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# Evaluating Self-Efficacy of Health Behaviors in Bariatric Surgery Patients Through Online Support

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Evaluating Self-Efficacy of Health Behaviors in Bariatric Surgery Patients

Through Online Support

Shala Swarm

Submitted to Lynn Wimett, Ed.D., APRN-C

Doctor of Nursing Practice Capstone Project

Regis University

August 23, 2015

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## Executive Summary

Obesity has become an epidemic in the United States, leading to numerous health related conditions. Bariatric surgeries are recognized as reasonable treatment options for obesity; however, without adequate support which, especially in rural areas can be difficult needed behavior change may not occur. This quality improvement (QI) project explored if an online behavioral support program designed for post bariatric surgery patients helped increase their perceptions in their ability to change unhealthy behaviors to health promoting behaviors. The research question was: will an online behavioral support program designed for post bariatric surgery patients help improve perceptions of health promoting behaviors to achieve and maintain weight loss after weight loss surgery?

The main purpose of this project was to analyze changes in perceptions of participants' ability to engage in health promoting behaviors pre-intervention and post intervention. The intervention was a virtual behavioral support program for post bariatric surgery patients.

The vision of this project was "Supporting bariatric surgery patients so their dreams become reality." The mission was "to assist bariatric surgery patients in developing and maintaining health promoting lifestyles by providing support so they increase self-efficacy in fulfilling and maintaining weight loss goals." The goal of the project was to implement an online behavioral support program for post bariatric surgery patients designed to assist them to develop and maintain health promoting lifestyles and ultimately decrease their risks associated with chronic obesity.

The main objective was to determine if following participation in an eight week virtual support program, participants would have improved scores of perceptions of ability to participate in and maintain health promotion behaviors. The online support program consisted of eight weekly one hour sessions presented through a telehealth program. Lessons covered topics related to developing and maintaining healthy habits after bariatric surgery. The changes in perceptions were evaluated by measured pre and post intervention the Health-Promoting Lifestyle Profile II tool. This tool is a 52 question item covering questions on health responsibility, nutrition, physical activity, spiritual growth, interpersonal relations and stress management.

Overall results showed an increase in the mean scores of perceptions from pre-intervention to post intervention of 0.09 (2.54 to 2.63). Although this did not reach power or show statistical significance, the overall perceptions surrounding healthy lifestyles did increase a small amount overall and in noticeable amounts in certain categories. This positive change shows clinical significance. The data collected during this project was not intended to generalize to any patient population. It is recommended that this study be repeated with a larger sample size in order to generalize to the bariatric surgery population.

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# **Evaluating Self-Efficacy of Health Behaviors in Bariatric Surgery Patients**

## **Through Online Support**

### **Problem Recognition and Definition**

#### **Statement of Purpose**

Obesity has become an epidemic in the United States, leading to numerous health related conditions. Bariatric surgeries are recognized as reasonable treatment options for obesity. In fact, it is such a health risk that the Center for Medicare and Medicaid Services determined that bariatric surgery options are reasonable and necessary for beneficiaries with a BMI over 35 (CMS.gov, no date).

Unfortunately, surgery alone is not the answer. There is a huge need for continued frequent follow-up support for post-surgical bariatric patients (Rudolph and Hilbert, 2013; Breznikar and Dinevski, 2009; Keren, Matter, Rainis, & Lavy, 2011). In fact, long term success requires continued, frequent follow up for bariatric surgery patients to successfully implement healthy eating and living lifestyles in order to attain and maintain successful weight loss (Livhits et al, 2010; Rudolph and Hilbert, 2013; Livhits et al, 2011; Breznikar and Dinevski, 2009). More post-surgical services need to be available that include learning healthy behaviors, and actually changing lifestyles to achieve and maintain a healthy weight (Peacock & Zizzi, 2012). Even when support services are available, access, especially for rural patients, is often difficult because of cost, time of travel, and family commitments that can hinder follow up care (Vidal et al, 2013). Support care needs to include helping patients find the belief and motivation for behavioral changes necessary to reach and maintain a healthy weight. Bandura's self-efficacy model strongly suggested that knowing there are excellent reasons for a needed change and even

wanting to make that change is not enough (Bandura, 1977). An individual also needs to believe they can make the change. Peacock and Zizzi (2012) stated that Internet-based support should be considered for an additional method for improving access to care, and promoting healthy lifestyles.

### **Problem Statement**

Could an internet based program increase self-efficacy or the belief that needed lifestyle changes could be made and sustained? The main goal of this pre-test, post-test quality improvement project was to evaluate if the implementation of a post-bariatric surgery online behavioral support program would increase participant's beliefs in their ability to achieve health promoting behaviors following the program. The other goal for this project was to provide recommendations for further study to explore if virtual support improves health promoting behaviors or maintenance of healthy behaviors and if healthier behaviors drove weight loss or maintenance of target weight. This project was not intended to generalize as it was a small convenience sample from only one bariatric program.

### **PICO Articulated**

Will an online behavioral support program designed for post bariatric surgery patients help support perceptions of ability to learn and maintain health promoting behaviors to achieve and maintain weight loss?

The study population was Post-Operative Bariatric surgery patients followed by a local bariatric surgery program. The intervention was an implementation of an online eight-week post-operative behavioral support program compared to no virtual post-operative support

program. The outcome was to analyze if the intervention increased perceptions of ability to engage in a health promoting lifestyle measured by the *Health Promoting Lifestyle Profile II*.

### **Project Significance, Scope and Rationale**

Although the literature strongly suggested the need for more and better support after bariatric surgery (Rudolph and Hilbert, 2013; Breznikar and Dinevski, 2009; Keren et al, 2011), there was a gap in the literature as to what type of program would be most significant for sustained lifestyle behavior modification. Although, there were a limited number of studies that recommended behavioral type support programs (Rudolph and Hilbert, 2013), few discussed online support for bariatric surgery patients or other ways to improve access to the programs after bariatric surgery.

The scope of this research project was intended to provide insight for how technology might be used to increase access to support services designed to help bariatric surgery patients be more successful with behavioral changes after surgery. A long term goal of this quality improvement project is to improve nursing practice and patient outcomes for sustained weight loss following bariatric surgery. In the field of obesity medicine, so much is unknown for how nurses can best help post-surgical bariatric patients achieve obesity management through healthy eating lifestyle change. There seems to be little question that post-surgery support is one essential and that access to such support is not always achieved. The rationale for conducting this project was to explore if technology could increase access to essential support needed for sustainability of lifestyle changes in order maintain or lose excess weight.

### **Theoretical Foundation for Project and Change**

There were several theoretical foundations for this study. The first one was a nursing model by Nola Pender, *The Health Promotion Model* (2011), was a conceptual framework that

guided the understanding of motivators or processes that work for individuals on improving health or health behaviors (Pender, 2011). Key concepts are person, environment, nursing, health, and illness (Pender, 2011). A person is influenced by individual characteristics and experiences. Characteristics and experiences impact behavior-specific cognitions and affect as well as behavioral outcomes. Behavioral outcomes are also influenced by environment. However an individual can change or manipulate the environment. Nursing can help patients change environments by promoting health behaviors. This theory applied to the problem statement by experiences and characteristics that have influenced a person as well as their surroundings.

The foundational theory for this project was Bandura's Self Efficacy theory (Bandura, 1977). Bandura's work demonstrated that the belief that behavioral change is possible was required for a change to happen even if the change was desired. His model showed that if individuals believed in a needed change and had motivation to change, but were unsure if they could achieve the needed change, they would doubt continued change and all too often give up on the change if obstacles arose. On the other hand, if individuals believed they could be successful in changes, when an obstacle to the change rose they would find a way around, under or over that obstacle. Belief in ability to change became as important as motivation to drive the change. Applied to post-bariatric patients, they must believe they can achieve a change in lifestyle behaviors as well as be motivated for the need for change. They must develop self-efficacy or they may not be able to progress through the stages of change.

Two change theories supported this project as well. The first was the Transtheoretical Model (TTM) of Change (Prochaska & Prochaska, 2010). The TTM of change described stages

of change as pre-contemplation, contemplation, preparation, action, and maintenance (Prochaska & Prochaska, 2010). The TTM also discussed that to successfully change, people must learn from their past and develop road maps to guide them. This theory suggested it is important for health care providers to understand what stage of change the patient is in so the provider can develop a plan for success with the patient for that stage in the change process. Accurately identifying the stage of change and designing a plan for that stage can reduce possible resistance to change (Prochaska & Prochaska, 2010).

The second change theory was Kurt Lewin's Change Theory (1947). This explains change happens in three phases: unfreezing, movement and refreezing (Lewin, 1947). This change theory also discussed driving and restraining forces to change (Lewin, 1947). Outside influences can be driving or restraining forces. Patient's surroundings are forces that support change or may hinder change. Patients need driving forces around them (support system) to help them believe change is possible and sustainable.

## **Review of Evidence**

### **Background of the Problem**

Obese individuals are vulnerable to negative bias which leads to increased difficulty in obtaining proper healthcare as well as social discrimination (The Obesity Society, 2010). Obesity leads to numerous types of co-morbid conditions like diabetes, heart disease, and cancers that cause billions of dollars in medical costs each year (Center for Disease Control (CDC) and Prevention, 2015). According to the World Health Organization (2015), obesity contributes to 44% of the diabetes burden and 23% of ischemic heart disease. Reducing obesity decreases health risks as well as health care costs.



Continued support has shown to be important after surgery for bariatric surgery patients (Rudolph and Hilbert, 2013; Breznikar and Dinevski, 2009; Keren, Matter, Rainis, & Lavy, 2011). This continued support can help patients maintain behavioral changes needed for optimal weight loss after surgery (Livhits et al, 2010; Rudolph and Hilbert, 2013; Livhits et al, 2011; Breznikar and Dinevski, 2009). Due to various commitments, patients may have difficulty following up after surgery. In rural areas, access to care can be especially difficult and compounded in a specialty such as bariatric surgery.

### **Systematic Review of the Literature**

An extensive literature review was done using the following databases:

- Academic Search Premier
- PsycINFO
- CINAHL
- Business Source Complete
- ERIC
- Google Scholar
- PubMed

There were minimal exclusions in the review, that is, the search was not limited by date of publication or specific profession. It was, however, exclusive to scholarly academic journals or sources. Key words searched included:

- Support group for bariatric surgery
- Post-operative support bariatric surgery patients
- Successful behavioral interventions for bariatric surgery patients

- Behavioral needs after bariatric surgery
- Support needs after bariatric surgery
- Best follow up care after bariatric surgery
- Patient needs after bariatric surgery
- Support needs after bariatric surgery
- Patient satisfaction after bariatric surgery

Using the above search terms and the above databases, total results were about 700 articles. Many articles were found on ways to improve surgical or medical outcomes but few articles showed how to improve behavioral outcomes after surgery. There was still a gap in the literature about what type of support is best after weight loss surgery. Exclusions of duplicate articles, non-English articles, articles relating to adolescents and articles relating to nutritional or medical complications were applied. Once exclusions were applied, there was a result of about 35 articles. These 35 articles were categorized by follow-up care or support, quality of life, post-surgical outcomes based on pre-operative program, and nutritional behaviors. Nineteen articles directly mention the need for close follow up or support systems after weight loss surgery. A meta-analysis of 15 different studies by Rudolph and Hilbert (2013) found that behavioral interventions had a positive effect on weight loss. Livhits et al (2010) found that patients who didn't follow up routinely, but attended support groups post-op, had better weight loss. Patients must make behavioral changes to be successful, such as how and what they eat, and improving their overall relationship with food (Elkins et al, 2005). The changes in lifestyle and dietary intake that must occur after surgery to be successful can lead to mixed feelings for patients after surgery (Peacock and Zizzi, 2012 and Natvik et al, 2013). Having support systems available can

help through the challenging changes. Orth, Madan, Taddeucci, Coday, & Tichansky (2008) found that patients who attended support group had better weight loss. They go on to mention that some barriers to support group attendance include the belief that it is not beneficial and family obligations. Having an easily assessable program can help overcome one of those barriers. Petasne Nijamkin, Campa, Samiri Nijamkin, & Sosa (2013) even found that a post-operative behavioral program improved depression scores in post-operative bariatric surgery Hispanic patients. Keren et al (2011) found better results of greater percent of excess body weight loss and comorbidity resolution in patients who actively participated in follow up care. These authors as found patients had a better quality of life and food tolerance in patients who participated in follow up care. Cranwell and Seymour-Smith (2012) suggest ongoing education on appetite changes after surgery. Peacock and Zizzi (2012) assessed types of services offered by bariatric programs that were most utilized by patients. They found that support groups were the most utilized, but also there was a need for more post-operative behavioral services (Peacock and Zizzi, 2012). Echols (2010) mentions that ongoing education and routine access to support groups should be included in a successful bariatric surgery program. Rural areas increase the difficulty in access to care, so it becomes more important to implement measures that are easily assessable to patients that have difficulty making it to follow up appointments. Sivagnanam and Rhodes (2010) found patients who lived farther from bariatric offices attended fewer follow up clinics. However, patients had significantly higher percent of excess body weight loss at one year post-op in patients that attended ten or more visits the first year compared to those who attended three or fewer. This again stressed the need for easy access to meet the need of frequent follow up after weight loss surgery. Patients are often discriminated against by other health care

professionals so the importance of follow up from a bariatric clinic is important for patients (Kaminsky & Gadaleta, 2002). Using the internet is a way to reach these patients in rural areas while still not requiring a lot of time, or cost to travel. Vilallonga et al (2013) performed a study of technology based interventions for obesity management. Findings showed that such internet based programs were well received by participants and participants were very satisfied with this type of follow up (Vilallonga et al, 2013).

The benchmark study for this project was one done by Stewart, Olbrisch, & Bean, (2010). This study was a project implementation of a back on track program for post bariatric surgery patients who had regained some weight (Stewart et al, 2010). This project consisted of 8 weekly sessions for patients to attend with a different topic each week (Stewart et al, 2010). Topics ranged from developing smart goals, emotional eating, cognitive distortions, emotional triggers and hunger, preparing for challenging situations, and learning strategies for helping get through those situations (Stewart et al, 2010). Findings from this study showed improvement in behavioral changes and all participants made at least one behavioral modification as a result of attending the program (Stewart et al, 2010). Additionally, patients showed improved confidence in keeping behavioral change after the program (Stewart et al, 2010). However some limitations of their study were a small sample size and self-selection of participants leading to possible bias of sample population (Stewart et al, 2010). Additionally, there was no comparison group or pre-group evaluation (Stewart et al, 2010). These authors suggest further evaluation in similar type of groups (Stewart et al, 2010).

## **Project Plan and Evaluation**

### **Market Risk Analysis**

The setting for this project was a bariatric program affiliated with a medical center in Wyoming. Wyoming is a rural state, having a population just over 576,000. It is the least populated state in the U.S. (State of Wyoming, 2013). Since it has a low population and nearly 98,000 square miles, access to support resources can be challenging (State of Wyoming, 2013). According to the Center for Disease Control (CDC) and Prevention, in 2012 Wyoming had an obesity rate of 24.6%. With already limited resources due to living in a rural state, the obese population in Wyoming has increased challenges in obtaining support to help manage their health and well-being. Frequent access to care can often be difficult for patients, making it challenging to acquire the optimal support after surgery to achieve and maintain behavioral changes. The implementation of more post-operative patient educational support systems is needed, but these programs must also meet access needs of patients in rural Wyoming.

### **Project Strengths, Weaknesses, Opportunities and Threats**

The strengths of this project were having highly secure tele-health equipment available, patient educational resources, comprehensive bariatric team, tele-health staff, clinic supported need of program, and increase marketability against competition. The Health Insurance Portability and Accountability Act (HIPAA) protects patient's health information (U.S. Department of Health and Human Services, no date). The Health Information Technology for Economic and Clinical Health (HITECH) act (HITECH, 2015) ensures electronic medical record (EMR) systems meet privacy standards to protect patient's confidential health information. The tele-health system met military grade privacy which is more secure than HIPAA and HITECH act requires (HITECH, 2015), therefore there were minimal risk of security breaches. The bariatric program consists of a comprehensive team that includes a surgeon, nurse practitioner,

dietitian, psychologist, exercise physiologist, program coordinator and support staff. The program had numerous education resources available to develop the program. Further, there were not any other bariatric programs in the area that provided this type of service, so this project increased the marketability of the bariatric program.

The main weaknesses were limited staff time, limited time for study implementation, sensitive topics for patients or patient fear of security, small sample size, cost to continue, and synchronized sessions. This project required a great amount of staff time to develop, making it difficult with other clinic duties. This project also had an implementation time frame of just a few months therefore long term outcomes were not possible to analyze. Since implementation was limited to one clinic, it had a small sample size. This limited the ability to make generalizations to other bariatric patients. Since this was a synchronized program, patients not able to participate at the scheduled time of the sessions could not join.

The biggest opportunity was being able to reach rural patients and lack of similar programs in the area. This could lead to better marketability of the bariatric program. It also provided an additional resource for rural providers that care of these bariatric surgery patients.

The main threats were the fact that this was technology. Like many technology systems, it did fail at times, both computers and internet. The long term threat to continue is potential cost for patients to participate in the program, and insurance may not cover that cost. Another long term threat is if the tele-health system does not continue to be funded by a federal grant then there would not be a system available to implement the online program.

### **Driving and Restraining Forces**

The driving forces were staff and administration support as well as the tele-health staff support. Additional driving resources available included having education material and the tele-health system. The need for better access to care for rural patients was another driving force.

The restraining forces were the limited implementation time, staff time, cost for patient to obtain required materials if needed, synchronized or time sessions and patient's lack of readiness to participate or change. Since this program was offered at a specific time each week it limited participants who were unable to attend at that time. Another limitation was the tele-health system. The current maximum amount of users on the system at one time was 200 if video was not used, however, more than 10 users on at one time made it difficult to view everyone at the same time with video.

### **Need, Resources, and Sustainability**

Increased post-operative services are needed after bariatric surgery (Rudolph and Hilbert, 2013). The use of new technology should be considered to reach patient easily (Peacock & Zizzi, 2012). The tele-health equipment was available at the bariatric center for the setting of this project. This project helped increase the use of the system for the bariatric center. Since the majority of the resources were available for this project at this bariatric center, the cost of this particular project was minimal. See appendix G for budget to replicate this project if resources were not available. Sustainability of this project would be threatened if the federal grant for the tele-health system did not continue or was not available.

### **Feasibility/Risks/Unintended consequences**

If the telehealth system is not available or obtaining a grant to get a telehealth system was not possible, then this project would not be feasible to replicate. Suggestions for replication

would be considering federal grants to obtain a tele-health system or contact local health care facilities to see if systems are available to lease.

The main risk for this project was patient privacy. This was minimized by not obtaining patient demographic information on the survey tool used for this project. This was a limitation of this study, but probably a limitation that could not be changed for this particular project due to a small sample size. If this project could be repeated with a larger sample size and multiple bariatric centers, then the recommendation would be to run individual data and patient privacy would not be as much of an issue. Risk was also minimized through a secure tele-health system. The greatest risk of patient privacy was through sharing information in the group sessions. This was also minimized through enforcing group norms established at the beginning. The group norms included that patients should not “talk about” or discuss anything within these sessions, especially if it was about another patient. No unintended consequences developed or were known during or after this project.

### **Stakeholders and Project Team**

The main stakeholders were the patients and their families. The surgeon was also a key stakeholder as he was not involved much with the project, but with successful implementation long term, it could help reduce clinic time of post-operative patients. The surgeon currently travels once a month to an outreach clinic about 3 hours away and this could help reduce time needed in the outreach clinic. Other stakeholders included the organization, rural healthcare providers and potentially insurance companies and tax payers. Long term if patients lose weight due to improved behaviors, it could improve obesity related co-morbidities and therefore decrease cost of healthcare. The team consisted of the principle investigator, capstone chair,



mentor, clinic staff, tele-health department staff, and a statistician for analyzing data. All of these team members played an important role in the success of the project.

### **Cost-Benefit Analysis**

The costs for this project would prohibit implementation of this study if not available, but most resources were already available. For this project, very few additional cost were needed. As previously stated, the tele-health equipment was funded by a federal grant. The estimated total cost of the tele-health system which included tele-health staff, equipment and upgrades was estimated about \$500,000 for a 3 year implementation period (R. Miller, personal communications, September 22, 2014). During this project, the tele-health system was free for hospital staff and community members to use since it is funded by a federal grant (R. Miller, personal communications, September 22, 2014). The cost of this system is extreme for another program to replicate this study with this exact tele-health system. There may be other systems available. Another option for funding tele-health systems is the U.S. Department of Health and Human Resources (HHR) or Health Resources and Services Administration (HRSA). HRSA offers grants for tele-health systems (U.S. Department of Health and Human Services, no date).

Other costs for this project included the need for computer access with internet and a webcam. This cost was estimated at \$500, but again is already available for this project. Staff time was the other cost. The total estimated time requirements include 200 hours of the principle investigator (nurse practitioner), 6 hours from dietitian, 6 hours from psychologist and 20 hours for statistician. This total staff cost was estimated at \$10,970. Again these resources were available already for this project.

### **Mission, Vision, Goals and**

The vision of this project was “Supporting bariatric surgery patients so their dreams become reality.” The mission was “To assist bariatric surgery patients in developing and maintaining health promoting lifestyles by providing support so they increase self-efficacy in fulfilling and maintaining weight loss goals.”

The goal of this project was to evaluate if the implementation of a post-bariatric surgery online behavioral support program would increase participant’s beliefs in their ability to achieve health promoting behaviors following the program. Long term, or a further recommendation, would be to evaluate if the behaviors continue and ultimately decrease patient’s risks associated with chronic obesity though achieving weight loss and weight maintenance.

The main objective was to evaluate if there was improved perceived health promotion behaviors using the *Health-Promoting Lifestyle Profile II* tool, following an intervention of an online behavioral support program. In addition, determining sustainability of the program was a long term objective.

### **Process and Outcomes**

The activities completed to meet the goals and objectives were implementing eight weekly one hour synchronized behavioral support sessions for bariatric surgery patients. Each session focused on behavioral management of health promoting behaviors. The topics included

- 12 Stages of Weight Loss Surgery
- Ready for Change / Setting Goals
- Emotional Eating and Cognitive Behavioral Therapy
- Level of Hunger and Mindless Eating
- Developing Coping Strategies

- Healthy Thoughts and Body Image
- Overcoming Triggers and Challenging Situations
- Keys to Success and Ongoing Support

Each session lasted 60 minutes with approximately 30 minutes of lesson, 15-20 minutes for discussion and 10-15 minutes for reviewing assignments. After patients agreed to participate in the study, they signed an informed consent. After the informed consent was signed, the patient completed the pre-survey. Then at the completion of the program, each participant was asked to complete the survey again. Data analysis was completed comparing the initial survey to the end survey.

### **Logic Model**

A conceptual model is defined as “a diagram of proposed causal linkages among a set of concepts believed to be related to a particular public health problem” (Earp and Ennett, 1991, p. 164). A conceptual or logical model was developed for this study using guidelines from Zaccagnini and White (2014). The logic model for this project is in Appendix B. This project was an implementation of an online post-operative behavioral support program. The main inputs were having staff and resources available. The biggest constraints were time, of both staff and participants, and cost of equipment for patients. Additionally, the synchronized sessions were a potential constraint. Activities included the pre-test, participation in eight weekly one hour sessions, and then completing a post-test at the end of the program. The output was the completion of the activities and potential for improved perceived health promoting lifestyles. Short term outcome was improved self-perception of healthy lifestyles and the long term goal

was hope that participants will reach and maintain goal weight through continued healthy lifestyles. The potential impact was improved health conditions and better access to care.

### **Population Parameters**

Convenience sampling was used with survey design for this study. Convenience sampling was chosen due to limited implementation time and ease of recruitment. Recruitment was done through the bariatric program's current support group, patient e-mail list, current social networking systems (clinic Facebook page and clinic iPhone / android app), flyers in clinic, information at post op visits, and word of mouth.

The total population for this study included patients who have had a primary bariatric surgery operation (gastric banding, gastric sleeve, or gastric by-pass) with the local program. It excluded any revisional surgeries to eliminate repeating of patients. Other exclusions for participation in the study were lack of access to a computer with internet, less than six month post-operative, patient currently in another therapy/counseling program, patients not part of local program, and non-English speaking. There were a total of 872 primary bariatric surgery patients who have had surgery at this program that met the criteria. The ideal sample size for this would have been 267 patients to have a 95% confidence level and a 5% confidence interval. However, this project was not meant to generalize, but rather meet the need of one local bariatric program. Due to this convenience sampling, the sample size was predicted to be much smaller and in fact was very small.

There were seven participants that completed the program. Ten participants were initially enrolled and completed the pre-survey. One participant was unable to participate due to insufficient broadband speed on her internet. Two participants only participated the first week

and then didn't attend any more sessions. Specific reasons were not provided for why they did not continue to participate. Two other potential patients that were interested in participating but were unable to join due to other commitments during the time the program was presented each week. Participants were provided the pre-survey to fill out once they had signed the consent. They were also provided the contact information for the facility's tele-health staff, so each participant could get set up with the tele-health system. Only one of the seven participants attended all eight sessions, four of the seven attended seven sessions, one participant attended six sessions, and one patient only attended four of the sessions.

The day of each session, participants were e-mailed the PowerPoint handout and any other handouts or materials for that week's lesson. Instructions on how to log on were provided in the e-mail every week as reminders for participants.

At the end of the last session, participants were reminded to complete the post survey. Instructions on how to complete the post survey, including how to return it, were provided when the handouts for the eighth session were e-mailed out the day of the session.

Only five of the seven that completed the program turned in the post survey. Four attempts were made to contact participants to complete and return the post survey to the delegated staff member. The first one was at the end of the eighth session. The second reminder was sent the next day. The next reminder for post surveys was sent 1 week after the last session. The final reminder was sent 9 days after the last session, with the final deadline of 10 days after the last session. No further requests were made after that timing in order to decrease the risk of variability of answers due to time lapsed after the session.

## **Methodology and Measurement**

This quality improvement project was a pre-test, post-test quasi-experimental project designed to measure the differences in patient's beliefs of their ability to achieve health promoting lifestyles following participation of an eight week online behavioral support program. The tool used for this study was the *Health Promotion Lifestyle Profile II*. This tool was developed by Susan Walker, Karen Sechrist, and Nola Pender (date). Permission to use this tool was granted in personal writing by the lead author and from a public letter and can be found in Appendix J. It is a 52 item questionnaire, broken out into six subscales. Participants rank answers on a 4 point scale. The possible answers were never, sometimes, often, and routinely. Never was a score of 1, sometimes was a score of 2, often was a score of 3 and routinely was a score of 4. See appendix D for the survey. See appendix E for scoring instructions for the survey.

After approval from both the institutional and Regis University internal review boards, (IRB), recruitment started. Patients were recruited through sources mentioned earlier. Recruitment took approximately one month. The implementation took place over the eight weeks, one hour each week of online time and any additional time patient's took for optional home assignments. Data collection and meeting with statistician took place over an additional month.

Overall, project implement went well. There were only a few issues with technology. The eight weekly online sessions covered the topics previously mentioned. See appendix K an outline of the weekly lessons. Week four was the only week there were problems with the system and only 2 people were able to log on that week. This session was repeated later in the week and recorded for people who missed it. Two additional people were able to attend that

week when it was repeated. Other than that, there were only a few minor connectivity issues where participants were disconnected but then able to get right back into the program. After the first session, one concern was the amount of background noise from participant's homes. To address this, starting with the second session, participants were asked to keep their microphones muted during the lesson and while not speaking. In a couple of the sessions, some participants were unable to log onto the computer or internet and just called in by phone. Since handouts were e-mailed out before the sessions, they could still follow along even though they could not see the lesson on the computer.

The instrument used to gauge these perceptions was a Likert style survey with scales ranging from 1 to 4. Possible answers were never, sometimes, often and routinely. An answer of never was scored as 1, sometimes was scored as 2, often scored as 3, and routinely was scored as 4. The 52 item survey, categorized questions in six different areas. These areas were health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. Again, see appendix D for the survey instrument and appendix E for the scoring instructions.

The R statistical programming language and software environment was used for the mean computation, tables, and graphics for this project. Item responses were combined from questions in each subject area to visualize the effect of the program on each category. Visualizations were centered on the threshold between response choices two and three. The percentages of responses were then split above and below this center line. This means, a percent was calculated for answers 1 and 2 and then for 3 and 4 in each category. This was done to differentiate between positive and negative responses.

**Protection of Human Rights**

Respect for persons includes maintaining their privacy and obtaining informed consent (CITI, 2012). Risks for this project included privacy, time of staff and participants, potential decrease to patient's self-efficacy, potentially causing emotional distress to patients, and cost of equipment if patient did not have required equipment. Approval from the IRB was obtained from both the New England IRB for the institutional approval and the Regis University IRB. See Appendix I for a copy of the CITI certification.

One other measure that helped minimize the risk of privacy with patients was presenting group norms, or "rules", for participation which included a statement asking patients to not share any information that was discussed in the secured group, especially about other patients. One of the group norms stated that a patient in the group cannot share any information about another patient in the group without their permission. This helped eliminate violation of patient privacy. This project also included an anonymous survey, helping to maintain privacy. The surveys did not include any patient information in order to protect patient's privacy. Other methods of minimizing risks were referring patients to a local therapist or counselor if emotional distress occurred. If this would have occurred, patients would stopped participation in this project. This did not occur during this project to the lead researcher's knowledge. For this study, a couple of measures were important for maintaining justice. First, recruitment of patients for the study was done by staff members and interested patients were directed to the lead researcher. Clear inclusions and exclusions were set to reduce bias of sampling or discrimination. Also patients were informed regardless if they want to participate or not, it had no effect on their routine follow up visits or services already provided in the bariatric surgery clinic. Also informing



patients that participation was voluntary so patients did not feel coerced to participate helped maintain justice. All of these measures were presented to the IRB for final review so that these ethical principles were being met.

### **Instrumentation Reliability and Validity**

The tool used for this study was the *Health Promotion Lifestyle Profile II*. Validity and reliability was tested by Walker & Hill-Polerecky (1996). In 715 adults, aged 18-92, the alpha coefficient of internal consistency was 0.943. The alpha coefficient for subscales ranged from 0.793 to 0.872. The three week test/re-test stability coefficients was 0.892 (Walker & Hill-Polerecky, 1996). In a systematic literature review by Hunter and Leeder (2013), they ranked tools “high” if the tool had been studied in a large amount of studies other than the authors, “moderate” if the tool had been studied other than the authors, but not in a large amount of studies, and “low” if a tool had not been studied other than the authors. This tool was ranked moderate in their review. Some other tools which could have been used for this study had over 100 questions, requiring more time from participants. Further, one of the authors of this tool was Nola Pender, who was also the author of one of the theoretical foundations for this study.

### **Data Collection**

Evaluation included totaling of the score from each category and overall. The initial survey and post survey were analyzed for changes in self-perception of health promoting behaviors. The positive aspects of this survey included a holistic assessment of patient lifestyle. The questions were easy to follow and answer, and should not have taken the patient more than 5-10 minutes to complete. The limitations of this study included nutritional questions that may not apply to specialized diets and no questions on smoking or alcohol (Hunter and Leeder, 2013).

The process for identification of possible variables for this study was to conduct the literature review and identify variables found in previous studies. There are several types of variables for every project. The two main variables in research are dependent and independent variables. For this project, each individual question on the survey were the independent variables. The dependent variable was if it was a pre or post survey. Since demographic information was not obtained, no other dependent variables applied to the project.

Extraneous variables can interfere or change the relationship between the independent and dependent variable (Christenbery, 2011). Extraneous variables for this project were patient demographics including marital status and children, level of education, employment status or income level, environmental surroundings, access to nutritional or unhealthy food and exercise facilities, ethnicity, and types of social support. However, for this study extraneous variables were not assessed or part of consideration. These demographic variables were discussed in the study by Vidal et al (2014) which showed one factor that hindered patient compliance with follow up was time required to take off work and other personal commitments. Additional variables include patient's medical history, type of bariatric surgery they have had, and how far post-op they are from surgery. Many of these mentioned variables were not obtained for this study therefore no data related to these variables was presented. Other variables that needed consideration were a patient's access to a computer or internet with appropriate broadband width, and comfort with computer and internet skills. If patients did not have this access or skill, utilizing the program was not possible or more challenging. These variables were addressed as best as possible in various ways such as connecting them with tele-health staff for support. Another way was suggesting ways for patients to gain access to a computer or internet. This

could have been through help of family members, local libraries or church offices that can help them overcome this variable and gain access to a computer or internet. Lastly, a moderator variable is a variable that has an influence or changes the relationship between the independent and dependent variable (Christenbery, 2011). A moderator variable in this study was related to temporal aspects which include day of week and time of day the online behavioral program is offered.

A possible internal threat was related to instrumentation. The survey may have had limitations as how questions were worded. The assessment survey also may not have captured the true states of behavioral changes resulting from the behavioral program as opposed to natural changes in patients over time. This was minimized by having a shorter time of implementation. The greatest external threat to this project was related to novelty effects. Ways to reduce this threat included making sure patients were evaluating the program itself, and not the online access when evaluating their perceptions of ability to maintain behavioral changes.

The main threat to reliability in this study was the small sample size. Recruitment was difficult due to the small patient population in a rural state and patient knowledge or comfort level with online technology. Using multiple measures to try to recruit patients helped to increase the possible sample size and therefore reduce this threat to reliability some.

Missing data was also a threat to reliability and therefore, patients were asked again to complete the survey. The first contact reminder was online during the last session. The second and third contact was through e-mail. With continued missing or incomplete data after follow up requests, the next step was to impute the missing values when possible to see if the variables missing values were actually affecting the description of the outcome. Surveys with missing

data or questions which were not answered in this study were still used and the mean of those questions was figured with one less total number.

Due to the small sample size in this project, only descriptive statistics were used. This included the four point Likert scale previously mentioned, which was evaluated as interval data. See appendix E for scoring information to the survey. Then the total scores were added to create and index for each topic addressed and overall. The same questionnaire was filled out by patients at the beginning of the program and at the completion of the program.

## **Findings and Results**

### **Objective Findings**

The main objective for this project was to determine if patients had improved perceptions of health promoting behaviors after participating in an eight weekly online behavioral support program. Overall, the post survey results showed a mean scale score increase of 0.09 (from 2.54 to 2.63). This increase indicates a slight increase in perceptions pertaining to health promoting behavior. Even though this project did not meet statistical significance, these finding are show clinical importance.

Table 1: Pre and Post Survey Means and SD for each Category

<b>Category</b>	<b>Pre Survey Mean (SD) N = 10</b>	<b>Post Survey Mean (SD) N = 5</b>
Health Responsibility	2.53 (0.50)	2.80 (0.46)
Physical Activity	2.25 (0.67)	2.63 (0.48)
Nutrition	2.48 (0.33)	2.40 (0.19)
Spiritual Growth	2.73 (0.64)	2.89 (0.52)
Interpersonal Relations	2.89 (0.44)	2.78 (0.62)
Stress Management	2.31 (0.68)	2.30 (0.37)

Although pre-intervention and post-intervention data were not linked to the same participant, there was a general trend toward increased self-efficacy in three categories. These three categories included health responsibility, physical activity and spiritual growth. These three topics were the main driving force for the overall increase seen in this study. Physical activity was one topic addressed a few times during this program, which did show a positive trend with an increase of 0.37 in the mean. (See Figure 1). Since it was topic addressed throughout the program, an increase in this category was expected. Health responsibility and spiritual growth were not heavily addressed during this program, but still showed an increase. Participants may have felt like they had good habits in other areas already and this program helped them in these areas.

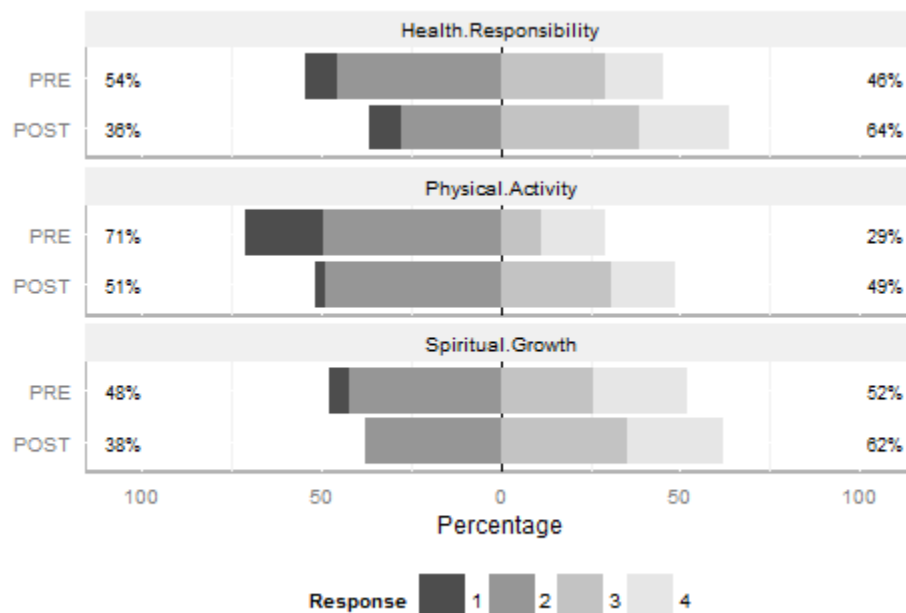


Figure 1: Three Categories with Positive Results

There was a negative or neutral trend in nutrition, interpersonal relations and stress management. It is interesting to note, however, that the main category addressed in the weekly sessions was nutrition. This was one of the categories that had a negative response of 0.07. In two of the nine nutrition questions, a decrease in the mean was a positive result for bariatric surgery patients, so those questions were reversed for data analysis. One question concerned whether or not a patient is eating 6-11 servings of bread or pasta products a day. Bariatric surgery patients are taught to limit servings of bread or pasta servings, so a decrease in the mean from the pre to post survey is a positive outcome for bariatric surgery patients. This result showed a 0.02 change in the mean, showing no real difference. The other nutrition question in which a decrease in the mean was a positive finding is a question of *only* eating 2-3 servings of meat products a day. Bariatric surgery patients are taught to eat mostly protein based foods. The goal is at least 3 or more servings a day. This question had a 0.04 change in the mean which also essentially is not a real change. Two other questions closely addressed in nutrition were related to reading nutrition labels and eating breakfast. Those questions showed an increase of 0.6 in the mean and decrease of 0.1 in the mean respectively. The fact that the survey instrument used was not a bariatric surgery specific instrument could have impacted the results of the nutrition category. Also, the very low number and missing data may have skewed the results as well.

The second most addressed main category during the intervention was stress management, which showed no real change in the mean from pre and post surveys. The possible reason for decrease or no real change in this area could be patients were focusing change behaviors in other areas that they were more ready to change. Interpersonal relationship was an

area not heavily addressed during this program, so an increase in this area would not be expected.

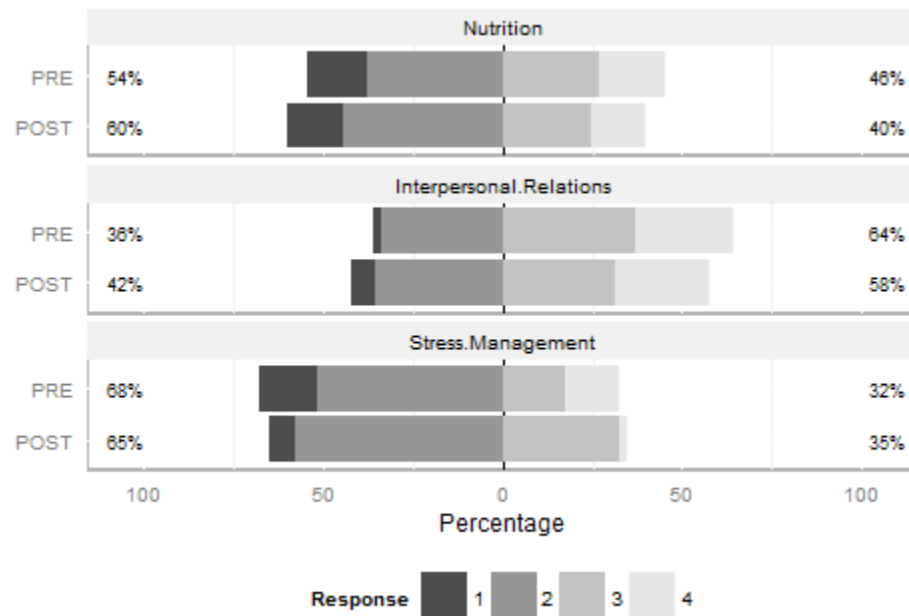


Figure 2: Three Categories with Neutral or Negative Results



While the positive effect noticed in the post survey results are encouraging for clinical application, the small sample size does limit the information that can be generalized due to lack of statistical significance.

### **Limitations and Further Recommendations**

This project had several limitations. The first one was lack of ability to generalize due to small sample size. The second limitation was the lack of ability to analyze individual data. A future recommendation would be to assign a random number for each patient for the pre and post surveys. Pre surveys of participants that didn't end up completing the program could then be excluded from data analysis. Secondly, individual changes could have been analyzed in addition to overall and per category.

Another limitation was the low response of post surveys returned. To maintain confidentiality, no patient characteristics were obtained with the surveys. Therefore, no demographic results were completed with this project. Since this was a small sample including only one bariatric program, that was the best method for this project to protect patient privacy. However, if patients were assigned a random number then missing post surveys could be tracked down easier. In addition, data analysis could have included the number of sessions patient's attended and if that had any effect on the outcome.

Developing a survey unique to this study was not attempted due to time constraints and a limited sample size to establish reliability and validity of a new survey; however, this may have been a limitation since the survey used was not specific to bariatric surgery patients. For future

studies, it is recommended that the survey be modified specifically for post-bariatric surgery patients or new bariatric specific survey developed.

Online etiquette with background noise in participant's setting was an issue. To address this, if a program like this was to be repeated, a recommendation would be establishing online etiquette at the very beginning of the program.

Another recommendation would be requiring participants to do home study instead of making it optional to see if this would increase the change in perceptions of health promoting behaviors. Having participants define what they want to study and how they want to demonstrate competency of learning key points is another consideration for further research. Additionally, consider alternative methods for participation if technology fails.

Several questions rose from this project and are recommended for further study. The first would be to develop a bariatric surgery specific survey or questionnaire. Additionally, adding a questionnaire on satisfaction is recommended to help determine if the content in the weekly lessons met participants needs or if additional or different topics would be more motivating toward driving change and perceptions of ability to change.

For sustainability, it is recommended cost effective measures and potential compensation options be reviewed. This could be offering the program at a low cost to patients or determine if insurance would cover such a program. Finally, it is recommended that this study be repeated with a larger sample size in a variety of bariatric centers so power could be reached and findings could generalize to a broader population.

## **Conclusion**

Even though there was minimal change in the mean of the results, there were still many benefits of this project. The biggest benefit was improving access to care for rural bariatric surgery patients. There was evidence of need for ongoing support after weight loss surgery as previously mentioned. This helped provide another resource to meet that need. Participants provided positive feedback in the benefit of the program and have requested this program to continue.

### References

- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological review*, 84(2), 191.
- Breznikar, B., & Dinevski, D. (2009). Bariatric surgery for morbid obesity: pre-operative assessment, surgical techniques and post-operative monitoring. *Journal of International Medical Research*, 37(5), 1632-1645.
- Center for Disease Control and Prevention (2015). Adult obesity facts. Retrieved from <http://www.cdc.gov/obesity/data/adult.html>.
- Christenbery, T. (2011). Building a schematic model: A blueprint for DNP students. *Nurse Educator*, 36(6), 250-255.
- CMS.gov (no date). *Decision memo for bariatric surgery for the treatment of morbid obesity*. [http://www.cms.gov/medicare-coverage-database/details/nca-decision-memo.aspx?NCAId=160&NcaName=Bariatric+Surgery+for+the+Treatment+of+Morbid+Obesity+\(1st+Recon\)&bc=ACAAAAAAEAAA&](http://www.cms.gov/medicare-coverage-database/details/nca-decision-memo.aspx?NCAId=160&NcaName=Bariatric+Surgery+for+the+Treatment+of+Morbid+Obesity+(1st+Recon)&bc=ACAAAAAAEAAA&)
- Collaborative Institutional Training Initiative (CITI) at the University of Miami (2012). *Social behavioral research investigators and key personal basic course*. Retrieved from <https://www.citiprogram.org/>
- Cranwell, J., & Seymour-Smith, S. (2012). Monitoring and normalising a lack of appetite and weight loss. A discursive analysis of an online support group for bariatric surgery. *Appetite*, 58(3), 873-881.
- Earp, J. A. & Ennett, S. T. (1991). Conceptual models for health education research and practice. *Health Education Research* 6(2), 163-171.

- Echols, J. (2010). Obesity weight management and bariatric surgery case management programs: a review of literature. *Professional case management*, 15(1), 17-26.
- Elkins, G., Whitfield, P., Marcus, J., Symmonds, R., Rodriguez, J., & Cook, T. (2005). Noncompliance with behavioral recommendations following bariatric surgery. *Obesity surgery*, 15(4), 546-551.
- HITECH Act. (2015). *Health IT legislation*. Retrieved from:  
<http://healthit.gov/policy-researchers-implementers/health-it-legislation>
- Hunter, J., & Leeder, S. (2013). Patient questionnaires for use in the integrative medicine primary care setting—A systematic literature review. *European Journal of Integrative Medicine*, 5(3), 194-216
- Kaminsky, J., & Gadaleta, D. (2002). A study of discrimination within the medical community as viewed by obese patients. *Obesity surgery*, 12(1), 14-18.
- Keren, D., Matter, I., Rainis, T., & Lavy, A. (2011). Getting the most from the sleeve: the importance of post-operative follow-up. *Obesity surgery*, 21(12), 1887-1893.
- Lewin, K. (1947). Frontiers in Group Dynamics: Concept, Method, and Reality in Social Science. *Human Relation*, 1, 5-41. doi:10.1177/001872674700100103
- Livhits, M., Mercado, C., Yermilov, I., Parikh, J. A., Dutson, E., Mehran, A., & Gibbons, M. M. (2010). Behavioral factors associated with successful weight loss after gastric bypass. *The American Surgeon*, 76(10), 1139-1142.
- Livhits, M., Mercado, C., Yermilov, I., Parikh, J. A., Dutson, E., Mehran, A. & Gibbons, M. M. (2011). Is social support associated with greater weight loss after bariatric surgery? A systematic review. *Obesity reviews*, 12(2), 142-148.

- Natvik, E., Gjengedal, E., & Råheim, M. (2013). Totally changed, yet still the same patients' lived experiences 5 years beyond bariatric surgery. *Qualitative Health Research*, 23(9), 1202-1214.
- The Obesity Society (2010). *Obesity, Bias, and Stigmatization*. Retrieved from <http://www.obesity.org/resources-for/obesity-bias-and-stigmatization.htm>.
- Orth, W. S., Madan, A. K., Taddeucci, R. J., Coday, M., & Tichansky, D. S. (2008). Support group meeting attendance is associated with better weight loss. *Obesity surgery*, 18(4), 391-394.
- Peacock, J. C., & Zizzi, S. J. (2012). Survey of bariatric surgical patients' experiences with behavioral and psychological services. *Surgery for Obesity and Related Diseases*, 8(6), 777-783.
- Pender, N. J. (2011). *Heath Promotion Model Manual*.
- Petasne Nijamkin, M., Campa, A., Samiri Nijamkin, S., & Sosa, J. (2013). Comprehensive behavioral-motivational nutrition education improves depressive symptoms following bariatric surgery: A randomized, controlled trial of obese Hispanic Americans. *Journal of nutrition education and behavior*, 45(6), 620-626.
- Prochaska, J. O., & Prochaska, J. M. (2010). Self-directed change: A transtheoretical model. In J. E. Maddux, J. Tangney (Eds.). *Social psychological foundations of clinical psychology* (pp. 431-440). New York, NY, US: Guilford Press
- Rudolph, A., & Hilbert, A. (2013). Post-operative behavioural management in bariatric surgery: a systematic review and meta-analysis of randomized controlled trials. *Obesity Reviews*, 14(4), 292-302.

- Sivagnanam, P. & Rhodes, M. (2010). The importance of follow-up and distance from centre in weight loss after laparoscopic adjustable gastric banding. *Surgical Endoscopy* 24(10), 2432–2438.
- State of Wyoming (2013). Wyoming facts and symbols. Retrieved from <http://www.wyo.gov/about-wyoming/wyoming-facts-and-symbols>
- Stewart, K. E., Olbrisch, M. E., & Bean, M. K. (2010). Back on track: confronting post-surgical weight gain. *Bariatric Nursing and Surgical Patient Care*, 5(2), 179-185.
- U.S. Department of Health and Human Services (HHS) (no date). *Health information privacy*. Retrieved from <http://www.hhs.gov/ocr/privacy/>
- U.S. Department of Health and Human Services (HHS) (no date). *Health resources and services administration: Rural health*. Retrieved from <http://www.hrsa.gov/ruralhealth/about/telehealth/>
- Vidal, P., Ramón, J. M., Goday, A., Parri, A., Crous, X., Trillo, L. & Grande, L. (2014). Lack of adherence to follow-up visits after bariatric surgery: reasons and outcome. *Obesity surgery*, 24(2), 179-183.
- Vilallonga, R., Lecube, A., Fort, J. M., Boleko, M. A., Hidalgo, M., & Armengol, M. (2013). Internet of things and bariatric surgery follow-up: Comparative study of standard and IoT follow-up. *Minimally Invasive Therapy & Allied Technologies*, 22(5), 304-311.
- Walker, S.N., & Hill-Polerecky, D.M. (1996). Psychometric evaluation of the Health-Promoting Lifestyle Profile II. Excerpt from unpublished manuscript, University of Nebraska Medical Center.
- World Health Organization (2015). *Obesity and overweight*. Retrieved from

<http://www.who.int/mediacentre/factsheets/fs311/en/>

Zaccagnini, M. E. & White, K. W. (2<sup>nd</sup> ed). (2014). *The Doctor of Nursing Practice Essentials: A model for advanced practice nursing*. Sudbury, MA: Jones & Bartlett Learning.



## Appendix A

### Systematic Review of Literature

Author/ Year	Title	Words Searched / Databases	Findings	Research Methods	Sample Size	Strengths / Weakness
Petasne Nijamki n et al 2013	Comprehen- sive Behavioral- Motivationa l Nutrition Education Improves Depressive Symptoms Following Bariatric Surgery: A Randomize d, Controlled Trial of Obese Hispanic Americans	support group for bariatric surgery EBSCO host through Regis library	Depression: less pessimism, past failure, loss of pleasure, self- dislike, self- criticism, and worthlessness Weight loss at 1 year: control lost 64% EBW vs 80% EBW lost from intervention	Prospectiv e study 2 phase trial	144 with 10% dropout resulting in 130 Adults Candidates for bariatric surgery for phase 1 and actual surgery phase 2 Hispanic American with bilingual	<i>Specific to Hispanic American population</i>  <i>Further: would need longer study to show if effective longer term</i>
Orth et al 2008	Support Group Meeting Attendance is Associated with Better Weight Loss	support group for bariatric surgery EBSCO host through Regis library	Findings not clearly defined for this study, gave summary of other studies	Investigati on Survey using Likert scale questionna ire  Compared ASGM vs NASGM	46 total 28 non attend 18 attend	Controlled distance to clinic or time to clinic Assessed how reminders should be done Assessed limitations to attending Assessed topic ideas <i>Small sample size Not many lap band Finding not well defined</i>

Rudolph and Hilbert 2013	Post-operative behavioral management in bariatric surgery: a systematic review and meta-analysis of randomized controlled trials	support group for bariatric surgery EBSCO host through Regis library	Behavioral mgnt resulted in positive effect on weight loss 13 of 15 studies with patients attending support group or behavioral intervention had significant greater weight loss	Retrospective Systemic review of cohort studies (10) RCT (5) Included: obs studies, tx studies, and non-randomized and uncontrolled studies  standardized data extraction form	16 articles with 15 different studies  8 studies on behavioral 7 studies on support groups	Large amount of data from all studies Reviewed limitations  NOTE TO SELF: Further follow on studies reviewed in this article for better data
Cranwell and Seymour-Smith 2012	Monitoring and normalizing a lack of appetite and weight loss. A discursive analysis of an online support group for bariatric surgery	support group for bariatric surgery EBSCO host through Regis library	Lack of appetite demonstrated a positive celebration but requires more education from clinician Weight stabilization was normalized by other group members with strategies to work through	Analyzed data using discursive psychology  Descriptive study On two topics: lack of appetite and periods of weight stabilization	284 wall post from online support group	Protection of privacy  <i>Limited to two topics Need to see if replication on other sites.</i>
Livhits et al 2011	Is social support associated with greater	support group for bariatric surgery	Positive association between support groups and post	Data abstraction And	42 studies with only 10 fulfilling inclusion	<i>Further studies need to be done on how</i>

	weight loss after bariatric surgery?: a systematic review	EBSCO host through Regis library	op weight loss  Only one study from other forms of support showed positive association and outcomes	divided into two categories: those dealing with support groups and those dealing with other forms of social support	criteria 735 patients from all studies	<i>often support group should be held and what topics should be included Need better definition of weight loss Causal relationship cannot be concluded</i>
Peacock, J & Zizzi, S. 2011	Survey of bariatric surgical patients' experiences with behavioral and psychological services	support group for bariatric surgery EBSCO host through Regis library	More support is usually given before surgery than after with dietary and psychological and exercise areas Exercise support received the lowest satisfaction rating Even though not even half of respondents reported attending support group after surgery, it was still the most utilized resource	On-line survey (survey monkey)	380 360 women and 20 men Mean age 47 Solicited by on-line web site	Pointed out that weight loss data may not be accurate b/c weight loss failure patients may not follow up and therefore may not be included in data Created own survey mostly Mentioned that further studies are needed to see if services are not provided or patients are not using them and

						<p>why (on-live vs in person and geographic availability of services)</p> <p><i>Self-reported measures, short survey questions, convenience sample, this sample had higher weight loss success than average so therefore may have more satisfaction than general population</i></p>
<p>Natvik, E., Gjengedal, E., Rahiem, M. 2013</p>	<p>Totally Changed, Yet still the same: Patients' lived experiences 5 years beyond bariatric surgery</p>	<p>Not sure, cannot find in searched terms. Thinking I got it from another article From mentor?</p>	<p>Participants enjoyed their new life and better health after weight loss, but still struggled with their "old self" Constant reminders of their old body and difficulties with eating and personal habits were still hard to accept Social cultural and body perceptions were</p>	<p>qualitative , descriptive, and retrospective design</p>	<p>8, 4 men and 4 women ages 43 to 53 years</p>	<p><i>Limited to Norwegian ethnicity; only surgery studied was DS</i></p> <p>Very interesting study and fun to read. Did nice job "getting into the minds" of these weight loss surgery patients.</p>

			difficult still			
Breznika r, B. & Dinevski , D. 2009	Bariatric Surgery for morbid obesity: pre- operative assessment, surgical techniques and post- operative monitoring	post operative support bariatric surgery patients EBSCO host through Regis library	Post op outcomes were improved by more experiences Psychological eval may help previous early on failures Frequent monitoring and participation in support group are important and best outcomes	observatio nal clinical study	May 2005 until December 2008, 246 bariatric procedures were performed in 212 females (86.2%) and 34 males (13.8%)	<i>Observation al study only at one facility and surgeon's techniques Really comprehens ive data presented but may not be what I need – more about surgical part</i>
Keren, D., Matter, I., Rainis, T. & Lavy, A. 2011	Getting the most from the sleeve: The importance of post- operative follow-up	post operative support bariatric surgery patients EBSCO host through Regis library	Better results, with regard to % EBMIL, comorbidity resolution, QoL, and food tolerance, were observed for the group that actively participated in the follow-up routine compared with the group that was lost to follow-up	retrospecti ve chart review two groups: group I (83 patients) those actively participati ng in the Health and Nutrition Clinic follow-up visits, and (2) group II (36 patients) patients who did not participate	119 patients	<i>Limited to GS surgery May need longer term study to show better differences</i>

				in the regular clinic followup visits, but returned for the 30-month follow-up visi		
Elkins et al 2005	Noncompliance with behavioral recommendations following bariatric surgery	successful behavioral interventions for bariatric surgery patients EBSCO host through Regis library	Results indicated that percentage of noncompliance at 6 and 12 months respectively was as follows:snacking (44% and 37%); drinking sodas (4% and 2%); not increasing water intake (14% and 7%); drinking alcohol (0% and 0%); not taking vitamins (7% and 11%); not eating protein first (7% and 1%); eating fatty foods (3% and 3%); not exercising (40% and 41%); binge eating (0% and 0%); and not attending support group (21% and 25%)	retrospective chart review	100 consecutive patients who had Roux-en-Y gastric bypass (RYGBP) for weight related medical problems. 81 women and 19 men with a mean age of 43.6 years. Their median preoperative weight was 139.8 kg and BMI was 49.0	Discussion of how often f/u was and attempts for missed apt Good sample size But <i>study is on one suburban and rural location in Texas and mainly Caucasian population</i>
Sutton, D. &	Health-Related	Support group for	Face to face group were	Cross-sectional,	164 individuals	<i>The "lack of consistent</i>

Raines, D. 2008	Quality of Life: Physical and Mental Functioning after Bariatric Surgery	bariatric surgery EBSCO host through Regis library	significantly higher for both the physical functioning and mental functioning summary scale compared to internet group. Ranking for each group were reversed in physical and mental functioning. Face group physical functioning was higher then mental, in internet the mental ranking was higher than physical.	non-experimental Survey design Used SF 12v2 form which is a generic measure of health not targeted by age, disease, or treatment group and provided two summary scales		<i>finding related to the patient's perspective is a significant gap in nursing knowledge related to the needs of this emergent population" (273) One limitation was that the face to face group was one geographic region, but internet group was all regions within the US Discuss possible differences in gender for mental scoring and need for further studies</i>
Smiertka, Jacquelyn & MacPherson, Bruce.	Bariatric Surgery Postoperative Behavioral Change: The	Support group for bariatric surgery EBSCO host through	Discussed generalized treatments for patients	Not really any, just generalized statements from practice	not	<i>Old article and not "scientific study". Just seemed like generalized statements;</i>



1995	Importance of Ongoing Assessment and Teaching	Regis library		and maybe articles		<i>had some good ideas or statements but don't seem to be backed up. Not a good article to go off.</i>
Seager, M. J., Egan, R. J., Heredith, H. E., Bates, S. E., Norton, S. A. & Morgan J. D. T. 2012	Shared Medical Appointments for Bariatric Surgery Follow-Up: a Patient Satisfaction Questionnaire	Support group for bariatric surgery EBSCO host through Regis library	Small amount in group rated scores low on feeling comfortable with sharing own experiences. Overall patients more satisfied	Questionnaire after visit and retrospective questionnaires from patients who had traditional visits 11 Likert-type questions and 2 categorical questions	34 returned questionnaires	97.1% response rate in group 48.1% response rate in retro group Had sent letters to patients ahead of time to let them know about group visit and why <i>European study so many have limitations in US</i>
Stewart, K.E., Olbrisch, M.E., & Bean, M.K. 2010	Back on track: confronting post-surgical weight gain	behavioral needs after bariatric surgery EBSCO host through Regis library	Low rankings on how "on track" they were before group Average weight loss 4 lb. All had made at least 1 behavioral change Mean confidence 8 out of 10 in feeling like they	Qualitative study Survey method pre and post	8 – only women and only 6 returned survey 2 groups – first group and then a second group	<i>Small sample size Second group had some advantages from feedback of first group ? if CBT was effective</i>

			could maintain change			<i>method at time of study</i>
Kaminsky, J & Gadaleta, D 2002	A Study of Discrimination within the Medical Community as Viewed by Obese Patients	support needs after bariatric surgery EBSCO host through Regis library	gastroenterologists and pulmonologists had the most favorable responses Patients complained of examination tables tipping, inappropriate gowns that provided no coverage, small blood-pressure cuffs, and chairs and scales not designed for persons over 159 kg	Patients were asked to use the following scale to determine the level of care that they received by both professional and non-professional medical personnel: 1- Very Supportive; 2- Somewhat Supportive; 3- Non Supportive; 4- Completely Negative	No. of questionnaires submitted 200 There were 40 respondents, aged 44.7 years (range 21-61 years); 34 were women. Average preoperative weight was 145 kg (range 101.8-231.8 kg). Average weight loss at time of survey was 42.8 kg; average time from surgery was 9.5 months.	Fairly low responded rate, but good they did different programs and not just one; Patients may have had biased opinions, these surveys just represent opinions of patients so the actual care they received could be different
Echols, J 2010	Obesity Weight Management and Bariatric Surgery Case Management Programs	best follow up care after bariatric surgery EBSCO host through	In general, the following five key focus points are recommended: 1. identification and engagement; 2. coaching,	review of literature		<i>Need more long term studies. Stated that most studies were no more than 2 years after surgery so</i>

	A Review of Literature	Regis library	education, and support; 3. collaboration including integrated case management and disease management interventions for morbidly obese clients including preparation, management, and follow-up when bariatric surgery is indicated; 4. aggressive follow-up and continued management until personal goals are achieved; and 5. outcome measurement. See chart in article for recommendations on meeting these. This review showed that surgery is effective in reducing co-morbidities such as diabetes and HTN.			<i>don't have a good idea of weight regain or what may cause it.</i>  Very informative article. Summarized great "best practice" structures for patient management after surgery.
Vidal, P., Ramon, J., Goday,	Lack of Adherence to Follow-Up Visits After	Was searching for another article in	Most patients reported work-related problems, family-related circumstances	retrospective analysis of a prospective	263 patients Forty-six (17.5 %) of 263 patients missed at	Need more study focused on the assessment

A., Parri, A., Crous, X., Trillo, L., Pera, M., Grande, L. 2013	Bariatric Surgery: Reasons and Outcome	Obesity Surgery journal and came across this one	(mainly the care of close relatives), or having moved outside the city or to the country. Only four patients cited weight regain as the reason for not attending the follow-up visits  See Table 1  Nonadherence was significantly greater in patients <45 years of age	e database including all patients undergoing bariatric surgery from January 2004 to February 2012 was performed  Quantitative variables were summarized with mean and standard deviation and qualitative variables as frequencies and percentages	least one of the scheduled visits Thirty-three (71.7 %) of the 46 nonadherent patients and/or their relatives completed the questionnaire	of specific reasons of nonadherence.  Unable to compare exercise to the different groups  Further f/u “our efforts should be to retain the younger population and provide social support to patients with work- and family-related problems to improve the follow-up rates and to reduce the incidence of unsuccessful weight loss”
Lier, H., Biringer, E., Stubbhau, B., Tangen, T. 2012	The impact of preoperative counseling on postoperative treatment adherence in	patient needs after bariatric surgery  EBSCO host through Regis	Pre-surgical counseling program did not increase post-operative adherence to lifestyle changes	Randomized control design Control vs treatment group 99 randomized and 45 not	141 total 69% in counseling group and 31% in not  99 randomized 45 not	Recommend further study post-operative to see effectiveness then  <i>Some of the 1 year f/u</i>

	bariatric surgery patients: A randomized controlled trial	library		(reference group)		<p><i>was done by phone with self-reported weights</i></p> <p>Based in Norway so may have some limitations in US</p> <p>strengths of our study are the randomized controlled design</p>
ENGSTROM, M. & FORSBERG, A 2011	Wishing for deburdening through a sustainable control after bariatric surgery	<p>patient needs after bariatric surgery</p> <p>EBSCO host through Regis library</p>	<p>“wishing for DE-burdening through a sustainable control over eating and weight”, was identified and illuminates the main concern of all the participants when they approached and went through bariatric surgery. One main strategy throughout the whole process for obtaining and maintaining control was by reflecting</p>	Prospective interview study	16 members before as well as 1 year after surgery and 11 took part 2 years after surgery	<p>design of this study is unique due to the combination of in-depth interviews, the inside perspective, and the prospective data collection</p>

			on their previous condition of being morbidly obese			
Freire, R.H., Borges, M.C., Alvarez-Leite, J.I., Correia, M.I.T.D.	Food quality, physical activity, and nutritional follow-up as determinant of weight regain after Roux-en-Y gastric bypass	patient needs after bariatric surgery  EBSCO host through Regis library	Lower calorie intake in group 1 but group 2 and 3 about same Only 20% did regular exercise	cross-sectional study Patients were distributed into three categories according to postsurgical time: group 1: up to 2 y (up to 24 mo); group 2: from 2 to 5 y (25 to 60 mo); group 3: over 5 y	100 273 had surgery but only able to include 100 preoperative data were collected retrospectively from medical charts and postoperative results were collected directly from the patients by one of the authors	<i>Use 24 hour recall diet</i>  Good summary of areas needed for patients after surgery such as close dietary counseling
LePage, C.T. 2010	The lived experience of individuals following Roux-en-Y gastric bypass surgery: a phenomenological study	patient needs after bariatric surgery  EBSCO host through Regis library	Surgery as renewed hope Finding balance Filling the void Transformation of self image	Human science approach to qualitatively explore phenomenon of gastric bypass  Phenomenological perspective	12 8 women 4 men	This group seemed successful; limited in the fact that not sure what “unsuccessful patients feel” or ones that are not happy with their surgeon/program However, did get a

						variety of patients with no struggles vs mental struggles
Boeka, A.G., Prentice-Dunn, S., Lokken, K.L. 2009	Psychosocial predictors of intentions to comply with bariatric surgery guidelines	patient needs after bariatric surgery  EBSCO host through Regis library	Contrary to expectations, the PMT intervention was not found to have a significant impact on participants' threat and coping appraisal processes	Pilot study With control and experimental group	82 adults between the ages of 21 and 56 The PMT group (n=44) consisted of 15 males and 29 females and the control group (n=38) contained 14 males and 24 females	May need longer intervention
Santarpia, L., Contaldo, F., & Pasanisi, F. 2012	Body composition changes after weight-loss interventions for overweight and obesity	patient needs after bariatric surgery  EBSCO host through Regis library	Body composition does change during weight loss and needs specialized individual attention	A review	N/A	Stud was not on surgery patients, but some guidelines may apply. Did stress importance for looking at long term weight loss and maintenance vs quick shorter term weight loss Did not differentiate between types of

						obesity
Franks, S. F. & Kaiser, K. A. 2008	Predictive Factors In Bariatric Surgery Outcomes: What is the Role of the Preoperative Psychological Evaluation	support needs after bariatric surgery EBSCO host through Regis library	Reasonable expectations for weight loss is clearly Important for diabetics and older patients. Patients with a childhood onset of obesity appear to be at risk for dissatisfaction with postsurgical weight and shape. Current diagnosis of depression or anxiety does not generally appear to negatively affect weight loss Quality of the marital relationship and extended social appear to be important determinants of postsurgical medical and psychological complications	A review	reports with totals ample size of <50 were also excluded. Otherwise, articles published between January 2003 and March 2008 that meet the aforementioned criteria were included	Reviewed several studies and used large sample studies to help eliminate bias and such. Did a good job of covering many different conditions (diagnosis) in patients pre-op but didn't really look at the treatment status of the patients with these diagnosis. That needs further consideration.
VILALLONGA, R., LECUBE, A., FORT, J.M., BOLEKO, M.	Internet of Things and bariatric surgery follow-up: Comparative study of standard and IoT	patient satisfaction after bariatric surgery EBSCO host through	Reasons patients declined the IoT group were due to lack of internet access, lack of knowledge with technology, concern on	controlled prospective trial patient was questioned on having a WIFI	33 patients 10 in IoT group and 23 in standard follow up group	Didn't state how they kept security with the wireless monitoring Pretty small study but



A., HIDALGO, M., & ARMEINGOL, M. 2013	follow-up	Regis library	“distant care” and worse outcomes. However patients in either group seemed satisfied with care and IoT group were more satisfied with time saved. Also IoT group felt more motivated by watching the trends on computer.	network at home, basic computer knowledge, and interest in participation in a study of “WIFI-online email” follow-up instead of a standard follow-up (if had it, was in this IoT group		did follow for 9 months so that was better than just 1-2 follow up visit, but still may need more long term data Mentioned limitation of no blood monitoring
da Silva, S. S. & da Costa Maia, A. 2012	Obesity and Treatment Meanings in Bariatric Surgery Candidates: A Qualitative Study	patient satisfaction after bariatric surgery  EBSCO host through Regis library	Three core processes emerged: obesity, eating behavior, and Treatment Obesity = an internal immutable problem, affecting all life dimensions (professional, interpersonal, and personal). Eating behavior seems to play an important role in the maintenance of obesity, and it is always present and controlling the patient’s life. It	Qualitative Interviews Grounded analysis method Interweaved – theoretical sampling	30 20 women 10 men	May need more studies to assess this but made a valid point in the fact that understanding patient’s perception of obesity, eating behavior, and treatment may be crucial to commitment and success of surgery

			is perceived as a coping strategy to deal with some events and imbued with negative feelings, and it is perceived as a loss of control. The treatment, especially the surgery, seems to be perceived as a miracle moment that will solve all life's problems.			
Himpens, J. Verbrughe, A., Cadiere, G.B., Everaerts, W., Greve, J.W. 2012	Long-Term Results of Laparoscopic Roux-en-Y Gastric Bypass: Evaluation After 9 Years	patient satisfaction after bariatric surgery  EBSCO host through Regis library	analyzing between the weight changes and the appearance of new-onset DMII in the 19 patients, there appeared to be no link between weight regain and new onset DMII Also no link between gender and age in DMII	retrospective study	126 consecutive patients Surgeries were between Jan 1, 2001 and Dec 21, 2002. First time surgical patients Complete data on 77 patients (61.1%). 51 were evaluated in office, 24 by telephone, 2 were deceased	Authors felt like 60% f/u rate was low but really probably pretty good for 9 years out but did stress importance of long term f/u and success. Weight changes in many are estimates as many patients had not been seen in a long time Also telephone interviews offered limited data

LIVHIT S, M., MERCA DO, C., YERMI LOV, I., PARIK H, J., DUTSO N, E., MEHRA N, A., KO, C.Y., MAGG ARD GIBBO NS, M. 2010	Behavioral Factors Associated with Successful Weight Loss after Gastric Bypass	patient satisfactio n after bariatric surgery  EBSCO host through Regis library	78 were success 70 were failure Success behaviors included f/u with surgeon in past year, supportive friends and family, and lower BED scores or EID, post op support group meeting, high physical activity, single Less success links were pre op diabetes and higher BED scores	Retrospect ive study Survey	197 were invited to participate and 148 completed surveys	Only evaluated patients at one program Were not able to gather pre op eating habits, exercise habits or self-esteem. Also not able to gather data on psychosocia l factors
Toussi, R., Fujioka, K., Coleman , K.J. 2009	Pre- and Postsurgery Behavioral Compliance , Patient Health, and Postbariatric Surgical Weight Loss	patient satisfactio n after bariatric surgery  EBSCO host through Regis library	Most frequent compliance issue was missed appointments Also with exercise and weight loss plan instructions Poor food choices not much of issue before surgery but increased after surgery obese patients tend to be more compliant with lifestyle change instructions because they want the surgery	Retrospect ive chart review Data from up to 1 year before surgery and up to 2 years after surgery	172 postsurgical cohort of which 112 had presurgical data	Do patients with BED need a different type of follow up? May need further study on that question. Due to sample mostly white females, may not be able to generalize to men or minorities.
Wee,	Understandi	patient	One-third of	Focused	75 patients	Again most

C.C., Jones, D.B., Davis, R.B., Bourland, A.C., Hamel, M.B. 2006	ng Patients' Value of Weight Loss and Expectations for Bariatric Surgery	satisfaction after bariatric surgery  EBSCO host through Regis library	patients were college-educated. No patient rated their health as excellent, nine rated it as very good, 24 rated it as good, and ten rated it as fair or poor. Top listed reason to have surgery is due to health reasons. patients do appear to value weight loss highly but may have unrealistic weight loss expectations for bariatric surgery	longitudinal study	eligible but only 45 responded	women 95%, and most were white.
Edholm, D., Svensson, F., Nasland, I., Karlsson, F. A., Rask, E., Sundbohm, M. 2012	Long term results 11 years after primary gastric bypass in 384 patients	patient satisfaction after bariatric surgery  EBSCO host through Regis library	Reduced mean BMI of 12 points Diabetes went from 6.4% pre op to 3.5% post op OSA went from 3.7% pre to 2.0% post Hypertrig went from 44.6% pre to 16.7% post But hypercholesterol increased from 47.6 pre to 51.6 post Revisional surgeries in 2.1% 79% were	Retrospective survey	384 317 women 67 men Mean age 37.9 years Mean years post op 11.4	Large study and good response rate <i>Limited to Sweden at 2 hospitals</i> <i>Post op weight was self reported</i>

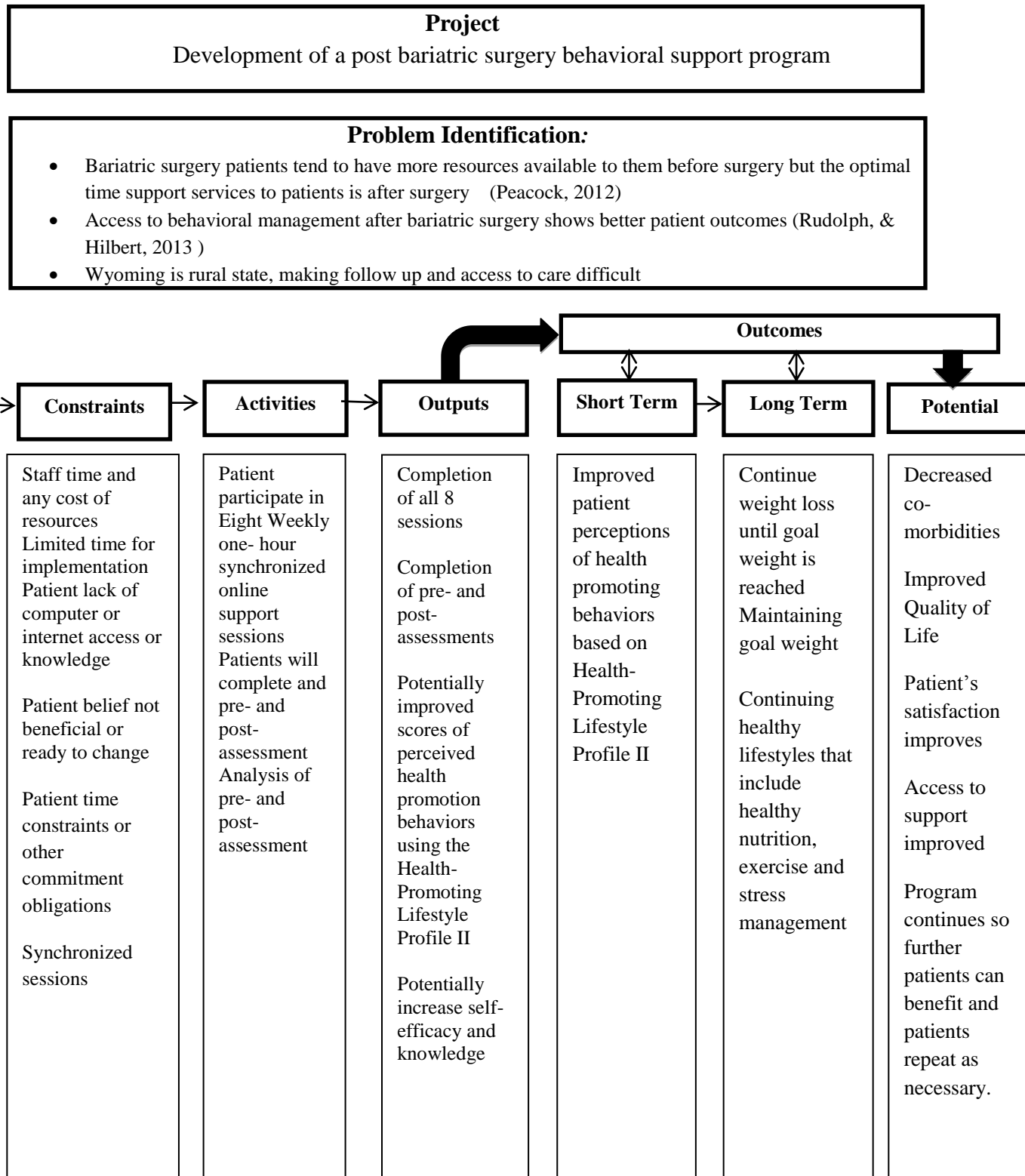
			<p>satisfied or very satisfied and depended on EBW lost</p> <p>Only 37.2% were following up at least annually</p> <p>Patients who had f/u within last year were more likely to take vitamins</p> <p>Long term weight loss about 63.3% EBW loss</p>			
<p>Sarwer, D. B., Moore, R. H., Spitzer, J. C., Wadden, T. A., Raper, S. E., Williams, N. N. 2012</p>	<p>A pilot study investigating the efficacy of postoperative dietary counseling to improve outcomes after bariatric surgery</p>	<p>ESBOT host</p>	<p>Intervention group lost more % weight loss at each interval in the short term but no difference long term</p> <p>But did not reach statistical significance</p>	<p>Randomized study with intervention group being assigned to 15 min RD sessions every other week for first 4 months</p> <p>Intervention group completed questionnaires before and at 2,4,6,12, 18, 24 months after surgery</p> <p>Eating</p>	<p>84</p> <p>53 women</p> <p>41 randomly assigned to intervention</p>	<p>Smaller sample size and % of returned questionnaires decreased over time intervals, long term had low f/u</p> <p>Found patients had difficulty f/u up appt. and had to change from face to face to phone visits</p> <p>Suggested maybe other forms of f/u may have been better like e-mail or web based to</p>

				inventory scale was used to evaluate		more easily reach patients, also questioned the timing of their intervention
Nakamura, T. & Mamary, E. 2013	A Qualitative Assessment of the My True Body Bariatric Surgery Preparation Program	support group for bariatric surgery EBSCO host through Regis library	Four primary themes emerged relating to MTB's influence on participants' perceptions about and confidence in healthy weight maintenance: (1) interpersonal support and shared experiences; (2) psychological transformations; (3) "MTB is not a diet, it's a lifestyle," with subthemes related to the program's focus on overall health, lack of deprivation, and sustainability; and (4) increased capacity for healthy weight maintenance through increased	Qualitative Telephone interviews  Selected participants from 2 different time frames In 2010 and in 2011	10 All female	Limitation of only female

			knowledge, reported Behavior modifications, and stress management.			
Sivagnanam, P. & Rhodes, M 2010	The importance of follow-up and distance from centre in weight loss after laparoscopic adjustable gastric banding	adjustable gastric band follow up	Significantly higher %EWL at 1 year for those attended 10 or more f/u appointments than those who attended 3 or fewer With increasing distance to center, patients attended fewer f/u clinics	Retrospective data review	150 137 females 13 males 87% live within 50 miles	Small % live outside 50 miles so may be hard to generalize

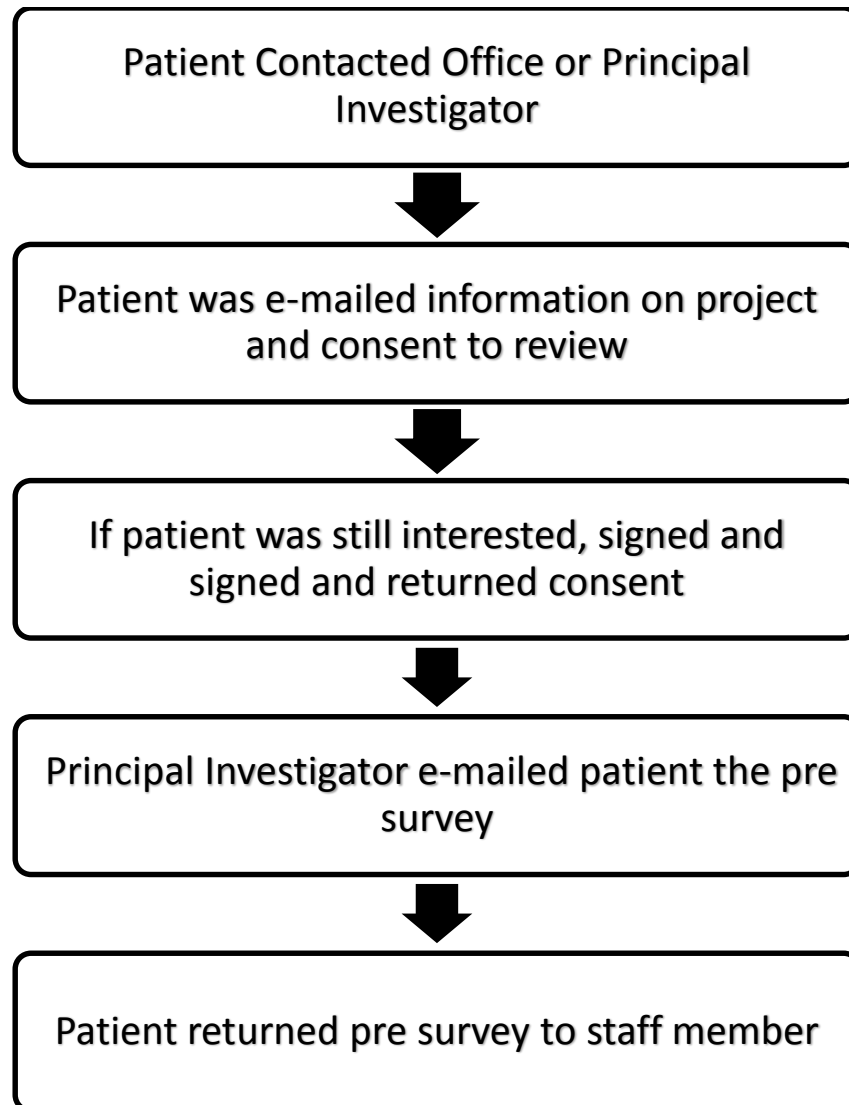
## Appendix B

## Logic Model

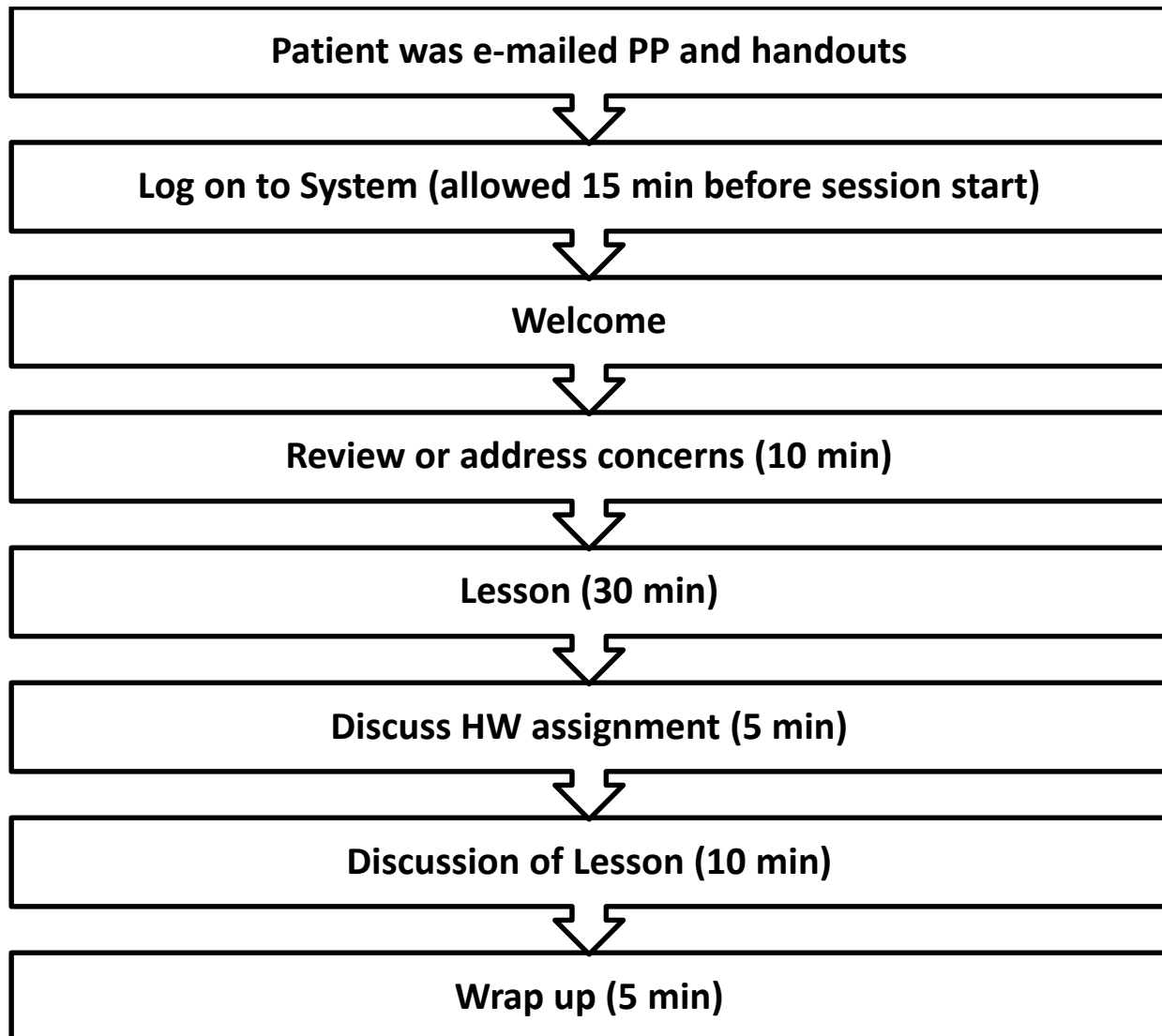




Appendix C  
Conceptual Diagrams



Conceptual Diagram of process for interested patients



Conceptual Diagram of Each Session

## Appendix D Survey Tool

### LIFESTYLE PROFILE II

**DIRECTIONS:** This questionnaire contains statements about your *present* way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the frequency with which you engage in each behavior by circling:

**N** for never, **S** for sometimes, **O** for often, or **R** for routinely

	NEVER	SOMETIMES	OFTEN	ROUTINELY
1. Discuss my problems and concerns with people close to me.	N	S	O	R
2. Choose a diet low in fat, saturated fat, and cholesterol.	N	S	O	R
3. Report any unusual signs or symptoms to a physician or other health professional.	N	S	O	R
4. Follow a planned exercise program.	N	S	O	R
5. Get enough sleep.	N	S	O	R
6. Feel I am growing and changing in positive ways.	N	S	O	R
7. Praise other people easily for their achievements.	N	S	O	R
8. Limit use of sugars and food containing sugar (sweets).	N	S	O	R
9. Read or watch TV programs about improving health.	N	S	O	R
10. Exercise vigorously for 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, using a stair climber).	N	S	O	R
11. Take some time for relaxation each day.	N	S	O	R
12. Believe that my life has purpose.	N	S	O	R
13. Maintain meaningful and fulfilling relationships with others.	N	S	O	R
14. Eat 6-11 servings of bread, cereal, rice and pasta each day.	N	S	O	R
15. Question health professionals in order to understand their instructions.	N	S	O	R
16. Take part in light to moderate physical activity (such as sustained walking 30-40 minutes 5 or more times a week).	N	S	O	R
17. Accept those things in my life which I can not change.	N	S	O	R
18. Look forward to the future.	N	S	O	R
19. Spend time with close friends.	N	S	O	R
20. Eat 2-4 servings of fruit each day.	N	S	O	R
21. Get a second opinion when I question my health care provider's advice.	N	S	O	R
22. Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling).	N	S	O	R
23. Concentrate on pleasant thoughts at bedtime.	N	S	O	R
24. Feel content and at peace with myself.	N	S	O	R
25. Find it easy to show concern, love and warmth to others.	N	S	O	R

	NEVER	SOMETIMES	OFTEN	ROUTINELY
26. Eat 3-5 servings of vegetables each day.	N	S	O	R
27. Discuss my health concerns with health professionals.	N	S	O	R
28. Do stretching exercises at least 3 times per week.	N	S	O	R
29. Use specific methods to control my stress.	N	S	O	R
30. Work toward long-term goals in my life.	N	S	O	R
31. Touch and am touched by people I care about.	N	S	O	R
32. Eat 2-3 servings of milk, yogurt or cheese each day.	N	S	O	R
33. Inspect my body at least monthly for physical changes/danger signs.	N	S	O	R
34. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking).	N	S	O	R
35. Balance time between work and play.	N	S	O	R
36. Find each day interesting and challenging.	N	S	O	R
37. Find ways to meet my needs for intimacy.	N	S	O	R
38. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day.	N	S	O	R
39. Ask for information from health professionals about how to take good care of myself.	N	S	O	R
40. Check my pulse rate when exercising.	N	S	O	R
41. Practice relaxation or meditation for 15-20 minutes daily.	N	S	O	R
42. Am aware of what is important to me in life.	N	S	O	R
43. Get support from a network of caring people.	N	S	O	R
44. Read labels to identify nutrients, fats, and sodium content in packaged food.	N	S	O	R
45. Attend educational programs on personal health care.	N	S	O	R
46. Reach my target heart rate when exercising.	N	S	O	R
47. Pace myself to prevent tiredness.	N	S	O	R
48. Feel connected with some force greater than myself.	N	S	O	R
49. Settle conflicts with others through discussion and compromise.	N	S	O	R
50. Eat breakfast.	N	S	O	R
51. Seek guidance or counseling when necessary.	N	S	O	R
52. Expose myself to new experiences and challenges.	N	S	O	R

## Appendix E

### Scoring Instructions for Survey

#### HEALTH-PROMOTING LIFESTYLE PROFILE II

##### Scoring Instructions

Items are scored as	Never (N)	=	1
	Sometimes (S)	=	2
	Often (O)	=	3
	Routinely (R)	=	4

A score for overall health-promoting lifestyle is obtained by calculating a mean of the individual's responses to all 52 items; six subscale scores are obtained similarly by calculating a mean of the responses to subscale items. The use of means rather than sums of scale items is recommended to retain the 1 to 4 metric of item responses and to allow meaningful comparisons of scores across subscales. The items included on each scale are as follows:

Health-Promoting Lifestyle	1 to 52
Health Responsibility	3, 9, 15, 21, 27, 33, 39, 45, 51
Physical Activity	4, 10, 16, 22, 28, 34, 40, 46
Nutrition	2, 8, 14, 20, 26, 32, 38, 44, 50
Spiritual Growth	6, 12, 18, 24, 30, 36, 42, 48, 52
Interpersonal Relations	1, 7, 13, 19, 25, 31, 37, 43, 49
Stress Management	5, 11, 17, 23, 29, 35, 41, 47

Appendix F  
Timeline of Project

<b>Step</b>	<b>Date</b>
Proposal Defense	October 2014
Proposal Acceptance	October 2014
IRB applications (CRMC, Regis)	October 2014
IRB approval	January 2015
Project Planning	February 2015
Project Implementation	March - April 2015
Data Analysis	May - June 2015
Capstone Defense	July 2015
Capstone Approval	August 2015
Final written submission to Regis Faculty and Library	August 2015
Publication	Fall 2015

Appendix G  
Budget

<b>Resources</b>	<b>Cost Estimate</b>
Tele-health equipment	\$500,000
Office Space w/ internet (8 days)	\$400
Computer with web camera	\$500
Misc. Supplies	\$100

<b>Staff</b>	<b>Cost Estimate</b>
Project Leader (NP) time ~ 200 hours	\$ 8,420
RD time ~ 6 hours	\$150
Psychologist time ~ 6 hours	\$ 400
Statistician ~ 20 hours	\$ 1000

<b>Total Projected Cost</b>	<b>\$ 510,970</b>
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## Appendix H

### IRB Approval Letters



November 4, 2014

Shala Swarm, NP  
Cheyenne Regional Medical Group Weight Loss Center  
421 E 17th Street  
Cheyenne, WY 82001

Re: (IRB# 14-450): "Post Bariatric Surgery Online Behavioral Support Program"

This is to inform you that New England Institutional Review Board (NEIRB), via Expedited Review (Thursday Board), has approved the above-referenced research protocol and the participation of the above-referenced investigative site in the research. The approval period is 11/4/2014 to 10/28/2015. **Your study number is 14-450. Please be sure to reference either this number or the name of the principal investigator in any correspondence with NEIRB.**

Continued approval is conditional upon your compliance with the following requirements:

- A copy of the **Informed Consent Document**, NEIRB Version 1.0, approved on 11/4/2014 is enclosed. Only NEIRB-approved informed consent documents should be used. It must be signed by each subject prior to initiation of any protocol procedures. In addition, each subject must be given a copy of the signed consent form.
- The following must be promptly reported to NEIRB: changes to the study site, and all unanticipated problems that may involve risks or affect the safety or welfare of subjects or others, or that may affect the integrity of the research.
- Approval is valid for enrollment of the number of subjects indicated on your submission form. If you anticipate enrolling more than this number of subjects, NEIRB approval must be obtained prior to exceeding the approved enrollment number.
- All protocol amendments and changes to approved research must be submitted to the IRB and not be implemented until approved by the IRB except where necessary to eliminate apparent immediate hazards to the study subjects.
- Compliance with all federal and state laws pertaining to this research, and with NEIRB's SOPs.
- The enclosed subject materials (Lifestyle Profile II and Flyer) have been approved. Advertisements, letters, internet postings and any other media for subject recruitment must be submitted to NEIRB and approved prior to use. Please refer to *NEIRB Guidelines for Recruitment and Advertising*, available at [www.neirb.com](http://www.neirb.com).
- All deaths, life-threatening problems or serious or unexpected adverse events, *whether related to the study article or not*, must be reported to the IRB. The Serious Adverse Event Form is available at [www.neirb.com](http://www.neirb.com).
- Any and all necessary FDA approvals must be received prior to your initiation of the trial. If this study is being conducted under an IDE, a copy of the FDA IDE approval letter must be submitted to NEIRB.
- The study cannot continue after 10/28/2015 until re-approved by NEIRB. A Study Renewal Report must be completed and returned to NEIRB prior to the expiration of the approval period.







- When the study is completed, terminated, or if it is not being renewed - complete and submit a Study Completion Report to NEIRB. The Study Completion Report can be accessed via the NEIRB website at [www.neirb.com](http://www.neirb.com).

*Katie Goldberg*

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Katie Goldberg, CIP, CIM  
Senior Administrator

Copy:  
NEIRB Chair  
Enclosures





**REGIS UNIVERSITY**  
OFFICE OF ACADEMIC GRANTS

IRB – REGIS UNIVERSITY

January 31, 2015

Shala Swarm  
2018 Meadow Dr  
Cheyenne, WY 82001

**RE: IRB #: 15-053**

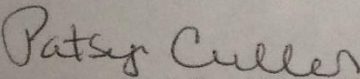
Dear Ms. Swarm:

Your application to the Regis IRB for your project, “Post Bariatric Surgery Online Behavioral Support Program,” was approved as an expedited study on January 31, 2015. It is approved per OHRP Category of Research #7.

If changes are made in the research plan that significantly alter the involvement of human subjects from that which was approved in the named application, the new research plan must be resubmitted to the Regis IRB for approval. Projects which continue beyond one year from their starting date require IRB continuation review. The continuation should be requested 30 days prior to the one year anniversary date of the approved project's start date. A completion report of the findings of this study should be sent to the IRB.

In addition, it is the responsibility of the principal investigator to promptly report to the IRB any injuries to human subjects and/or any unanticipated problems within the scope of the approved research which may pose risks to human subjects. Lastly, a final report should be submitted at completion of the project and it is the responsibility of the investigator to maintain signed consent documents for a period of three years after the conclusion of the research.

Sincerely,

  
Patsy McGuire Cullen, PhD, CPNP-PC  
Chair, Institutional Review Board  
Professor & Director  
Doctor of Nursing Practice & Nurse Practitioner Programs  
Loretto Heights School of Nursing  
Regis University

Cc: Dr. Lynn Wimet

Appendix I  
CITI Certification

**COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)**  
**HUMAN RESEARCH CURRICULUM COMPLETION REPORT**  
Printed on 06/01/2014

**LEARNER** Shala Swarm (ID: 4187436)  
**DEPARTMENT** nursing - DNP program  
**EMAIL** sswarm@regis.edu  
**INSTITUTION** Regis University  
**EXPIRATION DATE** 05/31/2017

**SOCIAL BEHAVIORAL RESEARCH INVESTIGATORS AND KEY PERSONNEL**

**COURSE/STAGE:** Basic Course/1  
**PASSED ON:** 06/01/2014  
**REFERENCE ID:** 13122916

REQUIRED MODULES	DATE COMPLETED
Introduction	06/01/14
History and Ethical Principles - SBE	06/01/14
The Regulations - SBE	06/01/14
Assessing Risk - SBE	06/01/14
Informed Consent - SBE	06/01/14
Privacy and Confidentiality - SBE	06/01/14
Regis University	06/01/14

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI Program participating institution or be a paid Independent Learner. Falsified information and unauthorized use of the CITI Program course site is unethical, and may be considered research misconduct by your institution.

Paul Braunschweiger Ph.D.  
Professor, University of Miami  
Director Office of Research Education  
CITI Program Course Coordinator



Appendix J  
Letters of Support



Cheyenne Regional  
Medical Center

214 E. 23<sup>rd</sup> Street • Cheyenne, WY 82001 • (307) 634-2273 • [cheyenneregional.org](http://cheyenneregional.org)

Institutional Review Board, Regis University  
Main Hall, Room 452, Mail Code H4  
Denver, CO 80221  
Email: [irb@regis.edu](mailto:irb@regis.edu)

Re: Shala D. Swarm, FNP-C

January 8, 2015

To whom it may concern:

As the Chief Compliance and Privacy Officer this letter is to serve as notice that Cheyenne Regional Medical Center supports the project proposed by Shala D. Swarm, FNP-C, entitled "Post-Bariatric Surgery Online Behavioral Support Program". Cheyenne Regional is pleased to support Ms. Swarm in her academic endeavors and we anticipate the results of her research.

For this study, Cheyenne Regional understands that Ms. Swarm will study an online post bariatric surgery behavioral support program increases the participants' thoughts that they can continue with the health behaviors discussed during the online program. This project has been approved by our outside Institutional Review Board, New England IRB. We anticipate that if the scope of the study is to change that Ms. Swarm will notify Cheyenne Regional in advance of the change to determine if additional institutional safe guards need to be followed.

If you have any additional questions or concerns, please me at (307) 432-6624 or [aimee.dendrinis@crmcwy.org](mailto:aimee.dendrinis@crmcwy.org)

Thank you,

Aimee Dendrinis  
Chief Compliance and Privacy Officer

## Health-Promoting Lifestyle Profile II



Inbox x

**Shala Swarm** <sswarm@gmail.com>

Oct 5 ☆



to swalker ▾

Dr. Susan Walker,

I am a DNP student at Regis University. I currently work as a nurse practitioner in a bariatric clinic in Cheyenne, WY. My capstone project is an implementation of an online post bariatric surgery behavioral support program. I will be using a tele-health program to complete my project. My hope is to provide another form of support that is easily accessible to rural patients. I plan to do a pre-test / post-test design. I am looking at using the Health-Promoting Lifestyle Profile II as my assessment tool. In my search, I found you as the author / developer. How may I obtain permission to use this tool or do you have any other suggestions of tools for my study. I appreciate your time and consideration.

Thank you,

\*\*\*

**Walker, Susan Noble** <swalker@unmc.edu>

Oct 6 ☆



to me ▾

Hello, Shala

You are welcome to use the HPLPII for your research project. If it is to be completed online, please insure that only your registered participants can access it.

Best wishes,  
Susan

Walker, Susan Noble

Add to circles

[Show details](#)

Appendix K  
Program Outline

Week / Lesson	Topic	Outline	Assignment/Handout
1	<b>12 stages of Weight Loss Surgery (Katie Jay)</b>	Go through 12 stages with brief description of each <i>Katie Jay book</i>	Have patients journal what stages they feel like they are in now and why Have them reflect if they have been in all stages at some point or another
2	<b>Ready for Change Setting Goals</b>	Review “rules” after surgery TTM – 5 stages of change Lewin’s stages of change Bandura “belief” of change ?Grieving stages Basic needs met <i>Coaching stuff</i>	Develop a SMART goal Use “readiness for change handout” from coaching stuff
3	<b>Emotional Eating CBT</b>	<i>Normal eating book</i>	Handouts from Normal Eating book
4	<b>Level of Hunger Mindless Eating</b>	<i>M. May “Am I hungry” stuff</i> or her book (more “assessment”)	Am I hungry handout
5	<b>Developing Coping Strategies</b>	(developing action plans) Stress management and relaxation Self-care	Journal – risks/benefits of changing Fun, Non-Food Activities Taking a time out Taming Craving and binges
6	<b>Healthy Thoughts</b>	H.A.L.T. strategy from coaching stuff (more action planning) Positive affirmations	Self permission / self denial handout from coaching stuff Healthy Self-Talk Legalizing all foods ? Healthy self-talk Journal ?
7	<b>Triggers Challenging Situations</b>	(Adjustments to change process) Body image Relationships Assertiveness and self-	? dear me letter ? Feeling Better about your body today If I were thinner . . .

		esteem	
8	<b>Keys to Success (Recap)</b> <b>Ongoing Support / Maintaining Behaviors Evaluations</b>	Review all week Provide resources Provide plan to keep going Review importance of exercise and nutritional information Accountability	Look at resources Tips for weight and eating management What is a non-diet approach