incision site consists of a large amount of redness and swelling.  
   True or False

6. Jackson-Pratt drain fluid is normally bright red  
   True or False

7. Pain, redness or swelling in the legs is normal after surgery.  
   True or False

8. Pain that is not controlled by the pain pills prescribed by your doctor is common and normal after surgery.  
   True or False

9. A diet consisting of 40-55 grams of protein should be the goal for the first six months following surgery.  
   True or False

10. The greatest weight loss will occur in the first two months following surgery.  
    True or False

11. Liquids should be avoided 15-30 minutes before and after eating meals.  
    True or False

12. All oral medications bigger than a pencil eraser must be crushed after having bariatric surgery.  
    True or False
APPENDIX F

MONTANA STATE IRB REVIEW LETTER
MEMORANDUM

TO: Sarah Herzog and Susan Luparell
FROM: Mark Quinn, Ph.D., Chair
Institutional Review Board for the Protection of Human Subjects
DATE: November 17, 2009
SUBJECT: Bariatric Patients Knowledge of Postoperative Complications and Lifestyle Changes [SH111709-EX]

The above research, described in your submission of July 29, 2009, is exempt from the requirement of review by the Institutional Review Board in accordance with the Code of Federal Regulations, Part 46, section 101. The specific paragraph which applies to your research is:

X (b)(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

Although review by the Institutional Review Board is not required for the above research, the Committee will be glad to review it. If you wish a review and committee approval, please submit 3 copies of the usual application form and it will be processed by expedited review.