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BARIATRIC SURGERY WEIGHT-LOSS MAINTENANCE AMONG HISPANICS: A MULTIPLE CASE STUDY

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BARIATRIC SURGERY WEIGHT-LOSS MAINTENANCE AMONG HISPANICS:

A MULTIPLE CASE STUDY

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Abstract

BARIATRIC SURGERY WEIGHT-LOSS MAINTENANCE AMONG HISPANICS: A MULTIPLE CASE STUDY

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Obesity significantly contributes to human illness and to subsequent rising healthcare expenditures. Bariatric surgery has been identified as the only effective option to achieve the weight loss necessary for those who are morbidly obese. Previous research indicated that maintaining significant weight loss has been a problem for individuals who undergo bariatric surgery. The number of bariatric surgeries is increasing and factors that contribute to or interfere following bariatric-surgery weight-loss maintenance need to be determined. Research on weight-loss maintenance following bariatric surgery is very limited, particularly among the Hispanic population.

This case-study research used an explanatory, multiple-case-study design to gain greater insight into how some individuals have been more successful in maintaining weight loss while others have been less successful. These explanations may be able to address deficits in the healthcare system or in a person's personal life that could be addressed to promote future success for persons having bariatric surgery. With better outcomes following bariatric surgery, positive impacts could be facilitated regarding cost

effectiveness of care and overall health and well-being of individuals who have had bariatric surgery for weight loss.

Keywords: bariatric surgery, excess body weight (EBW), percent excess weight loss, percent excess weight loss maintenance, lifestyle changes

Chapter 1

Overview of the Research

Obesity is considered an epidemic and a public health problem in the United States. Obesity rates are expected to rise 50% by the year 2030. Bariatric surgery (BS) is recommended for persons with a body-mass index (BMI) of > 40 or for persons who are more than 100 pounds overweight. BS is also recommended for persons who have a BMI of > 35 and at least two obesity-related co-morbidities such Type 2 diabetes mellitus and hypertension (Flegal, Carroll, Kit, & Ogden, 2012; Flegal, Carroll, Ogden, & Curtin, 2010; Oliver, 2006; Shields, Carroll, & Ogden, 2011; Wang, McPherson, Marsh, Gortmaker, & Brown, 2011).

Obesity, once considered a problem in high-income countries, has become prevalent in middle- and low-income countries. Worldwide, more than 10% of the population is obese (World Health Organization [WHO], 2014). WHO estimates that 1.4 billion men and women over the age of 20 are overweight (WHO, 2014). Obesity is considered a chronic illness and a public health problem because it significantly contributes to health disorders (Bastos, Barbosa, Soriano, dos Santos, & Vasconcelos, 2013; Cawley & Meyerhoefer, 2012; Centers for Disease Control and Prevention, 2015; Oliver, 2006; Wang et al., 2011). Common consequences of obesity include heart disease, stroke, diabetes, musculoskeletal disorders, and some cancers (WHO, 2014). Obesity interferes with quality of life and can lead to disability at a younger age, in contrast to individuals who are not obese. In addition to a higher mortality rate, obesity

results in greater work absenteeism, earlier retirement, and the need for assisted-living resources (Bastos et al., 2013; Stewart, Olbrisch, & Bean, 2010).

Treatment of obesity-related diseases contributes to rising healthcare expenditures. In 2006 increased medical expenses of up to $40 billion were linked to the increased prevalence of obesity. In 2006 the per capita spending by those classified as obese was 42% greater relative to spending on people of normal weight (Alverdy et al., 2009; Finkelstein, Trogdon, Cohen, & Dietz, 2009; Jia & Lubetkin, 2005; Wang et al., 2011). BS is the most effective treatment for significant weight loss of up to 80% of excess body weight (EBW) and long-term weight control (Buchwald et al., 2009; Chang, Stoll, & Colditz, 2011; Livhits et al., 2010; Maggard et al., 2005; Padwall et al., 2011; Sjöström, 2008). BS has made it possible for patients to lose 60–70% of EBW within a period of 18–24 months (Adams et al., 2007; Bastos et al., 2013; Chang et al., 2014; Jakicic, 2009). The dramatic weight loss has led to improvement or total resolution of co-morbidities linked to obesity (Bastos et al., 2013; Buchwald et al., 2009; Picot et al., 2009; Sjöström et al., 2007; Stewart et al., 2010).

Although BS contributes to significant weight loss and to the reduction of co-morbidities, researchers have questioned the long-term durability of the weight loss (Gariepy, Nitka, & Schmitz, 2010; Jakicic & Otto, 2006; Ogden, Avenell, & Ellis, 201l; Whiteside et al., 2007). On average, 30% of patients, following BS, face weight regain within a post-surgery period of 18 months to 5 years. Compliance with strict post-surgery guidelines is a struggle for some people who have had BS. Lack of compliance often leads patients to return to their pre-surgery eating habits and the co-morbidities that were

resolved with the weight loss, as the person regains weight (Bastos et al., 2013; Christou, Look, & Maclean, 2006; Magro et al., 2008; Odom et al., 2010; Stewart et al., 2010).

The current research took place in south Texas where the population is predominantly Hispanic. As of July, 2013, the U.S. Census Bureau (2010b) estimated that approximately 54 million or 17% of the U.S. population were Hispanics; in Texas, the Hispanic population comprises 38.6%. By 2060 the Hispanic population will represent approximately 31% of the U.S. population (U.S. Census Bureau, 2010b). Of Hispanic subgroups, Mexicans represented about 64% of the total in 2012. Between 2002 and 2007, health disparities among the Hispanic population reflected a higher prevalence of obesity among female Mexican American adults than among White and non-Hispanic female adults (U.S. Census Bureau, 2010a).

BSs are on the rise (Colwell, 2005; Earvalino-Ramirez, 2008; Kruger, Pricolo, Streeter, Colacchio, & Andrade, 2014; Mehaffey et al., 2015; Patterson, Peoples, & Gesten, 2015). As the number of BSs continues to rise, associated problems also continue to rise, particularly weight-loss maintenance. Factors that contribute to the ability and inability to maintain post-BS weight-loss need to be further explored, especially in the understudied Hispanic population.

Purpose of the Study

The purpose of this research study was to address the scientific gap regarding weight-loss maintenance following BS in the Hispanic population in south Texas by explaining how and why some patients are more successful and others are less successful. The target population included two different Hispanic groups of Mexican descent, without regard to generation in the United States. One group was more successful in

maintaining weight loss following BS for 2 or more years, and a second group was less successful in maintaining weight loss for 2 or more years. Weight regain starts from 1 to 2 years following BS (Bastos et al., 2013; Engström and Forsberg, 201l; Pajecki et al., 2013; Sarzynski et al., 2011; Sjöström et al., 2007). Results of this study can shed light on ways to facilitate more successful outcomes in persons who have undergone BS for obesity.

Introduction of Articles

The first manuscript, "Post-Surgery Support and the Long-Term Success of Bariatric Surgery," an integrative review of the literature examining sources of support that contribute to BS weight-loss maintenance, was published in the peer-reviewed journal, *Practice Nursing.* This article serves as a foundation for the research case study "Bariatric Surgery Weight-Loss Maintenance Among Hispanics: A Multiple Case Study." An e-mail confirming acceptance of the first manuscript for publication appears in Appendix A. The journal, *Practice Nursing,* is published by MA Healthcare Ltd. St. Jude's Church, Dulwich Road, London SE24 OPB. The journal *Practice Nursing* provides updates for nurses and managers by offering clinical reviews, clinical supplements, and educational articles, as well as the more practical clinics and travel health clinics.

The second manuscript, titled, "Bariatric Surgery Weight-Loss Maintenance Among Hispanics: A Multiple Case Study" is a report of a multiple, explanatory case study. Study findings represent 12 interviews with people who have had BS who were 2 or more years post-surgery. It presents six themes that illustrate participants' perceptions of factors that facilitate and obstacles mitigating against success with long-term excess

weight-loss maintenance. Details of these themes include examples of quoted exemplars from participants, listed in Appendices B and C.

Chapter 2

Post-Surgery Support and the Long-Term Success of Bariatric Surgery: An Integrative Literature Review

Abstract

Obesity was perceived as a symbol of wealth, power and health in times of food shortages, but now, in a time of abundance, it is a serious public health concern and is responsible for a number of diseases and deaths. As obesity becomes more prevalent, feasible solutions for weight loss and weight loss maintenance are urgently needed. Surgical interventions such as bariatric surgery have resulted in significant weight loss and the resolution of various co-morbidities. Long-term weight loss maintenance can be challenging, and the success of post-bariatric surgery requires significant lifestyle changes, which can be difficult to make without educational and emotional support. The studies described in this review look at the effect of different types of support, such as nutrition support, cognitive behavioral therapy, motivational support, family support, dietary education and support for depression; the studies show a significant correlation between the support of family members and attendance of support groups, and greater weight loss and improved weight loss maintenance.

Key Words: Bariatric surgery, Life style changes, Support Groups, Excess Weight Loss (EWL), Body Mass Index (BMI), Excess Body Weight (EBW)

Post-Surgery Support and the Long-Term Success of Bariatric Surgery

Technological advances have contributed to an abundance of food, compared with the chronic food shortages before the 18th century. During these times, obesity was associated with wealth, health and power. Initially, increases in food supply, along with improvements in quality and variety, contributed to better health and increased lifespan; however, more recently this abundant and easily accessible food supply, coupled with a decrease in physical activity, has had a negative impact on health. By the latter part of the 19th century, obesity was associated with unattractiveness, and by the 20th century, it was identified as a health problem associated with a number of co-morbidities and increased mortality (Moshiri et al., 2013). Many treatments have been suggested for the alleviation of obesity, such as 'jaw wiring' (to enforce a reduction in food intake) (Moshiri et al., 2013) and 'drug therapy', but, on withdrawal, results in a 100% regain of the weight lost. Al Harakeh, Burkhamer, Kallies, Mathiason, and Kothari (2010) stated that surgical therapy is the only long-term solution to weight loss, and according to Livhits et al. (2011) bariatric surgery (gastric bands and bypasses) has proven to be a highly effective treatment with significant weight losses—losses much greater than those typically seen with more traditional methods of behavior modification and drug therapy. Obesity is a lifelong struggle, and although bariatric surgery has shown much promise, it is not a 'magic bullet'. Many patients have experienced post-operative weight regain for a number of reasons, ranging from lack of motivation and confidence, to difficulty in coping with food cravings. It is hypothesized that support after bariatric surgery can improve weight loss and weight loss maintenance (Stewart et al., 2010). This article

reviews various post-bariatric support studies that found a significant positive relationship between support and greater excess weight loss (EWL).

Purpose

This integrative review was completed in order to summarize the evidence on sources of support that contribute to long-term weight loss maintenance for post-bariatric surgery individuals. The purpose of this paper was to review the relationships among support group attendance, dietary counseling, cognitive behavioral therapy and motivational support, family support, dietary education support, and support for depressive symptoms and long-term weight loss maintenance among individuals who have had bariatric surgery.

Methods

Relevant studies (published between 2008 and 2013) evaluating the impact of support on post-surgery patients were identified using MEDLINE and CINAHL. Search terms included: 'bariatric surgery', 'post-bariatric surgery', 'post-bariatric surgery support', 'post bariatric surgery and social support', 'post-bariatric surgery and family support' and 'post-bariatric surgery and support groups'. All studies included in this review were conducted in the United States. The articles were screened based on their full text. The articles selected were published in the English language and presented research of various methods of post-bariatric surgery support. Polit and Beck's (2012) guidelines for critique were used to review the articles along with their evidence hierarchy, which is appropriate for questions about the effects of clinical interventions. The purpose of this review was to identify the evidence-based research currently available.

Results

Support-Group Attendance

A retrospective study by Song et al. (2008) obtained data for 78 patients who had Roux-en-y surgery. The patients completed a required 6-month counseling program before surgery. Post-surgery, 28 patients (aged 42 ±8.74 years) attended more than five monthly support group sessions, and were compared to 50 patients (aged 42 ± 9.66 years) who attended less than five sessions. The sessions were peer support meetings and the discussions were led by patients, who brought up topics of interest. A surgeon, a nurse practitioner and a nutritionist served as support group leaders.

Data were collected for the first 12 months after surgery. The percentages of excess weight loss were measured at 2 weeks, 6 weeks, 3 months, 6 months, 9 months, and 12 months after surgery. There were significant differences in weight losses between the two groups at 9 and 12 months, with $P < 0.05$. The group attending more than five sessions lost significantly more weight (53.6% EWL at 9 months, and 55.5% at 12 months) compared with the group that attended less than five sessions (45.2% EWL at 9 months, and 47.1% at 12 months). The differences at the earlier points of measure were not significant.

A similar retrospective study by Kaiser et al. (2011) examined a private practice's records for gastric banding patients, of which 102 were found. The investigation aimed to determine if there is a positive correlation between the number of support group sessions attended and the percent excess weight loss of gastric banding patients. A licensed professional counselor and a licensed clinical psychologist alternated as group leader. The meetings' attendees were both pre-operative and post-operative patients, although

most (>95%) were the latter. The meetings acted as an open forum where patients shared surgery-related issues. In this study, the dependent variable was post-operative weight one year after surgery, while the independent variables were support group attendance, age and baseline body mass index (BMI). The use of simple regression analysis resulted in a significant linear, positive relationship between those attending more support group sessions and greater EWL (adjusted R2=0.061; *P*=0.007). Adding age (adjusted R2=0.100; *P*=0.002) and baseline BMI (adjusted R2=0.072; *P*=0.011) altered the results. Support group attendance and age were the only two independent variables

Dietary Counseling

Endevelt et al. (2013) conducted a retrospective study utilizing a sample of 1680 post-bariatric surgery patients (with females representing more than two thirds of the sample) to determine whether diet adherence, along with structured dietary counseling with a dietitian, contributed to weight reduction. The weight reduction was measured in BMI units. Participants had undergone various types of gastric surgery, including laparoscopic adjustable gastric banding (LAGB, 64.11%), sleeve gastrectomy (25.1%); bypass operation (9.05%) and vertical band gastroplasty (VBGO, 1.67%). The attendance at two or more dietary sessions was considered significant. The findings indicated that patients who had ‘significant attendance’ had significantly greater reductions in BMI (>5%). Adjusting for age, gender, number of other expert counseling sessions attended (other than with the dietician), additional surgery, type of surgery; and time interval between BMI measurements, a significant and independent association was found between two or more dietary counseling sessions and weight loss (95% CI; OR=1.56, 1.02–2.38; *P*=0.04).

Cognitive-Behavioral Therapy and Motivational Support

Stewart et al. (2010) conducted an 8-week pilot study which comprised ‘cognitive behavioral therapy and motivational interviewing’, intended to target participant-specific needs. Patients were required to be at least 18 months post-bariatric surgery to participate in this study. The researchers recruited 14 female post-Roux-en-y surgery patients and divided them into two cohorts consisting of seven participants each. Researchers proposed that small groups would be most helpful in targeting long-term specific problems related to weight loss maintenance. During the 8-week study, the groups set specific and realistic goals, undertook motivational interviews and discussed challenging situations and experiences, such as emotional eating. Participants of the study attended eight 90-minute sessions, once a week, which were led by doctoral psychology students and a clinical psychologist.

Participants were ranked before and after the study on a scale of 1–10, with ‘1’ being completely ‘off-track’ to ‘10’ being completely ‘on-track’. Before participation, the average rank was 2, and after the study, the average was 7. Six of the participants reported an average weight loss of 1.8 kg (4 lb) (ranging from 1.8–2.7 kg (4–6 lb), and at least one specific behavioral change that contributed to their weight loss. Participants rated peer support as one of the most valuable components of the group. The weight lost by participants in this 8-week study does not seem important relative to other studies; however, according to other studies, weight loss starts to level off at 6 months, and the participants in this study were in their 18th month after surgery.

Table 1

Baseline Characteristics of Studies Included in the Review

Author (year)	Category	Study design	Type of surgery	Number of patients	Mean age (years)
Song et al. (2008)	Support group	Retrospective	Roux-en-Y	78	Group attending > 5 sessions: 42 ± 8.74 Group attending < 5 sessions: 42 ± 9.66
Kaiser et al. (2011)	Support group	Retrospective	Gastric banding	102	45.6 ± 11.3
Steward et al. (2010)	Support group	Prospective	Roux-en-Y	14	32–67
Slotman et al. (2011)	Family support	Retrospective	Roux-en-Y	182	40 (range: 18–59) 41 (range: 19–61)
Nijamkin et al. (2012)	Dietary educational support	Prospective	Roux-en-Y	144	44.5 ± 13.5
Nijamkin et al. (2013)	Support for depressive symptoms	Prospective	Roux-en-Y	144	Intervention group: 44.2 ± 12.6 No intervention group: 44.8 ± 14.4
Endevelt et al. (2013)	Dietary support	Retrospective	LAGB: 64.11% VBGO: 1.67% sleeve gastrectomy: 25.1% by-pass operation: 9.05%	1680	4.23 ± 10.6

Note. LAGB: laparoscopic adjustable gastric banding; VBGO: vertical band gastroplasty

Table 2

Association Between Support Groups and Postoperative Weight Loss

Author (year)	Time of follow-up	Groups	Weight loss at follow-up	Units of weight loss	Results
Song et al. (2008)	9 and 12 months 9 and 12 months	> 5 sessions < 5 sessions	53.6%; 55.5% 45.2%; 47.1%	%EWL	Significant difference in weight loss between the two groups at 9 and 12 months
Kaiser et al. (2011)	12 months	More attendances Fewer attendances	41.8% (*SD* 25.7%) < 41.8%	%EWL	Significant linear relationship between greater attendance and %EWL
Stewart et al (2010)	8 weeks	2 cohorts	1.8–2.7 kg (4–6 lb)	kg (lb)	6 members reported an average weight loss of 1.8 kg (4 lb), and rated peer support as the most valuable component
Slotman et al. (2011)	6 months 12 months 6 months 12 months	With relatives Without relatives	58% ± 18% 76% ± 18% 49% ± 15% 62% ± 19%	%EWL, BMI	At 12 months, BMI was significantly lower in the study group than the control group. 45% of study group lost 80% EWL vs. 19% of the control group. %EWL was greatest among siblings
Nijamkin et al. (2012)	12 months	Comprehensive education Minimal education	79.60% ±15.48% 63.76% ± 14.24%	%EWL	Comprehensive group lost 80% EWL vs. 64% in the minimal group. Comprehensive group had greater BMI reduction
Nijamkin et al. (2013)	12 months	Intervention No intervention	80% 64%	%EWL	Depressive symptoms reduced in intervention group. EBW and changes in depression scores were significant and positively correlated
Endevelt et al. (2013)	48 months	> 2 sessions < 2 sessions	At least 5% < 5%	BMI	Those that attended > 2 sessions had a BMI reduction of at least 5%. Those that attended < 2 had a BMI reduction of < 5%

Note. BMI: body mass index; %EBW: percentage of excess body weight; %EWL: percentage of excess weight loss

Family Support

Slotman (2011) conducted a retrospective study based on records from his own practice. He selected the records of 91 patients who had undergone bariatric surgery but who also had family members who had undergone the surgery. These patients were paired with a control group of 91 patients who had undergone bariatric surgery but who did not have family members who had also undergone the surgery.

The relationships between the test group participants and their family members varied, e.g. siblings, husband and wife, grandmother and granddaughter. Some family members lived together while others lived apart. It was hypothesized that patients and their family members who were also surgery patients would support each other, positively contributing to long-term success.

The demographic data for all participants (those in the study group and those in the control group were very similar. The groups were compared in terms of 'safety, outcomes, BMI, %EWL, and post-operative office follow-up'. The results of the study indicated that the test group had a significantly lower BMI at one year post-surgery (from 49 ± 8 kg/m2 pre-operatively, to 31 ± 7 kg/m2) than the control group (from 49 ± 9 kg/m2 preoperatively, to 35 ± 8 kg/m2; $P<0.05$). Loss of excess weight was greater than 80% in 45% of the test group, compared with 19% of the control group ($P<0.001$). The test group had a higher percentage of co-morbidity resolution. This group also attended significantly more follow-up sessions than the control group ($P<0.01$).

Dietary-Education Support

Socioeconomic and cultural factors can greatly influence individuals' dietary and physical activity levels. These factors can contribute to poor success of post-surgery

weight loss. Nijamkin et al. (2012) conducted a prospective, randomized study with 144 Hispanic American post-bariatric surgery patients, with a mean age of 44.5 ± 13.5 years, of whom 83.3% were female. The patients were divided into two groups of 72, which were not significantly different in terms of demographic characteristics. The test group was provided comprehensive educational support in nutrition and exercise; the control group was given minimal support, but they were given printed guidelines of healthy eating and physical activity. Sessions for the intervention group started at 7 months post-surgery. The nutritional session emphasized dietary changes that participants were required to make, and science-based dietary guidelines were used to recommend meal plans. The sessions also recommended a regular exercise program and strategies for dealing with problems such as low self-esteem, binge eating and lack of motivation.

EWL and changes in physical activity were the main variables measured. From 6–12 months after surgery, the intervention group significantly increased the amount of time they spent exercising ($P=0.019$) and the intensity of the exercise increased ($P<0.001$); the control group did not significantly change their exercise behavior ($P<0.005$). The intervention group achieved significantly greater excess weight loss levels, with an average of 80% EWL, as compared with the control group's average of 64% EWL. The average BMI of the intervention group declined by 6.48 ± 4.37 kg/m2, compared with the control group, whose average fell by 3.63 ± 3.41 kg/m2.

Support for Depressive Symptoms

Depression is prevalent among bariatric surgery patients, and Nijamkin et al. (2013) have found a positive relationship between depressive mood and obesity. Some findings indicate that bariatric surgery patients who have been depressed before and after

the surgery tend to lose less excess body weight (EBW). The authors hypothesized that a comprehensive behavioral-motivational intervention would reduce depressive moods and contribute to greater losses of EBW.

Nijamkin et al. (2013) conducted a randomized, controlled, two-phase clinical trial with two groups of Hispanic American post-bariatric surgery patients using an equal number of participants in each group. The participants had a mean age of 44.2 ± 12.6 years, and 62% were female. In phase I, 307 patients took part, and after a 6-month period, phase II divided 144 participants into two groups of 72. One group continued receiving standard care while the other group received specialized and comprehensive behavioral motivational interventions. At a follow-up 12 months after surgery, the intervention group reported a significant reduction in depressive symptoms, relative to the group who had received standard care ($P<0.001$). The intervention group had lost 80% of their preoperative EBW, compared with the control group who lost 64% ($P<0.001$).

The study found that EBW loss and changes in Beck's Depression Inventory (BDI) scores were positively and significantly correlated. The study also found a significant positive relationship between the improvement of the intervention's group depressive mood and the amount of excess weight they lost, and their attendance of the support group.

Discussion

The typical bariatric surgery patient has already encountered pre-surgery stigma relating to obesity—their weight may have been considered unattractive and self-imposed (Alverdy et al., 2009). Patients face more difficulty after surgery, when they are required

to make dramatic lifestyle changes. As Sarvey (2009) suggests, fostering resilience in post-surgery patients may be the key to the acceptance of changes in their lives, and support groups may be a way of achieving this. The need for post-surgery support has risen as more patients turn to bariatric surgery for weight loss. Whether provider-led or patient led, highly structured or free-flowing, support groups are integral to the success of post-bariatric surgery weight loss, weight loss maintenance, and the management of postoperative problems. Numerous groups have been developed to support the growing number of bariatric surgery patients, from peer support groups and groups run by the surgery providers, to groups providing psychiatric and nutritional support. The studies reviewed in this article show that these kinds of support are positively associated with greater weight loss and some resolution of post-surgery problems such as lifestyle changes and depression.

Conclusions

All studies reviewed for this article report that the majority of support group participants were female. It is possible that more women are undergoing bariatric surgery, or that men are less inclined to attend post-operative support group sessions, but additional studies including male participants are necessary. To maintain the early success of bariatric surgery, obesity should be treated in the long-term, as in other chronic diseases such as hypertension or diabetes. Post-surgery patients should continue to make regular visits with their physicians and receive continued support.

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Chapter 3

Bariatric Surgery Weight Loss Maintenance Among Hispanics: A Multiple Case Study

Abstract

Problem: Bariatric surgery (BS) has been identified as the only effective option for significant weight loss. Maintaining significant weight loss has been a problem for many individuals. Research regarding weight-loss maintenance following BS is limited, particularly in the Hispanic population.

Objectives: The objective of this study was to address why some people are more successful and others are less successful in maintaining weight loss following BS. This information provides insight for future testing of interventions in the Hispanic population.

Propositions: Propositions identified for this study included that some people achieved more success with weight-loss maintenance following BS with social support, nutritional, psychological, and lifestyle counseling; exercise/physical activity; preoperative weight loss; practicing religiosity and spirituality; and other factors. Some people were less successful in maintaining postsurgical weight loss because of lack of support, eating disorders, lack of exercise/physical activity, psychiatric/psychosocial problems, and other factors.

Methods: This research used an explanatory, multiple-case-study design to answer two research questions. The units of analysis for this study were two groups of six who were 2 years or more post-BS. Six participants were recruited via Facebook using a

recruitment flyer (see Appendix E). Snowball sampling assisted in the recruitment of another six participants.

Findings: Four themes represented the more successful group, life is better, support: can't do this without you, transitioning to a new lifestyle, and accountability. Two themes represented the less successful group, retraining the mind is a must and resisting the Hispanic/Mexican American cultural food and eating traditions.

Keywords: bariatric surgery, percent excess weight loss (%EWL), support, lifestyle changes

Bariatric Surgery Weight Loss Maintenance Among Hispanics: A Multiple Case Study

Obesity is a growing public health problem in the United States. Projections indicate obesity rates are expected to rise 50% by the year 2030 (Flegal, Carroll, Kit, & Ogden, 2012). Categories related to obesity include severely obese (body-mass index [BMI] of $\geq$ 35), obese (BMI $\geq$ 30), and overweight (BMI $\geq$ 25). In the United States, estimates of the general population indicated 15% of adults were severely obese and 33% were considered obese (Flegal et al., 2012; Flegal, Carroll, Ogden, & Curtin, 2010; Oliver, 2006; Shields, Carroll, & Ogden, 2011; Wang, McPherson, Marsh, Gortmaker, & Brown, 2011).

The high medical costs of obesity-related diseases contributed to rising healthcare expenditures. The rising prevalence of obesity is expected to increase the financial burden from obesity related diseases such as cardiovascular diseases and diabetes. It is estimated that the medical costs associated with these obesity related diseases will be between $48 - 66 billion a year by the year 2030. (Alverdy et al., 2009; Finkelstein, Trogdon, Cohen, & Dietz, 2009; Jia & Lubetkin, 2005; Wang et al., 2011). Attempts to treat obesity have included the use of dietary therapy, exercise, behavioral interventions, drug therapy, and bariatric surgery (Alverdy et al., 2009; Clifton, 2008; Foster, Makris, & Bailer, 2005; Jakicic, 2009; Linde, Rothman, Baldwin, & Jeffery, 2006). Of all of the therapeutic options, bariatric surgery (BS) is the most effective treatment for the significant weight losses required by the severely obese and for long-term weight control (Buchwald et al., 2009; Chang, Stoll, & Colditz, 2011; 2011; Livhits et al., 2010b; Maggard et al., 2005; Padwall et al., 2011; Sjöström, 2008). People who have had BS have been able to lose up to 60–70% of excess body weight (EBW) within a period of

18–24 months (Adams et al., 2007; Bastos, Barbosa, Soriano, dos Santos, & Vasconcelos, 2013; Chang et al., 2014; Jakicic, 2009). The significant weight loss has resulted in improvement or total resolution of co-morbidities linked to obesity (Bastos et al., 2013; Buchwald et al., 2009; Picot et al., 2009; Sjöström et al., 2007; Stewart, Olbrisch, & Bean, 2010).

The benefits of BS are significant for weight loss and improvement or total resolution of obesity-related co-morbidities. However, long-term weight-loss maintenance remains a very difficult task (Gariepy, Nitka, & Schmitz, 2010; Jakicic & Otto, 2006; Ogden, Avenell, & Ellis, 201l; Whiteside et al., 2007). Despite being the best weapon against obesity, BS does not automatically keep excess weight down. An average of 30% of patients having BS struggle with maintaining weight reduction and start regaining weight 18 months to 5 years following BS (Bastos et al., 2013; Christou, Look, & Maclean, 2006; Magro et al., 2008; Odom et al., 2010; Stewart et al., 2010).

As of July, 2013, the U.S. Census Bureau (2010b) estimated approximately 54 million or 17% of the U.S. population were Hispanics, compared to 38.6% of the Hispanic population in Texas. Between 2002 and 2007, health disparities among the Hispanic population reflected a higher prevalence of obesity among female Mexican American adults than among White and non-Hispanic female adults (U.S. Census Bureau, 2010a). Of 20,296 patients who had bariatric surgery from 2004 to 2013 listed on a southern California registry, 35% were Hispanic (Coleman et al., 2014; Sturm & Hattori, 2013). To promote positive health outcomes and prevent chronic disease among Hispanics, a need exists to identify and explore factors that contribute to the ability and inability to maintain weight loss following BS in this population.

Review of the Literature

Incidence and Demographics

The number of individuals undergoing BS has been increasing every year, not only in the United States but also abroad (Colwell, 2005; Earvalino-Ramirez, 2008; Kruger, Pricolo, Streeter, Colacchio, & Andrade, 2014; Mehaffey et al., 2015; Patterson, Peoples, & Gesten, 2015). In Israel, the Maccabi Health Medical Services, a health-maintenance organization that insures 2 million people, had 1,450 of its members undergo BS in 2010, and this number increased to 1,650 for 2011 (Colwell, 2005). In 1993, fewer than 20,000 BSs were performed in the United States, and a decade later the number of surgeries grew to 103,000 (Santry, Gillen, & Lauderdale, 2005). Bariatric surgeries in the United States multiplied 10 times between 1992 and 2005 (Colwell, 2005). According to the Nationwide Inpatient Sample (NIS) database, 775,040 US patients underwent BS between 2001 and 2010 (HCUP Databases, 2010). Of the 775,040 patients who underwent bariatric surgery between 2001 and 2010, 16% or 125,322 were Medicare patients (HCUP Databases, 2010).

Bariatric Surgery Procedures

BS consists of surgical procedures performed in the stomach or intestines to induce weight loss. Bariatric surgery changes the digestive system so that the body takes in fewer calories (le Roux et al., 2006; Moshiri et al., 2013). Three main categories of bariatric surgical procedures are predominantly restrictive, restrictive and malabsorptive, and predominantly malabsorptive (le Roux et al., 2006; Moshiri et al., 2013; Nelson et al., 2006; Rajeswaran, Shaikh, Mohammad, & Phillips, 2013). Roux-en-y gastric bypass surgery represents 80–88% of the weight-loss surgeries performed in the United States

(Brethauer, Chand, & Schauer, 2006; Mitchell & de Zwaan, 2012; Santry et al., 2005; Shinogle, Owings, & Kozak, 2005). In general the amount of weight loss by patients having Laparoscopic Roux-en-Y gastric bypass (LRYGB) surgeries has been significantly higher compared with those having the laparoscopic adjustable banding or the sleeve gastrectomy procedures (Kaser & Kukla, 2009; Kruger et al., 2014; le Roux et al., 2006).

All BS procedures have advantages and disadvantages. Factors such as local expertise and experience with different procedures, complexity, and reversibility are considered when choosing a BS procedure. Other considerations include patient and surgeon preference, the effects of a specific procedure on existing co-morbidities, the amount of long-term weight loss, and intensity of aftercare and complications (Abela, Stevens, Reddy & Soldin, 2011; Patterson et al., 2015; Piché, Auclair, Harvey, Marceau, & Poirier, 2015).

Preparing for Bariatric Surgery

The bariatric surgery team (BST) consists of the surgeon, a dietician, a psychologist, and a nurse. The preoperative phase includes a detailed exam by the surgeon and assessment and evaluation by the dietician and psychologist. These evaluations provide opportunities for the education and the preparation needed for the individual. The nurse plays a key role in setting expectations for the individual's entire experience by providing the education that reinforces key points required for successful weight loss, during clinical appointments (Abela et al., 2011; Sanger & David, 2006). Although a plastic surgeon has not typically been a part of the BST, plastic surgery is part

of the treatment to restore the person to normality due to hanging skin after significant weight loss (Abela et al., 2011; Borud & Warren, 2007; Sanger & David, 2006).

Major Outcomes of Bariatric Surgery

Positive BS outcomes include weight reduction and reduced obesity-related co-morbidities such as diabetes mellitus, hypertension (Aftab et al., 2014; Buchwald, 2005; Buchwald et al., 2009). Improved physical abilities, quality of life, well-being, and psychosocial health have been noted (Aftab et al., 2014; Coleman et al., 2014; Kubik, Gill, Laffin & Karmalie, 2013). Excess body weight (EBW) loss at one year and resolution of co-morbidities has been consistently greater for Roux-en-y gastric bypass than laparoscopic adjustable gastric banding procedures (Colquitt, Picket, Loveman, & Frampton, 2014; Davies et al., 2015; Goergen et al., 2007; Jan, Hong, Bardaro, July, & Patterson, 2007).

Facilitators and Barriers Influencing Success Versus Nonsuccess of Bariatric Surgery

Researchers have consistently demonstrated that BS is a powerful means to achieve massive weight loss and have defined success as maintaining 50% or more of the excess weight loss for 2 or more years (Abela et al., 2011; Alvarado et al., 2005; Bastos et al., 2013; Boeka, Prentice-Dunn, & Lokken, 2010; Cassin et al., 2013; Colquitt et al., 2014; Fox et al., 2015; Lier, Biringer, Stubhaug, & Tangen, 2012). Weight-loss maintenance also requires sustained changes in lifestyle (Abela et al., 2011; Brandenburg & Kotlowki, 2005; Kalarchian & Marcus, 2009, 2010; Wadden, Crerand, & Brock, 2005). Factors that predict improved lifestyle and outcomes for people who have had BS include emotional support (Clark, Saules, Schuh, Stote, & Creel, 2014; Livhits et al.,

2011), nutritional counseling (Byrne, Barry, & Petry, 2012; Nijamkin et al., 2012)., exercise/physical activity (Byrne et al., 2012; Livhits et al., 2010b; Troiano, 2007), preoperative weight loss (Alger-Mayer, Polimeni, & Malone, 2008; Alvarado et al., 2005), and spirituality (Campesino & Schwartz, 2006; Gillum & Griffith, 2010; Krause & Bastida, 2012). These factors are described in the following sections.

Emotional support: Multidisciplinary. Significant lifestyle adjustments needed for success following BS require multidisciplinary support (Abela et al., 2011; Clark et al., 2014; Heber et al., 2013; Kaiser, Franks, & Smith, 2011; Lier et al., 2012; Liskov, Mastroianni, & Moser, 2012; Livhits et al., 2011; McVay, Friedman, Applegate, & Portenier, 2013). Individuals who have had BS need support to be able to address stressors, receive educational support to prevent the resurfacing of old habits (Livhits et al., 2011; Nijamkin et al., 2012), and to be assessed for behavioral risk factors (Kaiser et al., 2011; Kubik et al, 2013). Professional multidisciplinary support groups have been shown to contribute to post BS success (Kaiser et al., 2011; Livhits et al., 2011; Song, Reinhardt, Buzdon, & Liao, 2008). Although studies have shown that post BS support contributes to post-surgery success (Kaiser et al., 2011; Lier et al., 2012; Liskov et al., 2012; Livhits et al., 2011; McVay et al., 2013; Nijamkin et al., 2012; Song et al., 2008), support group participation is optional and many persons do not participate in support group opportunities. Without support, persons who have had BS will likely not adopt pre-surgical recommendations (Kaiser et al., 2011; Lier et al., 2012; Livhits et al., 2011).

Nutritional counseling. BS can change the way the body absorbs nutrients and requires a specialized diet designed by a nutritionist (Abela et al., 2011; Commonwealth of Massachusetts Betsy Lehman Center, 2005; Cummings, 2009; Cunningham, 2006).

For nutritional optimization within the restrictions of the bariatric diet, a dietician must identify the desired goals and outcomes of nutritional interventions (Abela et al., 2011; Cummings, 2009). For example, the body needs additional protein in times of rapid weight loss to maintain muscle mass, promote metabolism, and facilitate exercise. In addition, protein is a nutrient that is recommended because it helps in feeling fuller longer and it reduces the likelihood of feeling hungry when it is not time to eat (Abela et al., 2011; Commonwealth of Massachusetts Lehman Center, 2005; Cunningham, 2006; Foster & Nonas, 2009). Pre-operative and post-operative nutritional support for weight loss maintenance has been shown to result in significantly greater weight loss in comparison to control groups (Byrne et al., 2012; Endevelt, Ben-Assuli, Klain, & Zelber-Sagi, 2013; Nijamkin et al., 2012).

Exercise/physical activity. BS reduces body fat as well as muscle and bone density. Exercise not only helps with weight loss and weight loss maintenance, it also promotes bone density health (Greenway et al., 2015; Xu, Lombardi, Jiao, & Banfi, 2016) and helps improve the quality of life for persons who have had BS (Byrne et al., 2012; Metcalf, Rabkin, Rabkin, Metcalf, Lehman-Becker, 2005). People who have had BS need to be educated about the importance of planning for exercise, and about setting realistic goals (Byrne et al., 2012; Metcalf, Rabkin, Rabkin, Metcalf, Lehman-Becker, 2005; U.S. Department of Health and Human Services, 2008). A walking regimen is one of the most common exercise recommendations for people who have had BS because it is perhaps the easiest and safest form of activity for individuals who are overweight (Byrne et al., 2012; Livhits et al., 2010b; Troiano, 2007; Nijamkin, et al., 2012; Ward, Evenson, Vaughn, Rodgers, & Troiano, 2005). Although regular exercise is among the most

significant predictors of post BS weight loss success and maintenance, it is the most likely area of post BS noncompliance. Motivating this population can be a challenge (Byrne et al., 2012; Egberts, Brown, Brennan, & O'Brien, 2012; Livhits et al., 2010b; Peacock, Sloan, & Cripps, 2014; Zagarins et al., 2011). An educational intervention on motivating Hispanic participants to exercise more regularly showed encouraging results regarding motivation (Nijamkin et al., 2012). Relative to a control group, participants in the intervention were not only motivated to exercise more regularly but were also motivated to increase the intensity of the exercise.

Preoperative weight loss. BS programs often require pre-surgery weight loss, typically 10% of total body weight. One purpose of a pre-surgery weight-loss requirement is to demonstrate the ability to adhere to a strict diet (Alger-Mayer et al., 2008; Alvarado et al., 2005; Solomon, Liu, Alami, Morton, & Curet, 2009). Studies have shown that prospective patients that seek BS who succeed with the requirement of pre-surgery weight loss are more successful with post-surgery weight loss (Alger-Mayer et al., 2008; Alvarado et al., 2005; Solomon et al., 2009).

Spirituality. Religious and spiritual practices infuse the daily life of many Mexican Americans. Generally, Mexican Americans who practice religious beliefs and spirituality tend to self-rate their health more favorably, have greater psychological well-being, and have a higher likelihood of using prayer for health reasons (Campesino & Schwartz, 2006; Gillum & Griffith, 2010; Krause & Bastida, 2012; Ramirez, Wooten, & Lumadue, 2007). Ramirez et al. (2007) found that spiritual and psychological well-being were highly correlated in the Hispanic population.

Eating disorders. Binge eaters are highly prevalent among patients who seek BS (Burgmer et al., 2005; de Zwaan et al., 2010; Meany, Conceicao, & Mitchell, 2014; Niego, Kofman, Weiss, & Geliebter, 2007; Sallet et al., 2007). Eating disorders relate to poorer BS outcomes (Meany et al., 2014; Niego et al., 2007; Sallet et al., 2007). Studies suggest that patients who have had BS who binge have more difficulties adapting to the restrictive post-surgery diet, run a greater risk of poor weight loss, and that binge eating disorders are associated with poor mental well-being and higher stress levels which have been shown to impact metabolism (Niego et al., 2007; Wimmelmann, Dela, & Mortensen 2014). An examination of the relationship of psychological factors to binge eating found positive correlations between anxiety and binge eating and stress and binge eating (Azarbad, Corsica, Hall, & Hood, 2010; Rosenbaum & White, 2015). Azarbad et al., 2010 examined the prevalence of binge eating among Hispanic women, compared the severity of binge eating in Hispanics relative to Blacks and Whites. The findings in Azarbad's study indicate that Hispanic women choosing to have BS reported binge eating rates equivalent to Blacks and Whites.

Psychiatric/psychosocial problems. It is vitally important to conduct a preoperative assessment of psychological stability because people who seek BS tend to be a psychologically vulnerable population (Abela et al., 2011; Franks & Kaiser, 2008; Gariepy et al., 2010; Heinberg, 2013; Kubik et al., 2013; Legenbauer et al., 2009; Livhits et al., 2010a; Whiteside et al., 2007). Researchers studying the impact of psychosocial health on persons having BS found an association between postoperative weight regain and depression (Kubik et al., 2013; Legenbauer et al., 2009; Nijamkin, Campa, Samiri Nijamkin, & Sosa, 2013). Existing psychological problems can worsen by any rapid or

unexpected changes in the body. Lack of materialization of unrealistic expectations of persons who have BS for weight loss surgery can lead to a negative impact on psychological health (Abela et al., 2011; Franks & Kaiser, 2008; Gariespy et al., 2010; Heinberg, 2013; Himes et al., 2015; Kubic et al., 2013; Legenbauer et al., 2009; Livhits et al., 2010a; Malik, Mitchell, Engel, Crosby, & Wonderlich, 2014; Rosenbaum & White, 2015; Sarwer, Dilks, & Ritter, 2012; Whiteside et al., 2007). Nijamkin et al. (2013) tested a behavioral-motivational support intervention on 72 Hispanic participants to evaluate its effect on depressive symptoms. Relative to the control group, participants in the intervention scored significantly lower on Beck's Depression Inventory Questionnaire after the intervention.

Qualitative Studies Regarding Facilitators and Barriers of Bariatric Surgery Success

Phenomena explored for qualitative BS studies included (a) coping strategies and support (Forsberg, Engstrom, & Soderberg, 2014; Geraci, Brunt, and Marihart 2014), (b) pre-and post-surgery experiences (Forsberg et al., 2014; Knutsen, Terragni, & Foss, 2011), (c) successes and challenges (Davis & Bowman, 2015; Geraci et al., 2014), (d) psychological challenges (Azarbad et al., 2010; de Carvalho, Turato, Chaim, & Magdaleno, 2014), and (e) physical activity (Jimenez-Loaisa, Beltran-Carillo, Gonzalez-Cutre, & Cervello, 2015; Smith, Larkey, Celaya, & Blackstone, 2014). According to participants in the abovementioned studies, facilitators to BS success included professional, peer, environmental, and family support (Forsberg et al., 2014; Geraci et al., 2014), learning how to eat (Forsberg et al., 2014; Geraci et al., 2014), participation in physical activity/exercise (Forsberg et al., 2014; Geraci et al., 2014), and follow-up care

(Forsberg et al., 2014; Geraci et al., 2014)**.** Of these eight qualitative studies, two included Hispanic participants. Geraci et al. (2014) investigated participants' relationship with food after BS, and challenges associated with binge eating, stress and depression were explored by Azarbad et al. (2010).

In summary, the review of the literature reflects scientific knowledge regarding psychological, physical activity, support and nutritional challenges associated with persons having BS and being successful with weight loss maintenance. While two quantitative studies focused on Hispanic participants, and others included Hispanics as part of a wider target population, no studies could be located that reflected a holistic perspective of more successful versus less successful Hispanics who have had BS. Knowledge of these expanded perspectives were needed to shed light on facilitating more positive outcomes in the future for Hispanics undergoing BS.

Study Design

Case study research is most appropriate for how and why questions (Yin, 2014). It is "…a qualitative approach in which the investigator explores a real-life, contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information and reports" (Creswell, 2013, p. 97). This study used a multiple case and theoretical replication design (Yin, 2014). The case study consisted of two cases, one which represented patients who were more successful (MS) and one of those who were less successful (LS) in weight-loss maintenance. Unlike literal replication, which aims to produce the same results for multiple cases, theoretical replication aims to produce contrasting results for predictable reasons. Explanations are expected to differ among groups (Yin, 2014). Flexibility during

data collection and analysis were integral to this case-study research, thereby avoiding methodological limitations (Tetnowski, 2015).

Using the case-study design allowed researcher to explain real-life casual links and to appreciate the individual richness of people describing their experiences in a real-world context (Yin, 2014). Findings from this study described the phenomena of the how's and why's of varying success of weight loss maintenance for Hispanic persons who had bariatric surgery.

Philosophical Underpinnings

Stake (2006) and Yin (2014) based their approaches to case study on a constructivist paradigm. Constructivists claim that truth depends on a subjective perspective and that multiple realities exist in the minds of the people under study. This paradigm argues that the researcher and participant each contribute to understanding, as they work in close collaboration. Enabling participants to tell their stories allows them to describe their subjective views of reality and allows the researcher to better understand participants' actions. The researcher acknowledges the subjectivity of the findings in the report (Marshall & Rossman, 2013). Stake affirmed that the qualitative-case-study approach seeks multiple perspectives of those involved in the case with the objective of gathering collectively agreed and diverse views of what occurred.

Methods

Research Questions and Propositions

Research questions for this study included, How were people of Hispanic Mexican descent more successful with weight-loss maintenance following BS? and Why were people of Hispanic Mexican descent less successful with weight loss maintenance

following BS? Propositions served as guides that directed attention to concepts that should be examined in the scope of the study. Propositions suggested relevant evidence, clarified boundaries, and assisted in avoiding unnecessary information (Yin, 2014).

Propositions identified for this study included the following: successful weight-loss maintenance following BS can be achieved with social support; nutritional, psychological, and lifestyle counseling; exercise/physical activity; preoperative weight loss; practicing religiosity and spirituality; and other factors. An inability to maintain postsurgical weight loss is the result of lack of support, eating disorders, lack of exercise/physical activity, psychiatric/psychosocial problems, and other factors.

Setting

The Rio Grande Valley is located at the southernmost tip of Texas. It sits along the northern bank of the Rio Grande River, comprising four counties (Cameron, Hidalgo, Starr, and Willacy), stretches across 4,244 square miles, and has a population greater than one million residents. The population is predominantly Hispanic (86% in Cameron Country, 90% in Hidalgo Country, 97% in Starr Country, and 86% in Willacy Country) and young (about 59.3% of the population is under 35 years of age; U.S. Census Bureau, 2010b). Approximately 76,000 people in the Rio Grande Valley have diabetes and one in four people have no health insurance (South Texas Diabetes Initiative, 2013). The Rio Grande Valley has one the highest rates of obesity. Of 199 adult diabetic participants 30.3% were overweight, 24.2% were obese, and 33.1% were severely obese (Mier, Bocanegra-Alonso, Zhan, Zuniga, & Acosta, 2008). Of 249 older Hispanics with diabetes, 64.8% were found to be obese (Mier et al., 2012), and a 2012 Gallup poll

estimated almost 40% of persons living in the McAllen-Edinburg-Mission areas of the Rio Grande Valley were likely to be obese (Sharpe, 2013).

Sample

A unit of analysis is "the case in a case study" (Yin, 2014, p. 241). The units of analysis selected to explain the research questions for this study consisted of two groups (cases) of six for a total of 12 people who were 2 or more years post-BS. Group 1 consisted of six people who were successful at maintaining their EWL, 70% or more of their maximum weight lost, for 2 or more years. Group 2 consisted of six people who were less successful at maintaining their EWL, less than 70% of their maximum weight lost, for 2 or more years. Participants were 30 years or older. This age-range selection was based on the average age in the literature for people having BS (Alger-Mayer et al., 2008; Contreras, Santander, Court, & Bravo, 2013; Fox et al., 2015; Odom et al., 2010; Sallet et al., 2007; Solomon et al., 2009) which ranged from 31 to 60 years of age, and included very few people under the age of 30.

Inclusion criteria. Inclusion criteria were: (a) $\geq$ 2 years post-surgery, (b) Hispanic of Mexican descent, regardless of generation, (c) 30+ years of age, (d) currently reside in the Rio Grande Valley of Texas, and (e) speak and understand English. Six were MS individuals who had maintained $\geq$ 70% of their EWL for $\geq$ 2 years post surgery and the other six were LS individuals who maintained < 70% of their EWL for $\geq$ 2 years post-surgery. Participants provided their pre-surgery weight, their weight at maximum weight loss, and their current weight, which the researcher measured on a calibrated scale. The researcher subtracted the weight at maximum weight lost from pre-surgery weight to determine the maximum number of pounds lost and subtracted the current weight from

the pre-surgery weight to determine the number of pounds kept off. The researcher calculated percent excess-weight-loss maintenance by dividing the number of pounds kept off by the maximum number of pounds lost times 100. The top six had weight-loss maintenance of 70% or more and the remaining six participants had weight loss maintenance of less than 70%.

Recruitment. The researcher recruited six participants through Facebook using a recruitment flyer (see Appendix E). Potential and recruited participants referred other individuals for participation in this study; snowball sampling resulted in the recruitment of the other six participants. The researcher also distributed a flyer (see Appendix E) in one support-group meeting and to two BS directors for distribution.

Interested participants contacted the researcher by e-mail or phone and the researcher provided additional explanations of the study. Once participants expressed interest in participation, the researcher made arrangements for a mutually agreeable place and time to meet to complete the demographic instrument (see Appendix F) and sign informed consent (see Appendix G), and to conduct the interview.

Instruments and Measures

Participants completed a demographic questionnaire (see Appendix F) including age, years since having surgery, pre-surgery weight, weight at maximum weight loss, current weight, type of BS, primary language, education level, marital status, race/ethnicity, and household income. Using this information, the researcher calculated the percentage of weight-loss maintenance. The researcher used participants' responses to the type of surgery, age, income, education level, and marital status to compare whether these made a difference in their weight-loss maintenance. Four prospective participants

were ineligible in that two of the four were not Hispanic and the other two did not speak English.

Procedures

Data Collection

Data collection involved digitally audio-recorded interviews with individual participants and writing field notes. Field notes consisted of observations during the interview, such as the use of nonverbal language, the environment, the setting, the tone and tension of the interview, and any other contextual information that could be relevant to answering the research questions. The location was a setting in which the participant was comfortable. The setting was private, minimizing distractions to facilitate in-depth interviewing and digital audio recording. The researcher gave participants a $25 gift card in appreciation for their participation.

The interview. Self-awareness, self-regulation, good listening, empathy, and power and politics enhanced or strengthened the researcher's connection to participants during the interview process. Self-awareness consisted of the ability to recognize emotions and know personal strengths and limitations. Self-regulation means awareness of what a researcher can and cannot do, which allows for greater self-confidence and assertiveness in what is believed to be right (Collins & Cooper, 2014). Knowing how to listen through the lens of a researcher who is attempting to capture one’s reality as another person lives requires intentional focus and making acute observations that could lend meaning to a participant’s words. The researcher worked to avoid listening deficiencies, having a closed mind, having a poor memory, or failing to realize that information may emerge between the lines (Yin, 2014). The researcher practiced

empathy by feeling and showing gratitude for the participant's dedication of time. In addition, the researcher worked to avoid counseling participants, making it clear that the researcher is not a trained therapist, but could make referrals should the need arise. The researcher addressed power and politics by being sensitive to the dynamics during interviews and providing a place that was safe and comfortable for sharing to take place (Collins & Cooper, 2014).

Participants sat in a way that facilitated eye contact with researcher (as suggested by King & Horrocks, 2010). Prior to initiating the interview, the researcher first explained that the purpose of the interview was to discover the "hows" and "whys" of being more successful or less successful as it pertained to their respective BS outcomes, as well as the general format. The researcher explained (a) there are no right or wrong answers, (b) the purpose of the interview was to obtain a rich and comprehensive understanding regarding their particular situation as it relates to their experience following BS (Smith, Flowers, & Larkin, 2009), and (c) to notify researcher if they needed a break or became too fatigued to continue.

Denzin (1989) emphasized the importance of obtaining thick descriptions rather than thin descriptions, to gain a more explanatory interpretation that reflects context, intentions, meanings for actions, and a historical basis for actions. To do this, the researcher probed extensively to illuminate explanatory information in all interviews. To facilitate participant relaxation, the researcher initiated the interview by including questions about their family, job, or day. The researcher used open body language.

The researcher assigned each participant a pseudonym to facilitate confidentiality. The researcher first asked each participant to address the question, What made you decide

to have bariatric surgery? (see Appendix H). This discussion provided a means to introduce the topic, allay any anticipatory stress about the interview, and allow the participant to freely express information that could lead to the next broad question: Tell me about what it's been like for you since you've had bariatric surgery. The researcher used relevant probing to elicit in-depth information and rich descriptions.

Field notes. Because context is very important during data collection, the researcher maintained field notes for each participant as part of the database (Yin, 2014). The researcher wrote these notes immediately after each interview and included information regarding the setting, tone of the interview, nonverbal communication, and any other relevant contextual information to augment the interview data.

Data Management and Data Analysis

Interviews were transcribed verbatim. According to Patton (2015), credible "case studies are holistic and context sensitive" (p. 535). Data analysis for this study provided an in-depth, explanatory contextual and holistic understanding of people who have been more and less successful with weight loss following BS. Yin (2014) offered two strategies for case-study data analysis: relying on theoretical propositions and working the data from the ground up. This study was an explanatory study and relying solely on theoretical propositions would limit the boundaries, However, combining with ground-up data collection allowed additional useful concepts and qualitative relationships to emerge in the data. In addition, Yin suggested five different techniques, used in conjunction with strategies that can be used in case-study research; of those, explanation building was the major technique used for this study. The goal of this technique was to analyze the case-study data by building an explanation about each of the two cases.

The researcher performed data-analysis procedures manually, starting with the interviews. Analysis took place concurrently with subsequent interviews. Patton (2015) advised to record initial analytical thoughts during the data-collection process, as this facilitates the emergent nature of qualitative designs, but cautioned researchers not to make premature conclusions and remain open during data collection and analysis.

A codebook was maintained throughout the fieldwork and data-analysis process to record initial codes and preliminary meanings. These notes included reasons for labeling of codes and themes and facilitated transparency of decisions that contributed to a deeper understanding of the analytic process (Patton, 2015; Ranney et al., 2015). Data analysis entailed examining and coding the data in search of patterns that addressed the propositions of the study. This process started by transcribing each interview verbatim and validating the transcript with the participant. The researcher first read each transcript in its entirety to gain a sense of the context and overall content of the interview. Then, the researcher read the transcript line by line, assigning codes or labels that symbolized relevant statements (Melnyk & Fineout-Overholt, 2011). These codes were words or phrases that had meaning in answering the research questions (Patton, 2015). The research questions and propositions initially served as a framework from which to analyze the data, but the researcher used only the interviewees' words and field notes in the analysis of data (Yin, 2014).

Field notes helped preserve contextual details of interactions and provided a better position to analyze the issues (as suggested by Silverman, 2013). The coding process was flexible to allow for modifications or clarifications of the categories as the work progressed (aligned with Ranney et al., 2015). The researcher conducted coding by going

back to the research questions and asking questions of the data that related to these questions (as per Whiffin, Bailer, Ellis-Hill, & Jarrett, 2014). The researcher further extracted codes to look for patterns of meaning across the data (as advised by Melnyk & Fineout-Overholt, 2011; Patton, 2015).

The researcher focused on recurring patterns as they became evident in light of the research questions and propositions. As data analysis proceeded, the researcher sought additional data as prompted, necessitating the need to re-contact participants during the data-analysis phase (Patton, 2015). Upon identifying patterns in the data, the researcher classified themes, focused on understanding the significance in the context in which each theme was determined. Establishing the significance of themes or findings was crucial (aligned with Kohlbacher, 2006).

To explain how some people who had BS were MS with weight-loss maintenance and why some were LS, the researcher specified a presumed set of explanatory links about how or why it happened. The explanation building process was iterative. This iterative process started with an initial explanatory proposition, comparing the findings from an initial case with the proposition, revising the proposition, comparing the case with the revision, and comparing the revision to subsequent cases. The researcher repeated this process as many times, as needed. As the case study evidence emerged, the researcher revised explanatory propositions, reexamining the evidence from a new prospective in iterative mode (a la Yin, 2014).

The narrative form of explanation building may lack precision; however, the magnitude of using a theoretically significant proposition may offset this lack of precision. An iterative process may cause the problem of lack of focus by the researcher;

thus, the researcher kept this possibility in mind throughout the process. Ultimately, the goal was to build a general explanation that fit each individual case, although the details of each case varied (Yin, 2014).

Rigor

Construct validity, internal and external validity, and reliability are four areas in which researchers establish and facilitate rigor (Yin, 2014). The use of multiple sources of evidence addressed construct validity along with creating a chain of evidence. This included the purposeful selection of 12 participants, Hispanics of Mexican descent, who were representative of the population. Data-collection triangulation maintained credibility with use of extensive interviews, field observations, and verification from participants during the data-collection phase, as well as through triangulated data analysis with an expert qualitative researcher independently analyzing the data. Data analysis through inferences in explanation building and through comparison of two opposite groups addressed internal validity (Yin, 2014). External validity concerns the generalizability of the study to other populations and areas, typically addressed through the wording of research questions. Yin (2014) suggested the use of how and why questions in explanatory designs to allow for a broader understanding, addressed at the start of the study design. The interview guides, approved prior to the start of the study, aligned with how and why questions. Last, reliability minimizes errors and bias in a study by ensuring researchers can conduct the same research again and come to the same conclusions in future similar studies (Yin, 2014). The development of a specific case-study protocol and database maintained reliability.

Human Research Ethics

The University of Texas at Tyler Institutional Review Board (UT Tyler IRB; see Appendix I) granted approval for this study and participants signed an informed-consent form (see Appendix G) following assurance of their understanding of the purpose of the study, frequency of interviews, expectations, the extent of their participation, and risks and benefits. They were also aware that participation was voluntary and that they could withdraw their participation at any time. Once the study began, consent was an ongoing process, instituted to ensure continued consent of participants through periodically affirming they were willing to continue participation. Risks involved could have included distress of participants in discussing issues related to their experiences during the interviews. If this occurred, the researcher was ready to offer the participant a break, an opportunity to reschedule the interview, or the option of discontinuing participation with no undue consequences (National Institutes of Health, 2012).

Confidentiality of participants was protected through limited access to data, including digital-audio recordings, and the use of codes for identifiers. In the report, the researcher identified participants in transcripts, field notes, and other contextual data only indirectly. The researcher stored data on a password-protected laptop and keep consent forms in a locked location. They will be shredded in 3 years, aligned with The University of Texas, Tyler's Institutional Review Board regulations. Once transcribing was completed and backed up on an encrypted flash drive, researcher immediately destroyed all recordings. To protect electronic data, researcher secured the computer password and used an encrypted flash drive (Ironkey, Model D80) to store all study-related data and documents. The laptop was never in a location where theft was possible.

Results

Participants were 12 people who had undergone BS 2 to 11 years prior to the interview. The demographics for the 12 participants appear in Appendix J. Participants reported three major types of BS procedures. Details regarding beginning weight, weight at maximum weight loss, maximum number of pounds lost, current weight, number of pounds kept off, and percent excess weight-loss maintenance (PEWLM) for the MS and LS groups appear in Appendices K and L, respectively.

The 12 participants were categorized into two groups: six MS with post-BS weight-loss maintenance (see Appendix K) and six LS with post-BS weight-loss maintenance (see Appendix L). The researcher calculated percent excess weight-loss maintenance by dividing the number of pounds kept off by the maximum number of pounds lost, times 100 (e.g., Participant J in Appendix K was 118/120*100 = 98%). The maximum weight loss for the more successful group ranged from 68 to 180 pounds, the number of pounds kept off ranged from 57.8 to 164 pounds and the PEWLM ranged from 85 to 98%. The MS group met inclusion criteria having 70% or more sustained weight loss since their surgery, whereas the other group did not meet this criterion. The maximum weight loss for the LS group ranged from 70 to 160 pounds, the number of pounds kept off ranged from 40 to 109 pounds, and the PEWLM ranged from 57% to 69%.

The following sections address the themes and subthemes that reflect insight into the study's two major research questions: (a) Why were persons of Hispanic Mexican descent LS with maintenance of weight loss following BS? (b) How were persons of Hispanic Mexican descent MS with weight-loss maintenance following BS? Because

most participants had successful beginnings following BS, the researcher noted some overlap in responses and themes so that responses in the LS group correspond more with those in the MS group during the initial period following BS. For this reason, the researcher presented results according to the research questions and not the two groups. The researcher also reported motivations for having BS, and although motivations for having BS did not address the research questions directly, this information provides context.

Motivation to Have BS

Factors that motivated the 12 participants to have BS are listed in Appendix M. These factors include (a) health promotion: preventive actions for the burden of future disease, (b) health: to minimize ill effects of existing health problems, (c) self-concept: feeling better about self, doing for oneself, and (d) relationships with family and marriage. The most common motivation for the surgery was health promotion, meaning they strived to avoid having co-morbidities often associated with obesity. The second most common motivator was health, and for these individuals, this meant they hoped the surgery would help to alleviate existing co-morbidities. .

Why Participants Were Less Successful Following BS

Two themes reflected participant responses regarding why they were LS in weight-loss maintenance following BS: (a) retraining the mind is a must, and (b) resisting Hispanic/Mexican American cultural food and eating traditions. Subthemes for retraining of the mind is a must are (a) returning to former poor habits: emotional eating, poor eating habits, and gastric pouch dilation; (b) knowing versus doing; (c) loss of motivation; (d) giving up: lack of exercise/physical activity; (e) body image; and (f) lack

of support. Subthemes for resisting the Hispanic/Mexican American cultural food and eating traditions are (a) traditional Hispanic diet, and (b) cultural customs and traditions. Appendix B provides detailed descriptions of these themes and subthemes and they are summarized here.

Retraining of the mind is a must. Participants spoke about the difficulties they had in changing the way of life they had known and practiced all their lives "because it's like you have to retrain your whole way of thinking" (D). They shared the challenges they encountered in their attempts to make the needed lifestyle changes such as the former practice of eating for emotional reasons. One participant felt psychological assistance was needed for a period of at least 6 months postoperatively to help make the needed lifestyle transition. Participant A believed that resisting the eating of prohibited foods is acknowledging that they must have "mind over matter."

Returning to former poor habits: Emotional eating, poor eating habits, and gastric-pouch dilation. Participants spoke about reaching for food as they faced stressful situations. One participant stated that stress related to her job caused the participant to reach for food and "contributed to my gaining weight" (F). Participants reported physiological changes that resulted in "cheating" on their diets: "at least two hours post lunch you can sneak something like a few chips because you have already digested what you had for lunch" (F).

Knowing versus doing. Most participants admitted they knew what they were supposed to do: "I know I need to put more effort on making diet changes" (I) and were initially compliant post-surgery. Despite receiving routine discharge teaching that

included prohibited foods, over time, participants drifted away from their initial compliance.

Loss of motivation. Some participants stated they started losing some of their initial motivation as they encountered obstacles. One participant started losing motivation as "I ended up with fibromyalgia and a torn meniscus and I was no longer able to run, to exercise" (D). They started gaining weight and: "as I started gaining weight due to lack of exercise, I felt embarrassed as I no longer fit into my new clothes" (D).

Giving up: Lack of exercise/physical activity. Most participants stated they had started some form of exercise routine. Over time, some faced obstacles to exercise: "My business demanded more time from me" (B) and "As my weight loss reached a plateau my negative feelings about BS worsened and I stopped exercising" (I)

Body image. Participants spoke about their disappointment with their body image due to sagging skin and unmet expectations. "I thought my skin would go back to where it was when I was young and that didn't happen" (A). "Seeing my hanging skin in the mirror made me feel like I was still huge" (B). Participant F was quite forthright in expressing how this had a psychological affect: "My hanging skin was dreadful; the flabby skin in my arms increased my self-consciousness … it has affected me psychologically."

Lack of support. Appendix N depicts sources of support along with PEWLM for both groups. Although participants reported a variety of sources of support, only Participant H from the LS group continued to have some kind of support. Participant H was very close to the cut-off point between the MS and the LS groups in PEWLM. Lack of support appeared to be a significant factor in the inability to sustain weight-loss

maintenance. One participant specifically did not have enough support and without that support, it was easy to return to former eating habits. “My husband supported my having the surgery since my primary care physician recommended it to improve my obesity-related diseases but he has never supported my new eating requirements” (F).

Resisting the Hispanic/Mexican American cultural food and eating traditions. Cultural eating habits presented a challenge for this group of Hispanic/Mexican Americans. Participants spoke of the cultural tradition of eating everything on the plate as a symbol of respect and of food being the primary form of entertainment in the Hispanic culture.

Traditional Hispanic diet. The traditional Hispanic diet consists of high-fat and high-calorie foods, “I eat the culturally fattening foods prepared for me by my elderly mother-in-law who cooks for me” (I). This kind of food is served at traditional Hispanic gatherings: “our Mexican culture … if somebody dies and or if someone has a party, you gotta bring food … food, food is our number one entertainment” (E). Approximately half the participants spoke about the culturally traditional fattening Hispanic/Mexican diet. They expressed concern over the difficulties they encountered in letting go of the foods they were accustomed to eating

Cultural customs and traditions. In addition to the increased fat and calories of the traditional Hispanic diet is the Hispanic cultural expectations for eating what is presented. “Eating everything on the plate is considered courtesy and good manners … saying no and not eating everything on the plate is considered disrespectful … this evolves during life to eating everything you want” (A). Half the participants talked of dealing with eating-related traditions in which they were raised.

How Participants Were More Successful Post BS

Four themes reflected participant responses regarding why they were MS in weight-loss maintenance following BS: (a) life is better, (b) support: can't do this without you, (c) transitioning to a new life, and (d) accountability. Subthemes for life is better are: (a) empowerment, (b) endurance, (c) freedom from medications, and (d) co-morbidity resolution. Subthemes for support: can't do this without you are (a) anticipatory planning: pre- and postoperative preparation; (b) mentorships: healthcare providers, community support groups, and others who have had bariatric surgery; and (c) encouragement: family and friends. Subthemes for transitioning to a new life are (a) learning a different way to eat: healthy food, portion control, and eating venues; (b) exercise/physical activity; (c) being compliant; and (d) spirituality. Subthemes for accountability are (a) accountability to others, and (b) accountability to self. These themes and subthemes are described in depth in Appendix C whereas here, I summarize them.

Life is better. The theme, life is better, reflected participant responses that indicated a sense of overall improved quality of life since having their BS. Losing a significant amount of weight made life better for participants in giving them feelings of empowerment, increased endurance, freedom from medications, and resolution of co-morbidities.

Empowerment. A sense of motivation led to feeling empowered, as participants observed scale readings that revealed significant weight reductions: "Prior to having BS I would go grocery shopping at a very early hour to avoid being seen by others. … After BS, I started feeling more comfortable around people" (C). Some participants felt empowered as they realized that if they could accomplish losing this much weight, they

could also accomplish other things: “losing this much weight empowered me to accomplish other things such as speaking on stage and getting a master’s degree” (J). Fitting into nice clothes they never thought possible made them feel better about themselves.

Endurance. Participants stated their physical endurance had increased in the form of increased energy, increased physical endurance, and ability to move faster, “I was having much trouble walking from one place to another fast enough; the weight loss has helped me move faster” (C). They talked about the ability to move without tiring and increasing their job-related productivity: “My productivity at work improved considerably. … I am now able to move much faster; even faster than some of the younger employees” (F).

Freedom from medications. Freedom from medications also improved quality of life for many participants. Participants stated they were able to get off all or a majority of medications they were taking. Participant H discussed this sense of freedom: “I was taking insulin and blood pressure medication. … Day before my BS was the last day I took these. … Am now on zero medication.” In addition to enjoying improved health and well-being, they are also enjoying a decrease in their annual medication co-pay expenditures, as is expressed by Participant E: “I was taking eleven pills for high blood pressure, cholesterol, diabetes II, and in the last 3 1/2 years, I only take a Synthroid pill every morning. I am now saving approximately $4,000 a year in medication expenditures.”

Co- morbidity resolution. The significant amount of weight loss contributed to improvements of existing obesity-related co-morbidities and other health-related

conditions, such as resolution of sleep apnea for one participant, and decreased stress on joints resulting in improved mobility and less pain for another participant. Participant E expressed relief and gratitude in life-saving BS: "The surgery saved my life. … The part of the stomach that was cut off with the gastric sleeve BS had cancerous cells and all cancer cells were cut off."

Support: Can't do this without you. All participants identified at least one aspect of support: family, healthcare providers, support groups (community), and friends. These sources of support assisted participants with pre- and postoperative preparation and provided support and encouragement as participants transitioned into their new lifestyle. Examples of sources of support appear in Appendix N.

Anticipatory planning: Preoperative and postoperative preparation. All participants reported receiving assistance from the BST for pre-surgery preparation. Participant H stated that a BS candidate "need(s) at least six months of pre-surgery preparation and support from the BST" and Participant G emphasized the importance of being thoroughly informed beforehand: "You need to research BS, ask others who have had the surgery, and be as informed as possible about BS … really think about what you are doing." Participants emphasized the importance of having an easy-to-follow, long-term diet plan. In addition, they expressed the need to consider psychological support post-surgery: "psychological help is needed to help with making lifestyle changes" (D).

Mentorship: Healthcare providers, community (support groups), and others who have had BS. According to participants, the role of healthcare providers included assisting them preoperatively in making the decision to have the surgery and postoperatively with the transition to a new lifestyle. Attending community support-

group sessions was beneficial to some participants because the sessions allowed them to address and share some common concerns among people, following BS. Participant B expressed feelings about support groups: "Support group sessions were very helpful to me. … These sessions gave me the opportunity to share concerns and difficulties in making the needed adjustments with others who had the surgery and with health care professionals." Most participants decided to have BS after seeing the success of others.

Encouragement: Family teamwork and friends. Family teamwork was a significant contributor to successful PEWLM. Four participants from the MS group stated that working as a team with their immediate family greatly contributed to their success, Participants E and J described this source of support in their lives: "My husband keeps encouraging meal planning and exercise. … Children also encourage me" (E), and "family is the most significant source of support. … My husband and children help me plan and fix my meals" (J).

Friends in their personal and work lives contributed support in the form of giving compliments and providing encouragement with lifestyle changes. "I get many compliments from my friends. They are proud of my weight loss accomplishment" (C).

Transitioning to a new lifestyle. Participants stated that a commitment to lifestyle changes significantly contributed to substantial weight loss and to long-term weight-loss maintenance. Participants spoke about how they have been learning experientially a different way of eating that consists of healthy food, portion control, and selection of appropriate eating venues. They also mentioned having structured exercise regimens, the effort they made in being compliant with postoperative requirements, and how their spirituality has impacted their BS results.

Learning a different way to eat: Healthy food, portion control, and eating venues. As Participant J expressed, knowledge of healthy foods, portion control, and eating venues is significant in the transition to a new lifestyle of eating: "My family and I carefully select places where they serve the stuff I can eat." Participants applied the knowledge they had acquired about eating following BS in addition to learning about correct eating experientially. "It's about me eating smaller portions, increasing my eating frequency, and not snacking between meals" (K). They also experientially learned the consequences of not doing it right: "I have lived the consequences of not doing it right, vomiting, bloating, or the food getting stuck" (A).

Exercise/physical activity. Exercise is part of the long-term plan for people following BS. Participants spoke about having a more structured exercise/ physical activity regimen. "I work out more consistently now, … run four miles five times a week at the same hour: seven p.m." (J). " I'm … now able to walk more, … walk six miles a day, five days a week" (G).

Being compliant. Compliance with their newly prescribed lifestyle following BS was important to participants. Efforts to meet this expectation included making a plan, eating more often, eating slowly, chewing well, and adhering to the recommended diet, expressed by Participants G and A: "Being compliant with the eating recommendations made by the dietician, planning my meals and physical activity have contributed to my weight-loss success" (G), and, "I eat slow and chew well; if I am attending a social event, I plan ahead" (A).

Spirituality. Four participants spoke about being close to God, about praying for strength, and about having faith. Participant E believed she gets her strength from God: "I

feel closer to God; I pray for strength to not let food be more important than my health. … I manage my life's changes with focus and prayer." Another asked God for "power and deliverance" (B).

Accountability. Participants spoke about feeling accountable to others in accomplishing and maintaining success with BS. They either did not want to disappoint others—"I do not want to disappoint my daughter who is a BS nurse or my family who is proud of my weight loss" (E)—or they wanted to prove to others that they could succeed with BS. Some participants spoke about being accountable to themselves as a commitment to improving their health, or as Participant B expressed: "I want to put a break on becoming a statistic."

In summary, the contributors to LS in long-term weight-loss maintenance included retraining the mind is a must. Less success with weight-loss maintenance was brought about by participants' inability to maintain required lifestyle changes due to returning to former poor habits such as eating for emotional reasons, eating prohibited foods, and ceasing the exercise regimens they had started. Loss of the support they had been receiving contributed to going back to their old lifestyle. Inability to resist their life time Hispanic/Mexican diet and cultural traditions also contributed to their lack of success.

Contributors to MS in long-term maintenance of weight loss included receiving support from various sources such as family, friends, professionals, and community support groups. All participants who were more successful are still receiving some type of support to date, particularly family support. The support they received contributed to a long-lasting transition to the new lifestyle required for success with long-term weight-

loss maintenance. A successful transition consisted of eating healthy foods; practicing portion control; selecting appropriate eating venues; maintaining an exercise regimen; being compliant, particularly with eating requirements; practicing spirituality, and being accountable to others and to oneself.

Discussion

This study addressed an important issue for outcomes of BS as to why and how some people had long-term weight-loss maintenance and others did not. Propositional statements for participants who were MS were supported with the addition of accountability, family working as a team, and spirituality. Participants who perceived they had more support had a family that was willing to work as team, were able to make changes in their environment, and felt a sense of accountability to themselves and others were those who experienced more success. More enthusiasm arose among participants who perceived they had support from others including immediate family, friends, relatives, and the BST. The level of family involvement and the impact it had on being more successful was profound. Changing the home environment with total family involvement was essential for participants who were more successful. This included eliminating unhealthy foods and beverages and planning a new diet that consisted of healthy food choices for the whole family. This seemingly simple challenge can be significant for people who have had BS. Four of the six MS participants expressed adamantly that accountability to themselves and others was very important to them.

Propositional statements for those who were LS were supported with no additional factors impacting participant weight-loss maintenance. Participants who experienced less success were those who experienced a perceived lack of support and

seemed to feel alone in their efforts. They mentioned no changes in their home environment that would facilitate changes in dietary needs. They continued eating in the same places and in some cases had to endure seeing their family eating the usual unhealthy foods and being criticized for not eating more. In addition, the Hispanic cultural aspect of being expected to accept unhealthy meals prepared by their relatives and friends was important to avoid appearing disrespectful. Some participants who were less successful mentioned having extended families with which they partied often and traditional foods were the main source of entertainment. No studies emerged that contradicted findings from this study, but new discoveries were made as well as similar findings gleaned from other target populations.

New Discoveries from Previous Research

Accountability. One of the most important factors in changing any behavior is having a sense of accountability for one's behavior. Having to report to someone else when a person feels a level of pressure tends to influence thinking and actions (Martin & Pear, 2011; Metzgar, Preston, Miller, & Nickols-Richardson, 2015; Reyes et al., 2012; Royle & Hall, 2012). Although review of the literature did not reveal any measurement or exploration of the impact of accountability on BS, some participants reported accountability was one of the most significant contributors to their transition to a new lifestyle and to their long-term weight-loss maintenance. Participants reported either wanting to prove to others that they could succeed or did not want to disappoint others such as family and friends who were proud or looked up to them as role models. Three participants stated they were setting an example to their family, particularly their children, in healthier lifestyle changes.

Family working as a team. Continuous support from family members, husband and children significantly contributed to weight-loss maintenance. Although literature on BS mentions family support (Kaiser et al., 2011; Livhits et al., 2011; Ogle, Park, Damhorst, & Bradley, 2016; Slotman, 2011; Song, Reinhardt, Buzdon, & Liao, 2008), it does not mention the family working as a team. Participants reported that their husbands and children worked with them as a team, ranging from providing assistance with meal planning and providing daily encouragement to getting rid of unhealthy food in the house and eating the same healthy meals. This teamwork was a very significant contributor to their long-term success. This level of support was an environmental change for the people who had BS.

Spirituality. The literature states that Hispanics who are spiritual tend to rate their health more positively and use prayer for health reasons (Campesino & Schwartz, 2006; Gillum & Griffith, 2010; Krause & Bastida, 2012; Ramirez et al., 2007) and this proposition was supported. However review of the literature did not yield studies that measured or explored the impact of spirituality on BS. Some participants in this study reported that spirituality contributed to their transition to a new lifestyle. Four participants stated that their prayers and their faith helped them with post-surgery complications and with the strength needed to remain compliant.

Similarities to Previous Research

The current study found MS weight-loss maintenance to be similar to previous studies: (a) learning a different way to eat (Forsberg et al., 2014; Geraci et al., 2014; Metzgar et al., 2015; Montesi et al., 2016; Reyes et al., 2012; Royle & Hall, 2012);

(b) perceiving a better life (Earvalino-Ramirez, 2008; Knutsen et al., 2013; Lier, Aastrom, & Rortveit, 2016; Reyes et al., 2012; Shafipour et al., 2009); (c) exercising (Byrne et al., 2012; Dikareva et al., 2016; Livhits et al., 2010b; Mundi et al., 2013; Shah et al., 2011; Smith et al., 2014); (d) complying with post-surgery recommendations (Boeka et al., 2010; Endevelt et al., 2013; Montesi et al., 2016; Toussi, Fujioka, & Coleman, 2009), and (e) receiving support (Chacko, Yeh, Davis, & Wee, 2016; Liebl, Barnason, & Brage Hudson, 2016; Livhits et al., 2011). Contributors to LS weight-loss maintenance that were found to be similar to previous studies included (a) lack of mental preparedness (Burgmer et al., 2007; Dziurowicz-Kozlowska, Wierzbicki, Lisik, Wasiak, & Kosieradzki, 2006; Janse Van Vuuren, Strodl, White, & Lockie, 2015; Ogden et al., 2011; Sogg, Lauretti, & West-Smith, 2016), (b) returning to former poor habits (Davis & Bowman, 2015; Faccio, Nardin, & Cipoletta, 2016; Geraci et al., 2014; Knutsen et al., 2013; Ogden et al., 2011; Wood & Ogden, 2015), (c) losing motivation (Borud & Warren, 2007; Homer, Tod, Thompson, Allmark, & Goyder, 2016; Jensen et al., 2014; Kubik et al., 2013; Zuelzer & Baugh, 2007), (d) lacking exercise (Byrne et al., 2012; Herman, Carver, Christou, & Andersen 2014; Josbeno, Kalarchian, Sparto, Otto, & Jakicic, 2011; Meckling & Sherfey, 2007), and (e) lacking support (Kaiser et al., 2011; Livhits et al., 2011; Ogle et al., 2016; Song et al., 2008). Findings related to nutritional factors included: (a) finding ways to cheat on the operation, eating more than they should, and eating high calorie content foods (Davis & Bowman 2015; Geraci et al., 2014; Knutsen et al., 2013; Ogden et al., 2011), and (b) having difficulty adapting to a new diet (Geraci et al., 2014; Ogden et al., 2011; Wood & Ogden, 2015). A number of more current interventions related to weight loss maintenance consists of behavioral

interventions. A systematic review (Steward & Avenell, 2016) yielded eleven trials of behavioral interventions. Three of these studies that demonstrated effectiveness included one study that tested a dietary counseling intervention of 60-70 grams of protein consumption a day. The other two studies involved a physical activity intervention and a behavioral change counseling program that consisted of a pre-operative supervised weight management intervention. A 10-week mindfulness-based pilot study (Chacko, Yeh, Davis, & Wee, 2016) as well as a behavioral intervention utilizing a combination of cognitive behavior therapy (CBT) and dialectical behaviors therapy (DBT) (Himes et al., 2015) were also shown to be effective in weight loss maintenance.

Implications for Practice

Findings from this study have implications for practice that may facilitate long-term weight-loss maintenance following BS in the Hispanic population. Major implications include (a) providing increased psychological support, (b) providing options for receiving community support, and (c) increasing dietary support. Participants expressed that retraining of the mind is a must. Some participants reported emotional eating before and after the surgery. They also reported other problems such as not being mentally able to see themselves as a different person, not being able to avoid serving the pre-surgery large portions of food, and difficulty changing the perception of their bodies.

Strongly recommended is more solid mental preparation for persons considering BS. Increased professional psychological support before and after surgery may support the mental changes needed (Aarts et al., 2016; Stewart & Avenell, 2016). A behavioral intervention with assessment of behaviors and psychological support such as what was used in an interventional pilot study (Himes et al., 2015) may be helpful. Rubin (2015)

suggested that individuals learn how to change by mastering their individual habits. Because everyone is unique, a psychologist could guide this type of change, because even individuals who try to imitate successful people find that what works for one may not work for others. Another psychological implication is the possibility of retraining cultural beliefs regarding food.

Not having enough support with post-surgery requirements or post-BS education was one reason reported to align with less success. An emphasis by healthcare providers on facilitating short and long term support following BS is essential. Some participants reported their community support-group attendance greatly contributed to their long-term weight-loss maintenance. Regular, online support-group sessions can be more convenient for a person with a family and working full time. Strong considerations should be directed toward provision of a sponsor, similar to those used in Alcoholics Anonymous and Narcotics Anonymous; this may be an invaluable resource for the person needing support.

Nutritional implications include not only dietician support, but acknowledgement of the profound importance of teamwork within the person's family is critical. Participants expressed a desire to meet with a dietician for a longer period following surgery, such as at least 6 months. Because all 12 participants had very unhealthy pre-surgery diets means they needed a great deal of dietary guidance following surgery.

Implications for Research

Future research should target determining ways to facilitate improved success for weight-loss maintenance among populations having BS (Jassil et al., 2015; Knutsen et al., 2011; Shane-McWhorter et al., 2016; Whittaker, 2015). One example is testing a model

of support for the patient following BS that includes having a sponsor to contact, online support groups, and a 24-hour hot line with someone to talk to, particularly at vulnerable times. Actively engaging family and significant others in preoperative and postoperative care should be evaluated to determine effectiveness in continuity of support following BS. Strategies for preparing the family to work together as a team for facilitating successful weight loss maintenance can be developed and tested. Recreating traditional food to a healthier version with an extensive number of online recipes geared to the different cultures may positively influence long-term success. Funding by third-party payers may be influenced with studies demonstrating the impact of plastic surgery to remove excess skin by examining the tremendous negative economic impact of persons not being successful with BS due to poor self-concept. Perhaps incentivizing this type of surgery by having the person with BS demonstrate successful weight loss maintenance after 6 months to a year could be an option for third party reimbursement if research demonstrated its effectiveness.

A prominent theme from this study dealt with retraining of the mind. Participants stated that mental preparedness was crucial for BS success. Participants, particularly those who were less successful, spoke about the difficulties they had encountered in making efforts to change their way of life. They spoke about a number of behavioral problems they had such as emotional eating, their inability to view themselves as different, being psychologically impacted by the hanging skin, and not being able to let go life time poor habits. The Transtheoretical Model (TTM) postulates that health behavioral change involves progress through six stages of change: precontemplation, contemplation, preparation, action, maintenance, and termination (Prochaska, Redding, &

Evers, 2008). Using a TTM framework could help participants progress through the stages of change by behavioral interventions that are tailored to the needs of each individual at each stage of change. These interventions can be evaluated in terms of outcomes by assessing impacts of weight loss maintenance over varying periods of time such as one year, two years and so on.

Some examples of behavioral interventions that correspond with retraining of the mind that have shown success include dietary counseling, physical activity and behavioral changes therapies (Nijamkin et al., 2012; Papalazarou, Yannakoulia, & Kavouras, 2010). A behavior change counseling intervention resulted in greater percent excess weight loss (%EWL) than a control group (Parikh, Dasari, & McMacken, 2012). A 10 -week mindfulness-based pilot intervention (Chacko et al., 2016) was effective in reducing emotional eating at 6 months. A behavioral intervention combined cognitive behavioral therapy (CBT) and Dialectical Behaviors Therapy (DBT) and resulted in successful weight regain reversal for participants (Himes, et al., 2015).

Spirituality is integral to Hispanics of Mexican descent. Spirituality and religiosity are interwoven with their daily lives and serve as foundations of strength in coping with life's struggles (Levin, Markides, & Ray, 1996). Community church-based interventions may be ideal for a population that is spiritual. Pengpid, Peltzer, & Skaal, L. (2014) evaluated the efficacy of a church-based intervention to control high normal blood pressure and/or high normal blood glucose in church members. While post bariatric surgery weight loss maintenance was not a focus in this systematic review on education and community-based programs in disease prevention and health (Lemacks, Wells, Ilich,

& Ralston, 2013), it demonstrated that churches can be an ideal setting in which to develop and implement these programs.

Implications for Education

Educational implications are from the patient-family perspective and from the health care provider perspective. Based on the findings from this study, continuous support, particularly from the immediate family, was a major factor that contributed to successful weight-loss maintenance. Many participants who were less successful stated they lacked support. The BST may not be able to directly increase family support but perhaps encouraging the family to be part of pre- and post-surgery education may help increase resilience in patients who do not perceive they have support. If the family has more knowledge about the surgery and post-surgery needs, they may feel more involved and be more inclined to provide the needed support. The BST should also encourage support-group attendance by family because this avenue would reinforce previously gained knowledge regarding eating and other challenges. The BST should also preoperatively have patients view pictures of former patients with sagging skin. If they are only told about it, they will not be able to visualize it. Expectations of appearance should be addressed.

Educational implications include incorporating this information in related health-professions curricula to better prepare healthcare providers to care for individuals having BS. Continuing education should also emphasize the importance of engaging family and other sources of support and being creative in developing ways to facilitate success for weight-loss maintenance following BS. Important to also include in educational content is that patient education and knowledge does not equate into practice, and that

exploration of other innovative, creative, and especially individualized strategies that promote behavioral change must be explored.

Strengths and Limitations

Strengths. A key advantage of case-study research is that it applies to real-world situations, which aids researchers in understanding issues presented (Turner & Danks, 2014). This study allowed the researcher to capture the complexity of the life worlds of MS and LS people at maintaining weight loss following BS, and how these persons viewed their respective outcomes. Through an in-depth exploration of individual cases, the researcher demonstrated interactions between situational demands and personal factors of individuals to explain varying degrees of weight-loss maintenance success. Using the case-study approach resulted in thick descriptions that allowed the researcher to understand as much as possible about participants, giving the results a more human face (Yin, 2014), and allowed for practical application to the population it most closely represented. The case-study qualitative design allowed for flexibility (Yin, 2014) and, in turn, allowed for combinations with additional cases (Tetnowski, 2015). Because the design emphasized explanation rather than prescription or prediction, the researcher had greater freedom for discovery and to address issues as they arose. The case study's flexible format allowed the researcher to begin with broad questions and to narrow the focus once the study progressed, rather than to predict outcomes before an experiment was conducted (Yin, 2014).

Steps to ensure validity of this research included adhering to a "rigorous methodological path" (Yin, 2014, p. 3). This included an exhaustive literature review that reflected the scientific gap of studying outcomes following BS in the Hispanic of

Mexican-descent population. Thoughtful planning of methodological processes was done following Yin's (2014) recommendations and strategies on case-study designs and methods. In addition, documentation of the sampling, data-collection, and data-analysis processes were maintained to create a careful audit trail. Finally, data analysis comprised compared two dissimilar groups (Yin, 2014).

Limitations. The beginning weight and the weight at the highest weight loss were self-reported. All participants were women, which limits generalizability. The researcher contacted two men who expressed interest in participating but later decided not to participate. Participants' length of time after surgery ranged from 2 to 11 years. The length of time post-surgery for MS participants ranged from 2 to 5 years whereas the length of time following surgery for LS participants ranged from 5 to 11 years. Three LS participants were 7.9, 9, and 11 years post-surgery. The two that were 7.5 and 11 years post-surgery had a PEWLM of 68% and 69%, which is quite close to the cut-off point between the LS and MS of $\geq$ 70%. It is possible that MS participants' PEWLM will decline by the 7.5 to 11-year mark. Due to the narrow focus of Hispanics living in a specific geographical area, the sample included only women and because they had wide variability in their post-surgery times, generalization to other populations is limited.

Summary

This study used a multiple-case and theoretical-replication design and reflected two themes regarding why some Hispanic people were LS in weight-loss maintenance and four themes regarding how Hispanic people were MS with weight-loss maintenance following BS. In general, contributors to LS included lack of mental preparedness and inability to resist the Mexican American cultural food and related traditions. Contributors

to MS included the ability to transition to the required new lifestyle with the assistance/support of others and the perception that they now have a better life; a life where they felt empowered, experienced increased endurance, had freedom from medications, and had resolution of their obesity-related co-morbidities. Accountability that participants felt toward themselves or others also contributed to a long-term transition to a new lifestyle.

This study contributed to scientific knowledge through case-study explanations of how Hispanics of Mexican descent were MS and why Hispanics of Mexican descent were LS in long-term weight-loss maintenance following BS. More research on contributors to long-term weight-loss maintenance and exploration and testing of strategies to promote adherence to education and to changing one's daily lifestyle is warranted. With better outcomes following BS, positive impacts would be feasible regarding cost effectiveness of care and overall health and well-being of individuals who have had BS for weight loss.

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Chapter 4

Summary and Conclusions

An initial integrative review (Aguilera, 2014) indicated that education, support-group attendance, dietary counseling, cognitive-behavioral therapy, motivational support, family support, and support for depressive symptoms were major contributors to long-term success of people who had BS. The current qualitative case study further explored other factors that contribute to LS and MS weight-loss maintenance following BS among Hispanics of Mexican descent. The integrative review revealed that support, although a major contributor was not the only contributor to long-term weight-loss maintenance following BS.

Using a case-study design allowed the researcher to gather comprehensive information from multiple data sources, guided by suggestions provided in the integrative literature review. Participants were 12 Hispanics of Mexican descent who shared their experiences and perceptions of factors that contributed to being LS or MS with long-term weight-loss maintenance. After completion of analysis of interviews, six themes emerged: retraining of the mind is a must and resisting the Hispanic/Mexican American cultural food and eating traditions captured the essence of participants who were LS. Themes for those who were MS included life is better, support: can't do this without you, transitioning to a new life, and accountability. Each theme also included subthemes expressing the details of participants' experiences with BS, pre- and post-surgery preparation, the struggles they encountered in making the transition to the new lifestyle

required for success with BS, sources or lack of sources of support, and other factors that contributed to MS or LS.

The researcher recruited 12 participants by posting a recruitment flyer (see Appendix G) on Facebook, social media, and through snowball-sampling techniques. Except for one participant, an outlier, the remaining 11 participants had similar beginnings following BS. They shared similar motivations to have the surgery done. Reported motivations included having BS as a preventive measure due to family history, to improve existing obesity-related diseases, to improve self-concept, and to improve marital relationships.

The early period post-surgery was very similar in both groups in terms of initial short-term outcomes and therefore their responses for this time period post-surgery overlapped. This is the reason the researcher presented results according to the research questions and not according to the two groups.

Why Were Participants LS With Maintenance of Weight Loss Following BS?

One factor that contributed to being LS in weight-loss maintenance was failure to modify their way of thinking. Lack of mental preparation for BS contributed to returning to former poor habits, created eating challenges such as emotional eating, poor eating habits, and increased eating as the gastric pouch stretched and allowed for more food intake. Job-related stress and being in a bad mood spurred emotional eating, eating prohibited foods, and drinking soda or sugary drinks. Participants admitted they received BS education and understood postoperative requirements and were initially compliant but they gradually ceased being compliant as changes occurred in their lives such as loss of support, changes in work hours, and going to school. Most participants started some kind

of exercise routine but over time also ceased their regular exercise routine. Participants lost motivation as they started seeing their sagging skin, and as they found themselves with obstacles to being more active. All participants started with some source(s) of support but over time some participants lost most or all their sources of support and this lack of support also contributed to LS in weight-loss maintenance.

The inability to let go of the high-fat, high-calorie traditional cultural food and cultural customs and traditions also contributed to LS in weight-loss maintenance. Participants felt challenged to let go of their lifetime traditional diet and the traditions they grew up with such as being told they had to eat everything on the plate and that not eating everything served was considered disrespectful.

How Were Participants MS With Maintenance of Weight Loss Following BS?

As participants lost a significant amount of weight, they experienced feelings of empowerment, increased endurance, freedom from medications, and co-morbidity resolution. These feelings led participants to perceive their life was better. Support from healthcare providers, community support groups, others who had BS, friends, and family contributed to participants' ability to make a sustained transition to a new lifestyle. Of the sources of support, immediate family support was the most significant source as the family worked as a team. The family working as a team consisted mainly of husbands and children consuming the same meals, selecting a place that served the right meals when eating out, and assistance in meal planning and preparation, particularly by the spouse.

Support from healthcare providers, family, and others contributed to a successful, long-term transition to a new lifestyle. This new lifestyle consisted of learning a different

way to eat: choosing healthy food, controlling portion, and selecting appropriate eating venues. Continuance of the exercise/activity regimen and of remaining compliant with post-surgery recommendations contributed to long-term weight-loss maintenance. In addition, spirituality, believing they are close to God, and prayer contributed to the long-term success of weight-loss maintenance.

Accountability was also a very significant contributor to MS weight-loss maintenance. Participants felt accountable to others in different ways. Participants expressed not wanting to disappoint others who were proud of them for their success or to whom they served as role models of successful BS or as mentors. Some participants felt accountable to others in proving they could succeed over time. Participants also felt accountable to themselves, remembering they had BS to improve their health, as a preventative measure, to improve their self-concept, and to improve their spousal relationship

The multiple-case study with explanatory design allowed for the heterogeneous and holistic perspectives of the responses needed to explain LS or MS weight-loss maintenance following weight-loss BS. The aim of this case-study qualitative research was to address a scientific gap to explain LS or MS weight-loss maintenance among Hispanic people of Mexican descent who had BS. These explanations address deficits in the healthcare system or in people's personal lives that could promote success in the future for persons having BS. With better outcomes following BS, positive impacts are feasible in cost effectiveness of care and overall health and well-being of individuals who had BS for weight loss.

Future efforts to continue this program of research may include participants who are closer in the number of years post-surgery and may include male participants. Future research should target determining ways to facilitate improved success for weight-loss maintenance in the Hispanic population having BS. One example may be a model of online support. Online recreated recipes that use cultural ingredients but which have been modified to healthier versions may be made available.

BS educational curricula should incorporate information on including family in pre-operative and post-operative educational activities and on using creativity on ways to increase the likelihood of success. Educators should keep in mind that BS education and knowledge does not necessarily mean compliance.

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Appendix A: Acceptance of Article One by Practice Nursing

From: pn <pn@markallengroup.com<mailto:pn@markallengroup.com>>
>>>>Sent: Tuesday, August 26, 2014 10:05 AM
>>>>To: minerva aguilera
>>>>Subject: Practice Nursing: Post-surgery support and the long-term
>>>>success
>>>>of bariatric surgery
>>>>
>>>>Dear Minerva,
>>>>
>>>>Many thanks for submitting your article to Practice Nursing. We are
>>>>very pleased to inform you that we would like to accept your article for
>>>>publication in the journal. The article is scheduled to appear in the
>>>>next issue of the journal.
>>>>
>>>>A subedited version of your article is attached to this email as PDF
>>>>file. Could you please answer the author queries (AQs) highlighted in
>>>>pink bold type and return your answers listed in a Word document or
>>>>email
>>>>to pn@markallengroup.com<mailto:pn@markallengroup.com> by Wednesday
>>>>27th
>>>>AM (UK time).
>>>>
>>>>Best wishes,
>>>>Abby
>>>>
>>>>Abigail James
>>>>Subeditor, Practice Nursing

Appendix B: Themes and Subthemes for Why Less Successful

Themes	Subthemes	Transcript Paraphrased and Quoted Exemplars
Retraining of the Mind is a Must	Returning to former poor habits: Emotional eating	"I think that being overweight carries a tendency to become depressed and be depressed eaters; Before the surgery I was eating unhealthy food in response to stress; I have tried to eat healthy but I am an emotional eater; Having depression contributes to finding a way to eat more." (D)
		"Job-related stress makes me reach for food and has contributed to my gaining weight." (F)
		"I get in a bad mood when I am hungry." (I)
	Returning to former poor habits: Poor eating habits	"It's really easy to just go back to your old habits; If you want to do the bad eating habits again, no matter what, you're going to find a way to do it; Would have liked a more realistic long-term diet plan." (D)
		Blames her weight gain on consumption of sugary drinks and not on having big meals; Cheating on diet: "at least two hours post lunch can sneak something like a few chips because you have already digested what you had for lunch." (F)
		Eating restricted foods; Started going out and was drinking; Not having money to buy the healthier stuff/food; Waiting too long to eat causes her to be so hungry that she eats whatever is available without thinking about what's good; Does not have a specific diet, eats everything; She refused to let go of unhealthy foods even before the surgery she decided she was not changing her diet. (I)
	Returning to former poor habits: Gastric pouch dilation	Lack of preparation leads to less eating compliance; Sticking to the right portions is a challenge (L)
		Stomach/pouch stretches, increases amount of food that can be consumed; Increased size of stomach started weight gain; As lap band stretched she was able to eat more and she did eat more. (I)
		"overeating episodes have caused my pouch to extend." (D)
	Knowing versus doing	I need to put more effort on making diet changes. (I)
		She advises others who want to have BS that they need to be aware of what you can and cannot eat; need to learn what is bad for you. (L)
		"if food is unhealthy (bad) use portion control." (H)
		She advices others who want to have BS of the need to have knowledge about what food can do; to be aware of limitations on food intake. (D)

Themes	Subthemes	Transcript Paraphrased and Quoted Exemplars
Retraining of the Mind is a Must (continued)	Loss of motivation	Physical injury; inability to continue exercising; had subsequent weight gain with embarrassment of her new clothes no longer fitting; put her back in a depression. (D)
		Lack of wt loss: Weighing self and not seeing any further results worsened negative feelings about the surgery; Worrying about thinning hair; Guilt of lack of continued success; Being judged: Some people said she took the easy way out. (I)
	Giving up: Lack of exercise/ physical activity	Unable to go jogging due to going to school. (K)
		Ceased working out due to starting on a Master's degree; Using the time she was using to exercise to study. (I)
		Medical conditions and job hours limit exercise. (F)
		Not having time to exercise due to increasing work hours. (B)
	Body image	Seeing hanging skin in the mirror; Loose skin gives perception of still being "huge." (B)
		Perceiving the hanging skin as dreadful; Flabby skin in arms increases self-consciousness; Hanging skin has affected her psychologically. (F)
	Lack of support	"After my first post-surgery visit with the BS doctor I never went back, I was on my own." (D)
		"My husband supported my having the surgery but has never supported my new eating needs." (F)
		"My mother used to help me plan my meals but now that I am working the night shift, my mom is no longer able to accommodate my different hours of eating." (L)
		"My husband used to be very supportive of my eating and exercising, but ever since our business became more successful, he is working much longer hours and no longer has time to support me." (B)
		"My daughter used to help me plan my meals but I started working the night shift and she started going to school and she is no longer able to help me out." (H)
		"I had the surgery done and I never went back for any follow-up appointments; I was on my own after the surgery." (I)
Resisting the Hispanic/Mexican American Cultural Food and Eating Traditions	Traditional Hispanic Diet	She eats culturally fattening foods prepared by her elderly mother-in-law who cooks for her. (I)
		Hispanic eating traditions consist of high fat, high calorie foods. (A)
		Food is the number one form of entertainment in the Mexican culture; Cultural eating habits challenge diet changes; Traditional Hispanic get-togethers lack healthy food. (E)

Themes	Subthemes	Transcript Paraphrased and Quoted Exemplars
Resisting the Hispanic/Mexican American Cultural Food and Eating Traditions ((continued)	Cultural customs and traditions	Courtesy and good manners to eat everything on plate..."Don't say no"; Hispanic Culture: Disrespectful to not eat everything; Eating everything in plate evolves during life to eating everything you want. (A)
		"Being in the Hispanic heritage, culture, we have to have the tortillas, we don't know how to eat with just a spoon and a fork; Also, "pan dulce" (Spanish pastries), if you're going to have a "merienda" (traditional mid-afternoon Hispanic snack) or a get together such a prayer group, it's gotta be "pan dulce", it can't be something more healthy like fruit tray or a veggie tray, it has to be "pan dulce." (D)

Appendix C: Themes and Subthemes for How More Successful

Themes	Subthemes	Transcript paraphrased and quoted exemplars
Life is Better	Empowerment	Others noticing weight loss; getting many compliments; she no longer avoids taking pictures; Motivated by scale readings as weight went down; more comfortable around people. (C)
		Surgery helped her gain the motivation to want to do other things; Getting on stage as a speaker and getting a master's degree; Increased confidence has helped her believe in herself; She is a positive person but the surgery has given her a little swing. (J)
		Feeling healthy, achieving a comfortable weight, being able to fit into nice clothes; Feeling so much better about herself, getting compliments; The strength to be disciplined." (E)
	Endurance	"I have been able to increase my activity and enjoy more time with doing activities with my kids." (A)
		"My ability to move without getting tired increased; I am able to spend more time with grandkids and do more outside activities with them." (E)
		"After my weight loss I am now able to move faster." (C)
		"My productivity at work improved considerably." (F)
	Freedom from medications	"I was able to get off my off my medications." (D)
		"I was taking eleven pills and in the last 3 1/2 years I only take one pill every morning; (E)
		"I was taking insulin and blood pressure medication; I am now on zero medication." (H)
	Comorbidity resolution	"The surgery saved my life; I had cancer cells in my stomach which were removed with the Sleeve Surgery!" (E)
		"I am able to travel more due no longer having joint pain." (G)
		"My asthma went away, altogether." (B)
		Resolution of sleep apnea; "My weight loss lessened stress on my knees." (F)

Themes	Subthemes	Transcript paraphrased and quoted exemplars
Support: Can't do this without you		"Be as informed as possible about the surgery; Really think about what you are doing." (G)
	Anticipatory planning: Preoperative preparation	"A pre-surgery diet helps determine if you can do this on your own." (L)
		"Need to take at least six months to prepare with support from the BS team." (H)
	Anticipatory planning: Postoperative preparation	"The dietician should tell me exactly what she would like for me to do and put more stress on it; The dietician should be more specific, define terms she uses." (K)
		"There is the need for a realistic picture of what you will be facing after surgery; need to see the dietician for a post-surgery period of at least six months; psychological help is needed for making lifestyle changes." (D)
		Need an easy-to-follow, long term diet plan; Needs visual demonstrations of portion sizes. (B)
		While eating out kids will ask that the bread be brought with the meals having her fill up with salad and not eating bread; Keeps things she can eat in a refrigerator she keeps in her office. (J)
		It is about being prepared for adverse consequences; eats before attending a social if she knows there will be stuff she cannot eat. (A)
		Her doctors are the ones who have been most helpful to her post-surgery. (E)
	Mentorship: Healthcare providers	Her bariatric surgery doctor and bariatric surgery nurse continued calling her to see how she was doing for six months. (J)
		"My primary care physician recommended bariatric surgery as a way to improve my obesity related diseases." (F)
	Mentorship: Community (support groups)	"I didn't put enough value on joining a support group: would have been helpful." (C)
		Joining a support group was a big help for her. (G)
		Support group sessions were very helpful to her, shared concerns and difficulties in making adjustments. (B)
		Friend had surgery and told her about the details of the surgery(B)
	Mentorship: Others who have had BS	"My sister and niece had this surgery before I did"; She recommends teaming up with successful peers to serve as mentors; She thinks teaming up with other people who have had the surgery would be helpful. (G)

Themes	Subthemes	Transcript paraphrased and quoted exemplars
Support: Can't do this without you (continued)	Encouragement: Family teamwork	Family is the number one source of support; "My husband keeps encouraging meal planning and exercise; My children also encourage me." (E)
		Husband and children help plan and fix her meals; Her husband and children help her monitor her eating while eating out and while attending social events; Perceives that having a supportive family increases your chances of success. (J)
		Family works together for each other's benefit; Consistent support with eating from husband and children; Family as a team working together to promote healthy lifestyle. (A)
	Encouragement: Friends	Remembers friends telling her she looks good. (K)
		She gets many compliments from her friends; Her friends are proud, stated they were glad she did the surgery. (C)
		She receives co-worker support (A)
		"Many of a my friends have been very supportive." (G)
Transitioning to a new lifestyle	Learning a different way to eat: Healthy food	Eating restrictions; consequences of adjusting to new eating style; consequences of not doing it right; avoiding fried foods. (A)
		"It's not about not eating, it's about eating the right foods; eating healthy snacks; Every meal has to be a decision." (J)
		"The main goal of the diet is protein and water intake; having more knowledge of healthy food." (K)
		"It's about eating smaller portions, increasing frequency of eating; I don't snack in between meals." (G)
	Learning a different way to eat: Portion control	"It's about knowing portion size and practicing portion control; I feel sick if I eat too much; feeling pain is a signal of my eating limit; my smaller stomach contributes to my portion control; If I don't chew correctly, if I eat too fast … it's like you're stuck already, either I have to wait for it to go down or I have to go throw up." (A)
		Fear of feeling ill has helped her stop eating. (K)
	Learning a different way to eat: Eating venues	She carefully selects places where they serve the stuff she can eat. (J)
		"We would go to buffets and now I can't." (G)
		She had increased her outside activities and has increased activities with her kids. (A)
	Exercise/physical activity	She is able to walk more; walks six miles a day. (G)
		She increased the time spent on exercising, works out more consistently now. (J)

Themes	Subthemes	Transcript paraphrased and quoted exemplars
Transitioning to a new lifestyle (continued)		Her advice to others planning to have BS is to decide to be compliant with eating recommendations and to make a plan and take some action. (G)
	Being compliant	Eating about every two hours and planning and preparing her meals lead to eating compliance. (J)
		She eats slow and chews well; Compliance is fostered with bringing healthy snacks to social events. (A)
	Spirituality	She is closer to God; She prayed for strength to not let food be more important than her health; She manages life's changes with focus and prayer. (E)
		She asks God for power and deliverance. (B)
Accountability		The fact that people are just watching makes is difficult but keeps her in check; Other people's doubts about her ability to succeed has made her increase her desire to succeed. (J)
	Accountability to others	She feels accountable to her daughter who is bariatric surgery nurse; She does not want to disappoint her family members who are proud of her weight loss. (E)
		Desire to be role model to her kids, practicing prevention behaviors with them to prevent their having the same fate. (K)
		She has participated in two bariatric surgery commercials; People look up to her as an example of bariatric surgery success; She wants to make a difference in other's lives. (E)
		She does not want to be labeled as person who "gained the weight back." (A)
	Accountability to self	"It takes putting effort to work sticking to post surgery requirements." (K)
		She is doing what it takes to avoid adverse consequences; She is putting the brake on becoming a statistic. (A)
		She now avoids buffets. (G)

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Publisher Tax ID	GB 844 1270 44
Billing Type	Credit Card
Credit card info	Visa ending in 9404
Credit card expiration	01/2020
Total	15.00 USD

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Appendix D, continued

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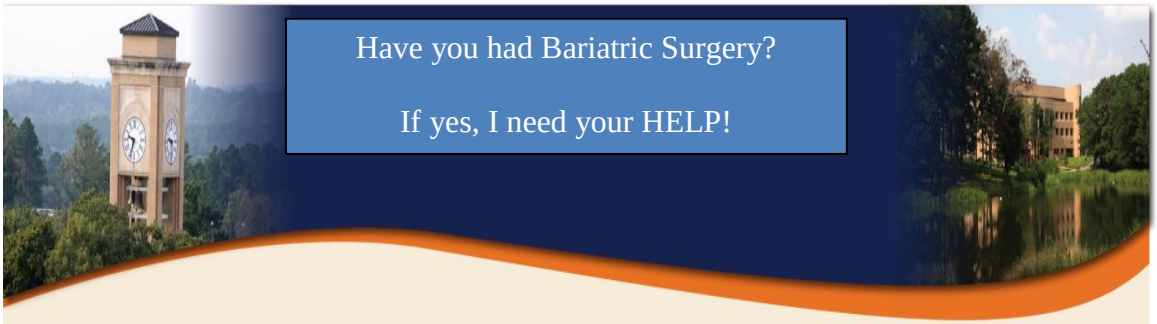
Appendix E: Recruitment Flyer



Have you had Bariatric Surgery?

If yes, I need your HELP!

Researcher at University of Texas at Tyler, Nursing PhD program wants to learn about factors that contribute to post-bariatric surgery weight loss outcomes. This research study is for post-bariatric surgery individuals.
Research is always voluntary!

Eligibility:

- You had bariatric surgery at least two years ago.
- You are Hispanic of Mexican descent, regardless of generation
- You are 30+ years of age (whether successful or unsuccessful with weight loss maintenance).
- You live in the Rio Grande Valley of Texas
- You speak and understand English

What would happen if I took part in the study?
If you decide to take part in the search study, you would

- fill in a demographic questionnaire (things such as your age, marital status, etc.)
- set up a meeting with the researcher to talk about your experiences with bariatric surgery weight loss outcomes and what factors have contributed to your successful weight loss maintenance or what factors contributed to your inability to maintain weight loss
- be interviewed for 1-1.5 hours, interviews will be recorded
- You may be asked to meet again if more information is needed.

There may be possible benefits if you take part in the study.

- Nurses and doctors can help other bariatric surgery patients by learning what has worked or not worked for others.

To take part in the post bariatric surgery weight loss maintenance research study or for more information, please contact Minerva Aguilera at 956-739-0843 or at maguilera@patriots.uttyler.edu
The principal researcher for this study is Minerva Aguilera PhD nursing student at UTTyler.

Appendix F: Demographic Questionnaire

Contact Information:

Name_____ DOB_____

Phone where you can be reached_____(best time to

contact you) _____

e-mail address_____

1. How long has it been since you had your bariatric surgery? _____

2. Pre-surgery weight_____
Weight at your maximum weight loss _____
Current weight_____

3. What type of weight loss surgery did you have?
___ Roux-en-y Gastric Bypass Surgery
___ Gastric Sleeve Surgery
___Adjustable Gastric Banding
___ Other _____

4. What is your age?_____

5. What is your gender?
__ male
__female

6. What is your primary language?
__ English
__Spanish
__Other (_____)

7. What is the highest level of education you have completed?
__ Grammar School
__ High School or equivalent
__Vocational/Technical School (2years)
__ Some college
__ Bachelor's Degree
__ Master's Degree
__ Doctoral Degree
__ Professional Degree (MD, JD, etc.)
__ Other

Appendix E continued

8. How would you classify yourself?
__ Hispanic
__ Latino
__ Mexican American
__ Other _____

9. What is your marital status?
__ Divorced
__ Living with another
__ Married
__ Separated
__ Single
__ Widowed

10. Where do you currently reside? (city, state)
_____ _____

11. What is your current household income in U.S. dollars?
__ Under $10,000
__ 10,000–19,999
__ 20,000–29,999
__ 30,000–39,999
__ 40,000–49,999
__ 50,000–74,999
__ 75,000–99,999
__ 100,000–150,000
__ over 150,000
__ would rather not say

12. Which of the following categories best describes your primary area of employment?

__ Homemaker
__ retired
__ student
__ unemployed
__ Education
__ Construction
__ Finance and Insurance
__ Government and Public Administration
__Health Care and Social Assistance
__Legal Services
___ Other _____

Appendix G: Informed Consent

THE UNIVERSITY OF TEXAS AT TYLER
Informed Consent to Participate in Research

Institutional Review Board #Sp2016-81

Approval Date: April 4, 2016

1. Project Title: Bariatric Surgery Weight Loss Maintenance Among Hispanics, A Multiple Case Study

2. Principal Investigator: Minerva Aguilera

3. Participant's Name: _____

To the Participant:
You are being asked to take part in this study at The University of Texas at Tyler (UT Tyler). This permission form explains:

- Why this research study is being done.
- What you will be doing if you take part in the study.
- Any risks and benefits you can expect if you take part in this study.

After talking with the person who asks you to take part in the study, you should be able to:

- Understand what the study is about.
- Choose to take part in this study because you understand what will happen

4. Description of Project

The purpose of this study is to find out how some persons have maintained post-bariatric surgery weight loss and why other persons have been not been able to maintain weight losses. Nurses and doctors can use your story to help other bariatric surgery patients by advising them what to do or what not to do to maintain their weight losses.

5. Research Procedures

If you agree to be in this study, we will ask you to do the following things:

- Your will be asked to fill in a demographic questionnaire (things such as your age, marital status, etc.)
- You will be asked to set up a meeting with the researcher to talk about your experiences with bariatric surgery and what factors have contributed to your success. Interviews will be recorded.
- You may be asked to meet again if more information is needed.

6. Side Effects/Risks

You may become slightly distressed when discussing your weight loss experience and your eating habits/problems, though we do not expect this to be a common problem. If you become distressed the researcher can stop the interview at any point you request and you will be given the option to re-schedule, take a break, or discontinue your participation. The researcher can also refer you to a therapist if you feel this will be helpful.

7. Potential Benefits

Nurses and doctors can help other bariatric surgery patients by learning what has worked for others.

Understanding of Participants

8. I have been given a chance to ask any questions about this research study. The researcher has answered my questions.

9. If I sign this consent form I know it means that:

• I am taking part in this study because I want to. I chose to take part in this study after having been told about the study and how it will affect me.

• I know that I am free to not be in this study. If I choose to not take part in the study, then nothing will happen to me as a result of my choice.

• I know that I have been told that if I choose to be in the study, then I can stop at any time. I know that if I do stop being a part of the study, then nothing will happen to me.

• I will be told about any new information that may affect my wanting to continue to be part of this study.

• The study may be changed or stopped at any time by the researcher or by The University of Texas at Tyler.

• The researcher will get my written permission for any changes that may affect me.

10. I have been promised that that my name will not be in any reports about this study unless I give my permission.

11. I also understand that any information collected during this study may be shared as long as no identifying information such as my name, address, or other contact information is provided. This information can include health information. Information may be shared with:
• Organization giving money to be able to conduct this study
• Other researchers interested in putting together your information with information from other studies
• Information shared through presentations or publications

12. I understand The UT Tyler Institutional Review Board (the group that makes sure that research is done correctly and that procedures are in place to protect the safety of research participants) may look at the research documents. These documents may have information that identifies me on them. This is a part of their monitoring procedure. I also understand that my personal information will not be shared with anyone.

13. I have been told about any possible risks that can happen with my taking part in this research project.

14. I also understand that I will not be given money for any patents or discoveries that may result from my taking part in this research.

15. If I have any questions concerning my participation in this project, I will contact the principal researcher: (Minerva Aguilera) at (956-739-0843) or email (maguilera@patriots.uttyler.edu).

16. If I have any questions concerning my rights as a research subject, I will contact Dr. Gloria Duke, Chair of the IRB, at (903) 566-7023, gduke@uttyler.edu,
or the University's Office of Sponsored Research:

The University of Texas at Tyler
c/o Office of Sponsored Research
3900 University Blvd
Tyler, TX 75799

I understand that I may contact Dr. Duke with questions about research-related injuries.

17. CONSENT/PERMISSION FOR PARTICIPATION IN THIS RESEARCH STUDY

I have read and understood what has been explained to me. I give my permission to take part in this study as it is explained to me. I give the study researcher permission to register me in this study. I have received a signed copy of this consent form.

_____ _____
Signature of Participant Date

_____ _____ _____
Signature of Person Responsible (e.g., legal guardian) Relationship to Participant

_____
Witness to Signature

18. I have discussed this project with the participant, using language that is understandable and appropriate. I believe that I have fully informed this participant of the nature of this study and its possible benefits and risks. I believe the participant understood this explanation.

_____ _____
Researcher/Principal Investigator Date

Appendix H: Interview Guide

To establish communication and dialogue:
(Icebreaking questions) questions about their family and/or job or their day

1. What made you decide to have this surgery?

2. Tell me about what it's been like for you since you've had your bariatric surgery. (possible prompts, with your family, your friends, co-workers, socially)

3. How has the surgery helped you?

4. How did the surgery meet your personal or other goals?

5. In what ways do you feel you met your expectations from this surgery?

6. How have you maintained your excess weight loss? (probes: have you made changes in eating habits, your level of activity, is it something inside you, intrinsic, or an outside factors, extrinsic, such as your family or others, have you received support from others, if so who)

7. What factors have contributed to your regaining some of the weight you lost.

8. How do you believe your age has affected your bariatric surgery results?

9. What other factors have contributed to your success? (probes: within you, intrinsic and any outside factors, extrinsic)

10. As you look back on the days after your surgery what events stand out in your mind? (your feelings, while at home, on the job, socially)

11. How did these events affect the results of your surgery?

12 . What helps you manage your lifestyle changes?

13. What problems have you encountered in managing your lifestyle changes?

14. Who has been most helpful to you?

15. How has he/she been helpful?

16. What positive changes have occurred in your life since having bariatric surgery?

17. What negative changes have occurred in your life since having bariatric surgery?

18. Describe a typical day for you when you are trying to comply with strict post-surgery guidelines (probe for different times, morning, noon, evening, social events, other).

19. What do you think are the most important ways to adjust to a post-bariatric surgery lifestyle changes?

20. What has been most important to you?

21. How has your experience before bariatric surgery affected how you handled lifestyle changes required by post surgery guidelines?

22. How have you grown as a person since having bariatric surgery.

23. Tell me about the strengths that you discovered or developed through adjusting to a new lifestyle.

24. What do you value about yourself now?

25. What do others most value in you now?

26. If you did this all over again, what, if anything would you do different?

What would you want to know that would make a bigger difference from the:
27. the doctor
28. the dietician
29. the psychologist/ psychiatrist
30. the nurse

31. After having these experiences, what advice would you give someone who would like to have bariatric surgery done?

32. What else that we haven't talked about that you can add?

33. Is there anything you would like to ask me?

Appendix I: IRB Approval for Study

THE UNIVERSITY OF TEXAS AT TYLER
3900 University Blvd. • Tyler, TX 75799 • 903.565.5774 • FAX: 903.565.5858

Office of Research and Technology Transfer
Institutional Review Board

April 7, 2016

Dear Ms. Aguilera,

Your request to conduct the study: Bariatric Surgery Weight Loss Maintenance Among Hispanics: A Multiple Case Study, IRB #SP2016-81 has been approved by The University of Texas at Tyler Institutional Review Board under expedited review. This approval includes the written informed consents that are attached to this letter, and your assurance of participant knowledge of the following prior to study participation: this is a research study; participation is completely voluntary with no obligations to continue participating, and with no adverse consequences for non-participation; and assurance of confidentiality of their data.

In addition, please ensure that any research assistants are knowledgeable about research ethics and confidentiality, and any co-investigators have completed human protection training within the past three years, and have forwarded their certificates to the IRB office (G. Duke).

Please review the UT Tyler IRB Principal Investigator Responsibilities, and acknowledge your understanding of these responsibilities and the following through return of this email to the IRB Chair within one week after receipt of this approval letter:

• This approval is for one year, as of the date of the approval letter •

The Progress Report form must be completed for projects extending past one year.
Your protocol will automatically expire on the one year anniversary of this letter if a Progress Report is not submitted, per HHS Regulations prior to that date (45 CFR 46.108(b) and 109(e): http://www.hhs.gov/ohrp/policy/contrev0107.html

• Prompt reporting to the UT Tyler IRB of any proposed changes to this research activity

THE UNIVERSITY OF TEXAS AT TYLER
3900 University Blvd. • Tyler, TX 75799 • 903.565.5774 • FAX: 903.565.5858
EQUAL OPPORTUNITY EMPLOYER

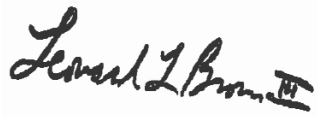
• Prompt reporting to the UT Tyler IRB and academic department administration will be done of any unanticipated problems involving risks to subjects or others

• Suspension or termination of approval may be done if there is evidence of any serious or continuing noncompliance with Federal Regulations or any aberrations in original proposal.

• Any change in proposal procedures must be promptly reported to the IRB prior to implementing any changes except when necessary to eliminate apparent immediate hazards to the subject.

Best of luck in your research, and do not hesitate to contact me if you need any further assistance.

Sincerely,



Leonard L. Brown III
Associate Professor of Computer Science

Appendix J: Demographics

Participant	Gender	Age	Racial/ethnicity	Marital status	Education	Annual income level
A	Female	40	H/MD*	Married	2 yr Vocational	N/A
B	Female	50	H/MD*	Married	Some college	> $150,000
C	Female	35	H/MD*	Divorced	Completed High School	$20,000–29,999
D	Female	49	H/MD*	Married	Some college	$75,000–99,999
E	Female	68	H/MD*	Married	Bachelor's Degree	$100,000–150,000
F	Female	66	H/MD*	Married	Some college	$75,000–99,999
G	Female	62	H/MD*	Married	Some college	$40,000–49,999
H	Female	60	H/MD*	Widowed	Completed High School	< $10,000
I	Female	38	H/MD*	Separated	Master's Degree	$40,000–49,999
J	Female	44	H/MD*	Married	Master's Degree	$100,000–150,000
K	Female	33	H/MD*	Single	Some college	< $10,000
L	Female	32	H/MD*	Single	Some College	$30,000–39,999

Note. *H/MD= Hispanic of Mexican Descent

Appendix K: More Successful Weight Loss Maintenance ≥ 70% for ≥ 2 years

Participant	Type of Surgery	Years postsurgery	Beginning weight	Wt at max wt loss/ max no. of pounds lost	Current weight/no. of pounds kept off	% Excess weight loss maintenance (PEWLM)
J	Gastric sleeve	3.0	303	183/120	185/118	98
K	Gastric sleeve	2.0	311	179/132	185/126	95
E	Gastric sleeve	3.5	268	161/107	170/98	92
G	Gastric sleeve	2.0	217	138/79	144/73	92
C	Roux-en-Y	3.0	382	202/180	218/164	91
A	Adjustable gastric band	5.0	228	160/68	170.2/57.8	85

Appendix L: Less Successful Weight Loss Maintenance < 70% for ≥ 2 years

Participant	Type of surgery	Yrs. postsurgery	Beginning weight	Wt at max wt loss/ max no. of pounds lost	Current weight/no. of pounds kept off	%Excess weight loss maintenance (PEWLM)
H	Gastric sleeve	5.0	236	115/121	153/83	69
B	Gastric sleeve	11.0	278	148/130	190/88	68
L	Roux-en-Y	5.0	320	160/160	211/109	68
F	Gastric sleeve	7.5	253	163/90	193/60	67
D	Roux-en-Y	9.0	280	140/140	200/80	57
I	Adjustable gastric band	5.0	385	315/70	345/40	57

Appendix M: Motivation for Both Groups to have Bariatric Surgery

Themes	Subthemes	Transcript paraphrased and quoted exemplars
Health promotion	Inspired by co-morbidities of family	"my husband being diabetic. And then it runs in my family, I really, I need be keep myself healthy." (A)
	Epiphany: Inspired by friend who had surgery	"my cousin, the one that came with me, the blind one. She recently became blind and she diabetic also." (H)
	Physical mobility with ill daughter	"I am always at the hospital with my mother who has diabetes, I don't want my kids to have to go through that." (J)
	Life longevity	"I couldn't do much activity; I had a little bit of asthma as well; I would get short of breath a lot, so I was very limited." (B)
	Convinced surgery works	"I have a daughter that is ill and every time she would end up in the ER and they transferred her to a room , she was in the stretcher and I would be like way behind; The weight loss helped me move faster." (C)
		"because I had a child late in life. You know I had to try to be around as long as I can because he is very significant to me." (D)
		"My sister and niece had this surgery before I did… when I noticed they were off their medications, I wanted my health to improve and I knew this surgery would help me in the long run." (G)
Health	Health improvement	The reason I decided to have the surgery was my health." (E)
		"I had a lot of health problems, diabetes, sleep apnea, high blood pressure, knee problems, and back problems." (L)
Self-concept	Treating self with surgery	"It is something that you do to spoil yourself." (I)
	Intrinsically inspired	"factors within me, definitely, I mean that's what it comes down to" (L)
Relationships	Spousal Relationship	"I just thought that it would help my husband. We had a good marriage but I wanted it to be better." (B)

Appendix N: Sources of Support

Participant PEWLM	Back then	In-between	Now
More successful group			
J: 98%	Family Healthcare providers	Family Healthcare providers	Family
K: 95%	Family Healthcare providers	Family	Family
E: 92%	Family Healthcare providers	Family Healthcare providers	Family
G: 92%	Family Healthcare providers Support groups (community)	Family Healthcare providers Support groups (community)	Family Healthcare providers Support groups (community)
C: 91%	Family Healthcare providers	Family	Family
A: 85%	Family Friends	Family Friends	Family Friends
Less successful group			
H: 69%	Family Healthcare Providers	Family	Family
B: 68%	Family Healthcare providers Support groups (community)	Family Healthcare providers Support groups (community	None
L: 68%	Family	None	None
F: 67%	Family Healthcare providers	None	None
D: 57%	Family Healthcare providers	None	None None
I: 57%	Family Healthcare providers	None	None None

Note. PEWLM = Percent excess weight-loss maintenance

Appendix O: Detailed Research Procedure Protocol

1. Came up with research questions:
a. In persons who have had bariatric surgery for morbid obesity, how have they been more successful at maintaining weight loss?
b. In persons who have had bariatric surgery for morbid obesity, why have they been less successful in maintaining weight loss?

2. Identified propositions for the study:
a. Post-bariatric more successful weight loss maintenance can be achieved with social support, nutritional, psychological, lifestyle counseling, exercise/physical activity, preoperative weight loss, practicing religiosity and spirituality, and other factors
b. Post-bariatric less successful weight loss maintenance is the result of lack of support, eating disorders, lack of exercise/physical activity, psychiatric/psychosocial problems and other factors.

3. Decided on the units of analysis for study, two groups of six or a total of twelve participants.
a. Six persons who were more successful at maintaining their excess weight loss for two or more years
b. six persons who were less successful at maintaining their excess weight loss for two or more years

4. Decided on inclusion criteria:
a. >2 years post-surgery
b. Hispanic of Mexican descent, regardless of generation
c. 30+ years of age
d. reside in the Rio Grande Valley of Texas
e. English-speaking

5. Study was approved by UT Tyler IRB.

6. Study was advertised in social media, Facebook.

7. Interested individuals made contact with researcher.

8. Study was explained and arrangements were made for a place and time of meeting.

9. A time and place for meeting were established.

10. Upon meeting in person, demographic and consent forms were filled after participants stated they fully understood.

11. Participants were fully informed regarding the purpose of the study, frequency of interviews, expectations, and the extent of their participation and made aware that participation is voluntary and that they may withdraw their participation at any time.

12. Data collection involved digitally-audio recorded interviews with individual

13. Field notes consisting of observations were also part of the data collection.

14. During the interview participants sat in a way that insured eye contact with the researcher.

15. Prior to initiating the interview the researcher first explained that the purpose of the interview and asked that they notify the researcher if they needed to break or became too fatigued to continue.

16. Each participant was given a pseudo-name for the interviews in order to facilitate confidentiality.

17. To facilitate participant relaxation the researcher initiated the interview by including questions about their family and/or job or their day to help "break the ice" and allow the participant to freely express information that may lead to the next broad question.

18. The next broad question was: Tell me about what it's been like for you since you've had bariatric surgery.

19. Relevant probing was done to elicit in-depth information and rich descriptions was done.

20. Once interviews were recorded, they were be transcribed by the researcher verbatim.

21. Data analysis procedures were done manually, and started with the interviews and was conducted concurrently with subsequent interviews.

22. New information from subsequent interviews was used to return to previous participants so that additional information was collected for richer and more in-depth data.

23. The researcher looked for alternative explanations that would negate those initial thoughts, and both of these recommendations were followed in this study.

24. A codebook was maintained throughout the fieldwork and data analysis process to record initial codes and preliminary meanings.

25. Data analysis was done through the process of examining and coding in search of patterns in the data that addressed the propositions of the study.

26. This process started with the researcher transcribing each interview verbatim and validating it with the participant.

27. Initially, each transcript was first read in its entirety to gain a sense of the context and overall content of the interview.

28. The transcript was read line by line, and codes or labels that symbolize relevant statements were assigned.

29. Coding was done by going back to the research questions and asking questions of the data that related to these questions

30. Codes were further abstracted to look for patterns of meaning across the data.

31. Data analysis was done through the process of examining and coding in search of patterns in the data that addressed the propositions of the study.

32. The researcher focused on recurring patterns as they become evident in light of the research questions and propositions.

33. As data analysis proceeded, the researcher sought out additional data as prompted, necessitating the need to re-contact participants during the data analysis phase.

34. Upon identification of patterns in the data, themes were classified.

35. The explanation building process was iterative.

36. This iterative process started with an initial explanatory proposition, the findings of an initial case was compared against the proposition, the proposition was revised, the case was compared with the revision, and the revision was compared to subsequent cases.

37. This process was repeated as many times as needed.

38. Participants reviewed the data to confirm its accuracy.

39. A doctorally prepared, qualitative researcher reviewed the report

40. The researcher triangulated data by converging data collected from different sources, to determine the consistency of the findings.

41. Once transcribing was completed and it was backed up recordings were destroyed immediately.

42 . To protect data there was limited access, the only person who used the data was the researcher.

43. Once the study was completed and written, all copies were destroyed except signed consent forms that will be kept for a period of three years per policy of the UT Tyler regulation.

44. To protect electronic data the computer was a standalone, it was password secured, had a firewall, and researcher used an encrypted flash drive.

45. Transcripts were identified only by indirect identifiers and stored on a password protected laptop

46. Field and other contextual notes also used indirect identifiers.

Appendix P: Biographical Sketch

OMB No. 0925-0001 and 0925-0002 (Rev. 10/15 Approved Through 10/31/2018)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors. Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Minerva Aguilera

ERA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Economics Faculty, Registered Nurse

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of Texas Rio Grande Valley	BBA	12/1975	Business Administration
University of Texas Rio Grande Valley	MBA	05/1982	Masters Business Administration
University of Texas Rio Grande Valley	Masters in Educational Leadership	05/1986	Educational Leadership
University of Texas Rio Grande Valley	Completed hours needed to complete a Masters in Economics	05/2001	Economics
South Texas College	ADN	05/2008	Nursing
University of Texas Brownsville	MSN	12/2011	Nursing
University of Texas at Tyler	Ph.D.	Not complete yet	Nursing

A. Personal Statement

The purpose of this qualitative case study research is to address the scientific gap regarding post-bariatric surgery outcomes in the Hispanic population living in south Texas by explaining why and how varying outcomes occur. The target population will include two different Hispanic groups of Mexican descent, without regard to generation in this country. Research questions for this study include: (a) In persons who have had bariatric surgery for morbid obesity, how have they been more successful at maintaining weight loss? and (b) In persons who have had bariatric surgery for morbid obesity, why have they been less successful in maintaining weight loss?

Appendix

P: Biographical Sketch, continued

I have been an instructor previously at the high school and currently at the college level, for over thirty years and have been a nurse for eight years. In my experiences in both jobs I have seen the ever-increasing problems of obesity. I also have a personal interest in bariatric surgery and in finding factors that have contributed to post-surgery success.

B. Positions and Employment

2013–2015	Registered MDS (Minimum Data Set) Nurse, Retama Manor Nursing Home, McAllen, TX
2010–2013	Registered MDS (Minimum Data Set) Nurse, Retama Manor Nursing Home, Edinburg, TX
2012–Present	Full-Time Economics Instructor, South Texas College, McAllen, TX
2008–2010	Registered Nurse, Oro Del Pueblo Adult Daycare, Edinburg, TX
2008	Registered Nurse, Mission Regional Medical Center, Mission, TX
2004–2006	Full-Time Economics Instructor, South Texas College, McAllen, TX
1977–2004	Instructor of Business Courses, Edinburg CISD, Edinburg, TX
1993–2003	Adjunct Economics Instructor, South Texas College, McAllen, TX
1976–1977	Elementary Teacher, Pharr-San Juan-Alamo ISD, Pharr, TX

Other Experience

1994–1995	Financial Advisor, Waddell & Reed Financial Inc., McAllen, TX
1982–1983	Staff Accountant, Arturo Flores CPA Firm, Edinburg, TX
1982–Present	Seasonal Self-Employed Tax Preparer, Edinburg, TX

C. Peer-Reviewed Publications

Aguilera, M. (2014). Post-surgery support and the long-term success of bariatric surgery. *Practice Nursing, 25,* 445-459. doi:10.12968/pnur.2014.25.9.455