

THE LIVED EXPERIENCE OF COUPLES AFTER BARIATRIC SURGERY: A
QUALITATIVE DESCRIPTION

by

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Obesity is a worldwide epidemic. Diet, exercise, and medical therapies alone have not been enough to stem the tide of this epidemic. Bariatric surgery has been found not only to be the most effective intervention for morbid obesity, but also results in substantial improvement in many of the associated co-morbid conditions. However, it is not clear what impact the surgery and subsequent life-style changes have on the patients' couple relationships. In order to explore the impact of bariatric surgery on the couple relationship, two research articles were completed: (a) a systematic literature review was used to explore existing research on the impact bariatric surgery on the marital/couple relationship and (b) a phenomenological study was conducted to explore and better understand the impact of weight loss surgery on the couple relationship. The results of the literature review demonstrated that very little is known on this topic. Of the published studies focusing primarily on the effects of weight loss surgery and couples, the vast majority of these studies were conducted between the years 1977 and 1991, with the most current study published in 2000. The more recent studies found that many couple relationships improved or remained stable after an initial adjustment period post-surgically. The research study revealed that the participant couples experienced the following five emerging thematic experiences: (a) changes in physical health; (b) changes in emotional health; (c) changes in

eating habits; (d) greater intimacy in the relationship and; (e) the joint journey, where all couples felt their post-operative success was part of a joint effort. Recommendations from both articles are offered for clinicians, researchers, policy makers and medical family therapists.

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BARIATRIC SURGERY: A QUALITATIVE DESCRIPTION

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by

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DEDICATION

To my parents, Mary Ann Rose and Walter Pories, for your unwavering love, patience, guidance, faith and unfailing support.

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PREFACE

My father is a surgeon who has both advanced the field of bariatric surgery and the search for a cure for diabetes. My mother is a nurse; currently a nurse researcher and educator. I grew up immersed in medicine and the medical model, so much so that it became second nature to me. Growing up, we discussed medical issues at the dinner table. I learned about things such as T-cells and how to do a kidney transplant. I heard my parents and other experts discuss the reversal of diabetes after a gastric bypass. In my younger years, I volunteered at the local hospital as a candy striper and saw what health care professionals did first hand. I saw people who were struggling with terrible illnesses hoping to find some resolution. I also witnessed times when medicine failed people. I saw people die, when neither medicine nor surgery could save them. Health and medicine were a part of my childhood and adolescence, and continue to form who I am and who I am still becoming.

My mother reminded me that I have always been interested in helping people who are dealing with medical issues. When I was a teen-ager, I participated in numerous projects that raised money or awareness for various medical issues. When my best friend's father needed a kidney transplant, I picked up the phone and called one of the leading experts in the country to find out what needed to be done to make a transplant happen. I was a very bold 13 year-old. Of course, I had met him at the dinner table, and I know now that my father called behind me and made inquiries. When the time came to consider higher education, I pursued a bachelor's degree in political science, and then a master's degree in social work. Becoming a licensed clinical social worker afforded me the opportunity to work with patients and their families who were dealing with health and mental health issues as a trained and credentialed behavioral health specialist. I worked in both public and private hospitals, as well as in a veteran's administration

hospital. I worked on both medical and behavioral health units, and as a member of multi-disciplinary treatment teams. I often worked with underserved populations.

As I advanced in my career, I realized the need for more integrated approaches to medical and behavioral health care, not working with just the individual and assisting him or her to navigate the labyrinth that is the medical and behavioral health system. When it became clear to me that I needed to advance my formal education if I wanted to contribute to the body of knowledge of research, I began looking for a program to meet my needs for a better defined, more integrated approach to health care that takes the mind/body connection into account. After all, it takes more than just a desire to practice integrated care; it takes in-depth training to do so (Blount, 2003; Blount, DeGirolamo, & Mariani, 2006). What I found was the Medical Family Therapy program and the biopsychosocial model.

The biopsychosocial (BPS) model was developed by George Engel (1977, 1980) as an alternative to the more traditional medical model. According to the BPS model, medical problems are best understood in the context of biological, psychological and social factors. This enables health care providers to view patients from a more holistic perspective and take into account not only the individual patient, but the larger social systems to which a patient belongs (Engel, 1977, 1980). According to McDaniel, Campbell, and Seaburn (1995), “each biological problem has psychosocial consequences, and each psychosocial problem has biological correlates” (p. 117).

McDaniel, Doherty, and Hepworth (2014) noted that a fundamental assumption of medical family therapy is "all therapeutic issues involve complex systems dynamics at the biological, psychological, interpersonal, institutional, community, societal, cultural, and environmental levels" (p. 5). Studying medical family therapy and the BPS model would allow

me to fill the gap between the medically oriented nature of my social work practice and my desire for a more holistic way to provide care to patients.

Almost 20 years after I earned my master's degree, I returned to school to study the field of Medical Family Therapy (McDaniel, Doherty, & Hepworth, 2014). In my master's program, I wrote a thesis on marital satisfaction in patients after they had undergone bariatric surgery, a blending of medical and psychosocial issues. As a doctoral student focusing my research agenda, I was drawn to similar issues.

While one might assume that major advances in this body of knowledge would have been made by now, I discovered the opposite. Indeed, very little has been published on the effects of bariatric surgery on the couple dyad. So, in some ways, I am back where I started, examining the issues of couples and bariatric surgery. This time, I have been trained as a researcher as well as a clinician who understands the mind/body connection and the larger systems impacting and impacted by illness.

CHAPTER ONE: INTRODUCTION

Obesity is the leading cause of mortality, morbidity, and disability in the United States (The Obesity Society, 2013). The worldwide prevalence of obesity has more than doubled since 1980 (World Health Organization, [WHO], 2012), with approximately 300 million women and 200 million men identified as being obese, and more than 1.4 billion adults overweight worldwide (WHO, 2012). The Center for Disease Control (CDC, 2012b) estimated that more than one-third of US adults, approximately 78 million adults (National Center for Health Statistics, 2012) are obese.

With the prevalence of obesity and medical complications of not only the obesity, but accompanying co-morbidities, it is not surprising that research is being conducted on a variety of issues such as how to lose weight (e.g., Blair, 2009; Pollak et al., 2012), maintain weight loss (e.g., James, 2009; Kraschnewski et al., 2010) discuss weight loss with patients (e.g., Pollak et al., 2010) and even the economic impact of obesity and weight (e.g., Hammond & Levine, 2010; Loveman et al., 2011). Of interest to this investigator is the study of bariatric surgery and the couple relationship.

Weight and Couples

Because of the widespread incidence of obesity in this century (CDC, 2012b), one area of interest to researchers is the relationship of weight and marriage/divorce. In Americans, Jeffery and Rick (2002) found that BMI [body mass index] did not predict the likelihood of marriage, and yet Mukhopadhyay (2008) noted that obese men were less likely to be accepted into cohabitating relationships and obese women were less likely to be accepted into either marriage or cohabitating relationships. Weight differences have been found in couples entering and exiting relationships. Sobal, Rauschenbach, and Frongillo (2003) noted that entering into marriage was not associated with weight gain in men, but was associated with weight gain in

women. Averett, Sikora, and Argys (2008) found that married women had lower BMIs than single, never married women, who were more often obese and/or heavier than married women (Sobal & Hanson, 2011). Averett et al. (2008) further found that married and cohabitating men had higher body mass index (BMI) than men who were not married or cohabitating while Sobal and Hanson (2011) found that married men weighed more than separated and/or divorced men. In a more recent study utilizing the longitudinal data from the Swedish Level of Living surveys, Oliveira, Rostila, de Leon, and Lopes (2012) found that divorced or widowed women had a higher risk of obesity. Obviously, the relationship is not yet clear.

Given that marriage rates have fluctuated around a relatively stable mean while divorce rates have risen in the US in the past 50 years (Stevenson & Wolfers, 2007), the possible relationship between weight and divorce has been of interest among researchers. Fu and Goldman (2000) noted that physical characteristics, including obesity for men or women, were not significantly related to the risk of divorce, and Jeffery and Rick (2002) found that BMI did not predict the likelihood of divorce. Interestingly, Sobal et al. (2003) noted that the dissolution of a marriage was not associated with weight loss in women, but was associated with weight loss in men. However, in a recent review of the literature, Dinour, Leung, Tripicchio, Khan, and Yeh (2012) found that "transitions into marriage were associated with weight gain, whereas transitions out of marriage were associated with weight loss" (p, 1). The findings of these studies do not provide a clear picture of the relationship between weight and the marital or couple dyad. Bariatric surgery, when introduced into this complex dynamic, adds a further and largely unexplored variable.

Bariatric Surgery

The CDC (2012a) defines obesity in an adult as having a BMI of 30 or higher and the National Institute of Health (NIH) Consensus Conference Statement of Gastrointestinal Surgery

for Severe Obesity (NIH, 1991) defined morbid obesity as a BMI of 35 or higher. Obese or morbidly obese persons have higher health care costs than non-obese persons (CDC, 2012b), in part because morbid obesity is generally accompanied by a series of illnesses (co-morbidities), which are also serious health concerns. They can include, among other things, type-2 diabetes, sleep apnea, hypertension and/or urinary stress incontinence (Guh et al., 2009). Diet, exercise and medical therapies alone have not been effective in resolving these problems, however, bariatric surgery has been effective (Gloy et al., 2013; Mingrone, et al., 2012; Schauer et al., 2012). Bariatric surgery has been shown to be the most effective intervention for morbid obesity (Buchwald et al., 2004; Buchwald et al., 2009; Chang et al., 2013; Garb, Welch, Zagarins, Kuhn, & Romanelli, 2009; Maggard et al., 2005; Ribaric, Buchwald, & McGlennon, 2013). Although there are several different operative techniques (i.e., Roux-en-Y gastric bypass [RYGB], adjustable gastric banding, sleeve gastrectomy), the result of each of them is either a restriction of the patient's intake and/or malabsorption of nutrients (Pender & Pories, 2005; Pories, 2008; Vetter, Dumon, & Williams, 2011). Not only is the weight loss dramatic, but many of the co-morbid conditions associated with morbid obesity are substantially improved after bariatric surgery (Ali, Maguire, & Wolfe, 2006; Buchwald et al., 2004; Buchwald et al., 2009; Padwal et al., 2011; Peluso & Vanek, 2007).

Bariatric Surgery and Couples

Not surprisingly, bariatric surgery outcomes and predictors of success are continually being researched (e.g., the Longitudinal Assessment of Bariatric Surgery, 2013). Numerous psychological and psychosocial issues are also being examined as possible precursors and/or outcomes of bariatric surgery such as depression/anxiety/mood disorders (e.g., de Zwaan et al., 2011; Sarwer, Wadden, & Fabricatore, 2005; Song & Fernstrom, 2008; Thonney, Pataka, Badel, Bobbioni-Harsch, & Golay, 2010), and predictive psychosocial factors (e.g., Kinzl,

Schrattenecker, Mattesich, Fiala, & Biebl, 2006; van Hout, Hagendoren, Verschure, & van Heck, 2009; van Hout, Verschure, & van Heck 2005). In the context of studying changes in psychosocial outcomes of bariatric surgery patients, some researchers have noted positive or negative changes in the couple relationship (e.g., Herpertz et al., 2003; Kinzl et al., 2001; Livhits et al., 2011; van Hout et al., 2005). Unfortunately, as noted by Bocchieri, Meana, and Fisher (2002), “isolated questions in larger psychosocial batteries are likely to be inadequate indices of the complexity of marital relations and concentrated attention on the measurement of marital outcomes is sorely lacking” (p. 161). Studies focusing specifically on WLS and the couple are scant.

Theoretical Perspective

A theoretical perspective for these relationships is gained through von Bertalanffy's systems theory (1950). He postulated that systems are interactive, and a change in one part of the system resulted in changes in other parts of the system (von Bertalanffy, 1950). von Bertalanffy's theory informed Engel's biopsychosocial (BPS) model (Engel, 1977, 1980), which Engel developed as an alternative to the more traditional medical model. In systems theory, von Bertalanffy (1950) postulated that systems are interactive, and a change in one part of the system resulted in changes in other parts of the system. Systems theory has general applicability and thus the "system" might be an organism, a physical system, a family, or a complex organization, to name a few examples. Engel's BPS model emphasized the importance of considering the patient and the social context in which the patient lives (Engel, 1977) not just the presenting biological problem, for organizing medical care for a patient. Engel asserted that medical problems are best understood in the context of biological, psychological and social factors, enabling health care providers to view patients from a more holistic perspective and take into account not only the individual patient, but the larger social systems to which a patient belongs

(Engel, 1977, 1980). Engel stressed the importance of attending to the interrelationships among the systems, the mind and body of the patient as well as the patient's social dimensions and environment as it relates to health and illness (Borrell-Carrio, Suchman, & Epstein, 2004; Ruddy & McDaniel, 2003; Taylor, 2002). Systems are dynamic, have the capacity to change, and are interdependent (Bronfenbrenner, 1977). Circular causality (Bateson, 1972) is the concept that in families or dyads, relationships and events are interrelated and therefore, the actions of one part of the system influence and affects all other parts of the system. Illness can be one such action/event, and an illness affects not only the patient, but all aspects of the patient's life, including relationships. Often, however, as a patient's medical health is being attended to scant attention is being paid to the health of a patient's relationships, even though "all health and relationship problems are biological, psychological and social in nature" (McDaniel, Doherty, & Hepworth, 2014).

Need for the Study

Studies have shown that a "close relationship plays a critical role in illness management. In turn, chronic illness takes a toll on the well partner" (Martire, Schulz, Helgeson, Small, & Saghafi, 2010, p. 339). However, close, secure personal relationships can support patients in dealing with the emotional distress that sometimes accompanies illness or disease (Weihs, Fisher, & Baird, 2002). Indeed, "supportive relationships can directly influence health by facilitating health-promoting behaviors and decreasing maladaptive coping behaviors" (Kiecolt-Glaser & Newton, 2001, p. 490). Because the couple relationship involves commitment from both persons to the other's well-being, this committed relationship is most often the primary source of support (Bodenmann, Pihet, & Kayser, 2006). While strides have been made in the

field of marital research (see Fincham & Beach, 2010; Gottman & Notarius, 2000, 2002), very little research has been done to study the impact of bariatric surgery on the couple relationship.

Of the published studies focusing primarily on the effects of weight loss surgery and couples, the vast majority of these studies were conducted between the years 1977 and 1991, with the most current study published in 2000 (Porter & Wampler, 2000). The more recent studies found that many couple relationships improved or remained stable after an initial adjustment period post-surgically (Goble, Rand, & Kuldau, 1986; Hafner & Rogers, 1990; Rand, Kowalske, & Kuldau, 1984; Rand, Kuldau, & Robbins, 1982; Rand, Macgregor, & Hankins, 1986).

More specifically, Rand, Kuldau, and Robbins (1982) examined patients' perceptions of their marriage before and after their bariatric surgery. Prior to surgery, 40 of the 54 patients (32 female and 22 male) rated their marriages as good. One-year post-operative, 51 patients were still married to the same spouse as when they had surgery, and three were separated and planned to divorce. Of the 51, 21 thought their marriage was as good as it had been prior to surgery, while 26 thought their marriage had improved.

In a follow-up study to examine the nature of the marital improvement, Rand, Kowalske, and Kuldau (1984) conducted a five year follow-up of 14 patients (10 female, mostly Caucasian) and 13 of their spouses. Those included in the follow-up study were patients who had previously indicated bariatric surgery had benefitted their marriage and were all still married to the same person as when they underwent WLS. Patients and spouses noted that patients had increased assertiveness, greater self-confidence, and a more positive attitude. Most patients reported enjoying sexual relations more, as did most of the spouses.

Goble, Rand, and Kuldau (1986) conducted semi-structured psychiatric evaluations of 54 (32 female and 22 male, predominantly Caucasian, middle class) consecutive jejunoileal bypass surgery patients who were married at the time of surgery, first in the hospital before their surgery, and again one year later. The researchers found that 52% of the patients reported that their marital relationships improved post-operatively, 42% reported no change in their marital relationship, and six percent reported that their marital relationship worsened after surgery. Additionally, patients reported sexual frequency increased, with fewer sexual problems. Interestingly, those patients reporting sexual problems pre-operatively were also those experiencing marital conflict.

Rand, Macgregor, and Hankins (1986) studied two cohorts of post-operative gastric bypass patients in an attempt to determine the factors contributing to the successful outcomes of WLS. One cohort consisted of 100 consecutive patients (76 female, 24 male, mostly upper and middle class) receiving gastric bypass surgery examined one year post-operatively and the second non-overlapping cohort consisted of 60 consecutive patients (51 female, mostly upper and middle class) receiving gastric bypass at three-years post-operatively. The authors reported that about half the patients in both groups reported that surgery had improved both their marriage and sex life, and 92% described their marital relationships as harmonious. Patients reported increased self-confidence after surgery and that most maintained regular eating habits after surgery.

In a study of the husbands of 75 female bariatric surgery patients, Hafner and Rogers (1990) studied the personal and marital adjustment of husbands in the couple relationship pre-and-post-operatively. Patient's husbands reported a higher level of marital dissatisfaction compared to the age-matched sample comparison group. Also, patients reported an increase in

assertive behavior while husbands reported a decrease in assertive behavior a year after surgery and this correlated with the husband's dissatisfaction.

Of the studies in which the researchers utilized interviews to gather data, Marshall and Neill (1977), Neill, Marshall, and Yale (1978), and Rand et al. (1984) interviewed patients and their spouses separately, not jointly, while Goble et al. (1986), Rand et al. (1982) and Rand et al. (1986) only interviewed the patients, not their spouses. In Hafner and Rogers' (1990) study, Hafner completed a routine pre-surgical psychiatric assessment with all patients, and also interviewed their husbands during this process, but it is unclear if he interviewed the husbands separately or jointly with their wives. In a later study, Hafner (1991) completed a pre-surgical psychiatric assessment with all patients and their husbands, and it is again unclear if he interviewed the husbands separately or jointly with their wives.

It is important to note that there are advantages and disadvantages to joint versus separate interviewing. In separate interviews, participants may feel more freely able to express their individual views (Taylor & de Vocht, 2011); however, in joint interviews, the participants may "represent themselves not just as individuals but also as concurrent participants in a relationship" (Taylor & de Vocht, 2011, p. 1577). Joint interviews allow the participants the opportunity to interact and provide information on the same issues, as well as hear and respond to how each perceived the same event (Arskey, 1996; Beitin, 2008; Wittenborn, Dolbin-MacNab, & Keiley, 2013), which can enhance the richness of the interview while generating more comprehensive data (Arskey, 1996). It is unclear what impact, if any, individual or joint interviewing had in the aforementioned studies, as the only known studies that might have utilized a joint interview were not clear on the interview method used (Hafner, 1991; Hafner & Rogers, 1990). Therefore, the

purpose of this dissertation is to examine the impact of WLS on the couple relationship utilizing a joint interviewing method to gather the data.

Overview of the Chapters

The first of two studies presented in this manuscript is contained in Chapter Two. This article entitled " The Effects of Bariatric Surgery on Couple Relationships: A Systematic Literature Review" was conducted to elucidate the effects of bariatric surgery, hereafter referred to as weight loss surgery (WLS), on the couple dyad by systematically reviewing peer-reviewed, published research on the impact of bariatric surgery on the couple/marital relationship. The research question was "What is the impact of bariatric surgery on the marital/couple relationship?" 15 articles were identified by the search strategy and nine met the inclusion criteria for this review. The majority of these 9 studies indicated that bariatric surgery had a positive effect on the couple relationship. Several of the reported studies noted that after surgery, many patients found they enjoyed sexual relations more (Goble et al., 1986; Hafner & Rogers, 1990; Rand et al., 1984; Rand et al., 1982; Rand et al., 1986), felt more self-assured (Neill, Marshall, & Yale, 1978; Porter & Wampler, 2000; Rand et al., 1984), experienced greater self-image (Hafner, 1991), and more autonomy (Neill et al., 1978). The results of studies, however, varied somewhat. Two studies reported deleterious effects, including major disruptions to the couple relationship (Marshall & Neill, 1977; Neill et al., 1978). All of the reported studies utilized relatively small convenience samples and there was no consensus developed over the years or reflected in the literature concerning the most appropriate tested and validated instruments to be used to measure variables. In short, there is scant information available on the impact of bariatric surgery on the couple dynamic. This dissertation is an effort to examine and elucidate the effects of WLS on the couple.

Chapter Three includes a detailed description of the study methodology utilized to examine the research question "What is the lived experience of the couple relationship when one member undergoes WLS?" A phenomenological approach was used in this study to explore the lived experience of the couple when one member undergoes WLS. Phenomenology is a research paradigm utilized by investigators to describe the lived experience of a phenomenon or concept (Creswell, 2007, 2013), allowing investigators to describe what participants "have in common as they experience a phenomenon" in an effort to "reduce individual experiences with a phenomenon to a description of the universal essence" (Creswell, 2007, p. 58). Use of the phenomenological method can be particularly useful and relevant for issues related to health and health care, because "the phenomenological method aims to describe, understand and interpret the meanings of experiences of human life" (Bloor & Wood, 2006, p. 128). Joint interviews with WLS patients and their significant other were conducted by this investigator and a triangulated co-investigator. These interviews were audio-taped, transcribed and analyzed utilizing Colaizzi's (1978) method of analysis for phenomenological studies to distill the content of the interviews into thematic clusters in order to formulate an exhaustive description of the couple after WLS. The investigators engaged in three activities (i.e., audit trail, members checking, and triangulated researchers) to promote the credibility, dependability, transferability, and confirmability of this study.

The second of two studies presented in this manuscript is contained in Chapter Four. This article entitled "Following Bariatric Surgery: An Exploration of the Couples' Experience," describes the findings from a phenomenological study of the lived experience of 10 couples when one member underwent WLS. The research question guiding this study was "What is the lived experience of the couple relationship when one member undergoes WLS?" In-depth, semi-

structured interviews were conducted with both members of the couple simultaneously in order to collect rich information about each couple's WLS experience and its impact on their relationship. The grand tour, or central, question in a phenomenological study is the broadest question the investigator can think of to explore the phenomenon in question (Creswell, 2009). In an effort to encourage the participants to describe their experiences for themselves (Dahl & Boss, 2005), each interview began with the same grand tour prompt related to each couple's lived experience after the WLS (Please describe what your weight loss surgery experience has been like as a couple). Subsequent questions varied, including specific and non-specific probing questions (Patton, 1980), some of which were circular (Brown, 1997) and designed to get at similarities and differences between each member of the relational unit's views (Brown, 1997; Scheel & Conoley, 1998). Each couple was only interviewed once, and offered the opportunity to member check the transcript of their interview for accuracy at two different time points, post-transcription and post-analysis. Chapter four includes an introduction to the reasons for this study, a description of the methodology, the findings of the investigation, including quotes to highlight and illustrate the various thematic clusters identified in this study, an exhaustive description of the phenomenon, and a discussion of the implications for WLS researchers and clinicians.

The fifth and final chapter offers implications of the findings in this dissertation for researchers, clinicians and medical family therapists wishing to advance clinical and policy changes for WLS patients and their significant others. Suggestions are presented for further research, as well as encouraging clinicians to utilize ongoing research to inform their clinical decisions in working with WLS patients and their significant others. Lastly, implications on the

field of medical family therapy are extended, offering encouragement for more research, clinical and policy work to be done by trained medical family therapists in this area.

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CHAPTER TWO: THE EFFECTS OF BARIATRIC SURGERY ON THE COUPLE RELATIONSHIP: A SYSTEMATIC LITERATURE REVIEW

Obesity is the leading cause of mortality, morbidity, and disability in the US (The Obesity Society, 2013). The worldwide prevalence of obesity has more than doubled since 1980 (World Health Organization, WHO, 2012), with approximately 300 million women and 200 million men identified as being obese, and more than 1.4 billion adults overweight worldwide (WHO, 2012). The Center for Disease Control (CDC, 2012) estimated that more than one-third of US adults are obese.

In the United States, the leading cause of health care utilization and health care costs is obesity (The Obesity Society, 2013). It is estimated that health care costs related to obesity have risen to 10% of all medical spending (Finkelstein, Trogon, Cohen, & Dietz, 2009, Organisation for Economic Co-operation and Development, 2012). Morbid obesity is generally accompanied by a series of illnesses (co-morbidities), which are also serious health concerns. They can include, among other things, type-2 diabetes, sleep apnea, hypertension and/or urinary stress incontinence (Guh et al., 2009). Diet, exercise and medical therapies alone have not been effective in resolving these problems; however, bariatric surgery has been (Gloy et al., 2013; Mingrone, et al., 2012; Schauer et al., 2012).

Biological Health and Bariatric Surgery

Bariatric surgery has been shown to be the most effective intervention for morbid obesity (Buchwald et al., 2004; Buchwald et al., 2009; Chang et al., 2013; Garb, Welch, Zagarins, Kuhn, & Romanelli, 2009; Maggard et al., 2005; Ribaric, Buchwald, & McGlennon, 2013). Although there are several different operative techniques (e.g., Roux-en-Y gastric bypass [RYGB], adjustable gastric banding, sleeve gastrectomy), the result is either a restriction of the patient's

intake and/or malabsorption of nutrients (Pender & Pories, 2005; Pories, 2008; Vetter, Dumon, & Williams, 2011). A recent Cochrane Review found that for people with a body mass index (BMI) greater than 30, “bariatric surgery resulted in greater weight loss than conventional treatment” (Cilquitt, Picot, Loveman, & Clegg, 2009, para 3). The success of the surgery is measured by initial and sustained weight loss maintenance, generally in the range of 59.9% weight loss for all procedures (Buchwald et al., 2009), approximately 68% weight loss for RYGB patients (Pender & Pories, 2005; Nguyen, Slone, Nguyen, Hartnam, & Hoyt, 2009), and approximately 45-47% weight loss for adjustable gastric banding patients (Angrisani, Lorenzo, & Borrelli, 2007; Nguyen et al., 2009). Yaghoubian et al. (2012) reported weight loss for patients who underwent a gastric sleeve procedure at approximately 72%; however, in a systematic review of the literature where the authors calculated average unweighted values for weight loss across the 38 studies included in the review, Brethauer, Hammel, and Schauer (2009) reported weight loss after a gastric sleeve procedure at approximately 55.4%.

Not only is the weight loss dramatic, but many of the co-morbid conditions associated with morbid obesity are substantially improved after bariatric surgery (Ali, Maguire, & Wolfe, 2006; Buchwald et al., 2004; Buchwald et al., 2009; Peluso & Vanek, 2007). The most dramatic effect is the sustained remission of type-2 diabetes, which is accomplished in approximately 82% of bariatric surgery patients who undergo RYGB (Pender & Pories, 2005). In recent systematic review of RYGB and gastric sleeve patients, improvement or remission of type-2 diabetes was found in more than 70% of the patients (Brethauer et al., 2009).

The body of knowledge on the impact of bariatric surgery on patient’s overall physical health continues to grow (e.g., Adams et al., 2012; Buchwald et al., 2009; Malone, Alger-Mayer, & Polimeni, 2012; Neovius et al., 2012; Sutton & Raines, 2007). Overall, the impact on the

patient's physical health is significant, with decreased risks of some diseases and remission or resolution of others. Adams et al. (2012) recently noted several examples which include: the remission of diabetes at 75% at 2 year post RYGB surgery, with six years post-operative remission maintained at 62%. They noted that "the improved glycemic control following bariatric surgery may have the end result of reduced microvascular disease" (p. 1129). The researchers further noted that the remission rates for hypertension in these bariatric surgery patients were significantly improved at six years following surgery. In a recent systematic review, Brethauer et al. (2009) found significant improvement in sleep apnea and joint pain in patients post-operatively, as well as hypertension and hyperlipidemia. Sjöström et al. (2009) also found that the incidence of first time cancer is lower in females who have undergone bariatric surgery than that for the control group. These changes in the patient's physical health resulting from bariatric surgery suggest that psychosocial changes might occur as well, although these have been less thoroughly investigated.

Psychosocial Health and Bariatric Surgery

Both the obesity and drastic changes brought about by bariatric surgery may impact not only the patient but others in the patient's family. Coping with a chronic illness, such as obesity, is not a transient event, but rather "a life circumstance involving a series of interrelated life strains" (Revenson, 2003, p. 351) most often managed not only by the individual, but also the spouse and family. Because the spousal, or couple, relationship involves commitment from both persons to the other's well-being, this committed relationship is most often the primary source of support (Bodenmann, Pihet, & Kayser, 2006). Indeed, for individuals experiencing a chronic disease, pre-illness marital satisfaction has been found to predict later coping (Badger, 1992). These couples are affected not only by the proximal factors of the quality of their dyadic

relationship and the demands placed on both the individuals and their dyadic relationship, but also by sociocultural factors (Berg & Upchurch, 2007).

The status of a patient's close relationships is currently not assessed prior to bariatric surgery. When a person who is morbidly obese decides to pursue bariatric surgery, a pre-surgical evaluation is required, and a psychological evaluation of each potential patient has become the norm. In fact, such evaluations are required by approximately 80% of insurance companies (Greenberg, Sogg, & Perna, 2009), before they will approve coverage of the surgery (e.g., Skinneywishes Bariatric surgery insurance coverage chart, n.d.; Yale Bariatric Surgery chart, 2013). Pull (2010) noted that the psychological assessment obtained prior to surgery is used to evaluate for current or a history of psychopathology (e.g., depression), and post-surgical assessment is to evaluate for changes in psychopathology, and to identify relevant factors for predicting weight loss outcomes. Most of these evaluations contain a clinical interview, in which information is gathered regarding: a patient's previous attempts at weight loss, current eating and dietary styles, physical activity (or inactivity), history of substance use, health related risk-taking behavior, legal history, level of cognitive functioning, reason for seeking surgery and knowledge of the proposed surgical intervention as well as the associated lifestyle changes, coping skills, emotional modulation, psychopathology/psychiatric symptoms, developmental history, current life situation, and utilization of social support (Heinberg, 2013; LeMont, Moorehead, Parish, Reto, & Ritz, 2004; Snyder, 2009). Additionally, objective psychological tests such as the Minnesota Multiphasic Personality Inventory-2 and the Millon Behavioral Medicine Diagnostic (with bariatric norms) are utilized to inform the evaluation (Heinberg, 2013; Snyder, 2009). It is important to note that these are individual assessments, and while these mental health and social factors are considered, they are done so only in the context of the effect of these factors on

potential compliance with the biomedical regime requirements (Sarwer et al., 2004; Sogg & Mori, 2004, 2008, 2009; Song & Fernstrom, 2008; Thonney, Pataka, Badel, Bobbioni-Harsch, & Golay, 2010), not on the ability of the system to change and adapt biopsychosocially before and after the surgery.

Theoretical Perspective

A theoretical perspective for these relationships is gained through von Bertalanffy's systems theory (1950). He postulated that systems are interactive, and a change in one part of the system resulted in changes in other parts of the system (von Bertalanffy, 1950). Systems theory has general applicability and thus the "system" might be an organism, a physical system, a family, or a complex organization, to name a few examples. von Bertalanffy's theory informed Engel's biopsychosocial model (Engel, 1977, 1980). Engel's model emphasizes the importance of considering the patient and the social context in which the patient lives (Engel, 1977) not just the presenting biological problem for organizing medical care for a patient. While the individual patient is "the highest level of the organismic hierarchy and at the same time the lowest unit of the social hierarchy" (Engel, 1980, p. 236), Engel stressed the importance of attending to the interrelationships among the systems, the mind and body of the patient as well as the patient's social dimensions and environment as it relates to health and illness (Borrell-Carrio, Suchman, & Epstein, 2004; Ruddy & McDaniel, 2003; Taylor, 2002). Systems are dynamic, have the capacity to change, and are interdependent (Bronfenbrenner, 1977). Circular causality (Bateson, 1972) is the concept that in families or dyads, relationships and events are interrelated and therefore, the actions of one part of the system influence and affects all other parts of the system. Illness can be one such action/event, and an illness affects not only the patient, but all aspects of

the patient's life, including relationships. Often, however, as a patient's medical health is being attended to; scant attention is paid to the health of a patient's relationships.

Purpose of the Review

Because the bariatric surgical assessment is patient-centered, there are few reported studies in which data on the dyad are reported and little appears to be known about the impact of bariatric surgery on the patient's marital or couple relationship. In the context of studying changes in psychosocial outcomes of bariatric surgery patients, some researchers have noted positive or negative changes in the couple relationship (e.g., Herpertz et al., 2003; Kinzl, Fiala, Hotter, Biebl, & Aigner, 2001; Livhits et al., 2011; van Hout, Saskia, Verschure, & van Heck, 2005). However, as noted by Bocchieri, Meana, and Fisher (2002), "isolated questions in larger psychosocial batteries are likely to be inadequate indices of the complexity of marital relations and concentrated attention on the measurement of marital outcomes is sorely lacking" (p. 161). Few researchers have examined the effects of bariatric surgery on the marital and/or couple relationship specifically. Yet a systems approach suggests that bariatric surgery and the resulting changes would have a major influence (positive or negative) on the dyad. Therefore, the purpose of this study is to elucidate the effects of bariatric surgery on the couple dyad by systematically reviewing peer-reviewed, published research on the impact of bariatric surgery on the couple/marital relationship.

Method

Article selection was completed through a series of steps as described by Cooper and colleagues (Cooper, 2010; Cooper, Hedges, & Valentine, 2009; Cooper & Lindsay 1998). The first step in this process is formulating the problem. The problem addressed in this review was the effect of bariatric surgery on the couple/marital relationship. For purposes of this review,

studies involving all types of bariatric surgery were included in this review. These can include bypass, banding and/or gastric sleeve procedures. The research questions are:

1. What is the impact of bariatric surgery on the marital/couple relationship?
2. What methods are being used to assess the marital/couple relationships of bariatric surgery patients?

In the next step, searching the literature, key search terms were selected in order to capture all studies related to the research questions (Cooper et al., 2009). An electronic database search utilizing key word combinations such as gastric bypass, obesity surgery, bariatric surgery, metabolic surgery, marital, marriage and couples (see Table 1) was conducted for three databases (Medline via Pubmed, CIHNAL via EBSCO and PsychINFO) for peer-reviewed articles published in English. Due to the relative lack of studies in this area of bariatric literature, no date limitations were imposed on this review. Article selection ended January 31, 2014. The earliest article admitted into the review was published in 1977 and the latest was published in 2000. Five thousand, one hundred seventy one scholarly articles were retrieved through this process. Duplicate articles were removed, decreasing the number of distinct articles retrieved to 3,308. A title and abstract check was then performed based on the following additional inclusion criteria: study of bariatric surgery patients and examination of the marital/couple relationship post-operatively. Articles in which marital status was noted as part of a larger study, but the couple relationship was not expressly examined were excluded. Articles were categorized as “possibly include” or “exclude” resulting in 15 possible articles. Citation tracking was performed by manually screening reference lists of the 15 articles that were considered for possible inclusion, resulting in 383 articles. Duplicates were removed, reducing the number of distinct articles to 202. A title and abstract check was then performed on these 202 articles based on the inclusion

criteria and articles were categorized as “possibly include” or “exclude” resulting in no additional “possibly include” articles. To increase the rigor of this search, a second researcher completed a fidelity check by independently performing a title and abstract review on the 3,510 articles identified (3,308 from the initial search and the 202 from the citation tracking) resulting in no discrepancies (See Figure 1).

For the next step, gathering information from the studies (Cooper, 2010), a code list was developed by this author to organize all the study characteristic variables. The 15 articles identified by the search strategy were then independently reviewed by this author and another reviewer (Cooper, 2010). Data were extracted and organized into the following code categories: (a) study design (research method), (b) sampling procedure, (c) participant characteristic (sample size, age, gender, race, BMI, SES), (d) measurements and (e) outcomes (Cooper et al., 2009). Code lists were compared and both researchers were in agreement on all data points. The results of this are presented in Table 3.

Of the 15 articles identified through the search strategy, nine met the inclusion criteria, and six were excluded. Of those, one article was excluded because the study did not examine of the marital/couple relationship, one study only examined marital satisfaction as part of a larger psychosocial study, but did not expressly study the couple relationship, and three articles were review articles, not original empirical research. An additional study was excluded because neither reviewer could determine what the authors found in the study, nor were the authors clear on what the effects were on the marital/couple relationship.

In the next step, evaluating the quality of the studies (Cooper, 2010) the methodological quality of the nine articles was assessed utilizing the following six criteria:

- Is there a description of the source of participants and the inclusion and exclusion criteria (defined sample)?
- Were the participants selected by random selection or as consecutive cases (representative sample)?
- Were outcome data available for at least 85% of the participants at one follow-up point (follow-up rate $\geq 85\%$)?
- Was there an appropriate choice of outcome measures (method of assessment)?
- Was there a report of the outcome data at follow-up (outcome data reported)?
- Was appropriate statistical analysis conducted, with adjustment for potentially confounding factors (statistical adjustment)?

These criteria have been utilized in previous studies (e.g., Hall, Ferreira, Maher, Latimer, & Ferreira, 2010; Kamper, Rebbeck, Maher, McAuley, & Sterling, 2008; Pengal, Herbert, Maher, & Refshauge, 2003) and inclusion of these criteria has been recommended in the STROBE Statement (von Elm et al., 2007) for strengthening the reporting of observational studies. These criteria were not designed to provide a quality score because, as Sanderson, Tatt, and Higgins (2007) noted in their systematic review of quality assessment tools for observational studies,

Summary scores involve inherent weighting of component items, some of which may not be directly related to the validity of a study's findings (such as sample size calculations). It is unclear how weights for different items should be determined, and different scales may reach different conclusions on the overall quality of an individual study (von Elm et al., 2007, p. 673).

The methodological quality of these studies was independently assessed by two researchers using a checklist of the above six criteria, and consensus reached on all points (Table 4).

Results

The results from this review have been organized chronologically. Of the nine articles that fit the criteria for inclusion, four reported information gathered from and focused only on the patient's experience and/or perceptions, and the remaining five reported information gathered from and focused on the patient and spouse's experience and/or perceptions. Table 2 contains summaries of the articles.

In the earliest study identified in this review, Marshall and Neill (1977) examined the effects of intestinal bypass surgery for extreme obesity in the marriages of 12 patients (10 female, two male, Caucasian) and their spouses. The patients and their spouses separately participated in semi-structured interviews (content not defined), and patient information was supplemented with information from discussions with the medical staff, psychological testing and from the patient's medical records. The time elapsed since surgery ranged from eight to thirty-six months, the mean being 24 months at time of interview. The experience of these patients and their spouses was not as positive as reported in other studies included in this review. The majority of patients and their spouses characterized their marriages as unsatisfactory post-operatively. Interestingly, only two spouses supported the patient's decision to have bariatric surgery, while seven spouses were neutral, and three reported that they were opposed to the surgery. All patients, however, reported that they were satisfied with their decision to have surgery and would do it again. Patients further reported positive changes in their self-image and interest in sexual relations, with nine patients reported increased interest in sexual relations and two patients reported decreased interest. This increased interest in sexual relations led to the disclosure that two spouses were homosexual. Overall, the spouses reported that they were concerned about the changes in relationships, felt threatened by the patient's lack of need for

and/or dependence upon them, and all the changes this brought about in their relationships. This was a retrospective study, and the average time of interview was 24 months post-operatively (range eight to 36 months). It is unclear what, if any, confounding variables may have impacted these couples. Furthermore, it is possible that patients and/or their spouses may have experienced reporting bias (Porta, 2008).

The following year, Neill, Marshall, and Yale (1978) reported the results of their investigation of the effects of bariatric surgery on weight loss and marital relations. They conducted separate, semi-structured interviews with 14 bariatric patients (12 female, two male, Caucasian) and their spouses, focusing their questions on the decision to have surgery, the marital relationship prior to surgery and post-operative changes. Five patients disclosed that one of the reasons they sought surgery was the fear that their obesity threatened their marriage. Interestingly, only three spouses supported the patient's decision to have bariatric surgery, eight spouses were neutral, and three reported that they were strongly opposed to the surgery due to the risks the surgery posed. All patients reported positive changes in their self-image, and all but one patient reported they were happy with the overall results of surgery at one year post-operative. Only one patient reported no changes in the couple relationship. At the time of publication of the article, of the 14 patients, two had divorced, one had separated from their spouse, and one patient asked to have the bypass reversed, as she reported that she had hoped that having the surgery would make her more attractive to her husband whom she suspected was homosexual. Indeed, three spouses came out and disclosed their homosexuality in the post-operative period. Patients reported some level of turmoil in their relationships post-operatively, and spouses reported feeling threatened by the patient's new-found autonomy. As with the previous study, this too, was a retrospective study that did not present any statistical analysis.

The average time of interview was 22 months post-operatively (range eight to 36 months). It is again possible that patients and/or their spouses may have experienced reporting bias (Porta, 2008). Furthermore, while some confounding variables, such as four patients becoming employed, were noted, other confounding variables that might have impacted the outcomes of this study were not accounted for. It is also possible that there was some form of selection bias when soliciting the couples for inclusion in this study.

In the first study included in this review that utilized a pre-post study design, Rand, Kuldau, and Robbins (1982) examined patient's perceptions of their marriage before and after their bariatric surgery. This study, while not including the partner, did utilize a non-obese comparison group (a sub-set of the Florida Health Survey population – married, Caucasian adults matching the age range and race of the patient group). Prior to surgery, 40 of the 54 patients (32 female and 22 male) rated their marriages as good. However, more patients reported moderate to marked friction in their marriages than in the non-obese comparison group. One-year post-operative, 51 patients were still married to the same spouse as when they had surgery, and three were separated and planned to divorce. Of the 51, 21 thought their marriage was as good as it had been prior to surgery, while 26 thought their marriage had improved. Data were only available from 30 patients at the three year follow-up. Of those 30, one patient was widowed and six were divorced or in the process of becoming so. The majority of the 23 patients that were still married to and living with their spouses rated their marriages as good. The rate of divorce in the patient group was only slightly higher than the comparison group. Overall, the researchers concluded "when compared with a group of nonobese adults, morbidly obese patients preoperatively showed a higher rate of major marital discord, whereas at the three-year follow-up, the two groups were no longer different" (Rand, Kuldau, & Robbins, 1982, p. 1421). While

the use of a comparison group added strength to this study, the fact that the comparison group was not matched on satisfaction of their marriage makes a comparison of the percentage of divorces unsustainable. The authors noted that divorce rates and incidents of marital disharmony among morbidly obese surgical candidates were higher than those found in the general population. However, as the researchers did not match the comparison group on satisfaction with their marriage, only on age, race (Caucasian), employment status and education, the results regarding divorce are not necessarily comparable or generalizable. The researchers also did not identify the gender of the patients who divorced or separated at the three-year follow-up, even though they did note this for the one-year follow-up. Furthermore, even though the researchers ran statistical analyses (Wilcoxon matched pair test and McNemar test for the significance of changes), they combined the results of these tests into one table, making it very difficult to interpret their results. Not only does the small sample size limit the generalizability of the results, it is unclear what the impact of gender of the bariatric patient might be on the outcomes.

In a follow-up study to examine the nature of the marital improvement, Rand, Kowalske, and Kuldau (1984) conducted a five year follow-up of 14 patients (10 female, mostly Caucasian) and 13 of their spouses. Those included in the follow-up study were patients who had previously indicated bariatric surgery had benefitted their marriage. All were married to the same person as when they underwent a jejunoileal bypass (between 1976 and 1979). At their three year follow-up, all had rated their marriage as good. For this study, both the patient and spouse were asked the same questions during separate telephonic semi-structured interviews. Information gathered included patient's personal attributes, mealtime interactions, brief marital history, an assessment of post-operative changes in social activities and sexual relationships and a global evaluation of current marital satisfaction. Additionally, open-ended questions regarding worsening or

improvement of the marriage, as well as any unrealized hopes for change were asked at the end of the interview. Unfortunately, a list of the interview questions was not provided. Patients and spouses noted that patients had increased assertiveness, greater self-confidence, and a more positive attitude. Most patients reported enjoying sexual relations more, as did most of the spouses. Rand et al. (1984) summarized their findings, noting that "eleven patients and eight spouses still considered their marriage to have improved because of surgery. The other respondents no longer thought that surgery had had a major impact on the quality of their marriage" (p. 223). Obviously, this was a retrospective study, gathering data five-years post-operatively. It is again possible that patients and/or their spouses may have experienced reporting bias (Porta, 2008). Interestingly, the researchers identified themes (such as patients had a more positive attitude, increased assertiveness with decreased defensiveness, improved self-confidence), however, the researchers only reported percentages. As the researchers did not report any statistical analysis, it might have been more useful if the researchers had utilized a more formal qualitative research approach to identify some of these themes, to add more rigor to the study.

Focusing on the three marital concepts of internal function, external influences and boundary activity, Goble, Rand, and Kuldau (1986) examined factors related to improvement in the marital relationships after bariatric surgery. The researchers conducted semi-structured psychiatric evaluations of 54 (32 female and 22 male, predominantly Caucasian, middle class) consecutive jejunoileal bypass surgery patients who were married at the time of surgery, first in the hospital before their surgery, and again one year later. It is unclear when the information gathered in the hospital was solicited (e.g., the day of surgery, two days before surgery). The semi-structured psychiatric evaluations included medical and weight history, interpersonal,

economic, social and physical functioning and eating behaviors (Kuldau & Rand, 1980). The researchers also administered the Present State Examination (Wing, Cooper, & Sartorius, 1974) and the Paykel Life Stress Events Schedule (Paykel & Uhlenhuth, 1972). The researchers found that 52% of the patients reported that their marital relationships improved post-operatively, 42% reported no change in their marital relationship, and six percent reported that their marital relationship worsened after surgery. The researchers noted that the degree of marital conflict pre-and-post operatively was significantly correlated. Additionally, patients reported sexual frequency increased, with fewer sexual problems. Interestingly, those patients reporting sexual problems pre-operatively were also those experiencing marital conflict. One major concerning point of this study was the gathering of data in the hospital prior to surgery. There is no mention of informed consent, and it is unclear if patients felt obligated to answer these questions. Patients may have felt pressured to respond to a "psychiatric evaluation" in the hospital. Additionally, the researchers utilized formalized instruments to measure stressful life events and to identify psychiatric classifications, but they neither provided any information regarding the reliability or validity of these measures, nor did they utilize a formalized instrument to measure marital adjustment. The results of this study might have been strengthened by the use of such an instrument.

In another study published that same year, Rand, Macgregor, and Hankins (1986) examined the factors contributing to the successful outcomes of weight loss surgery by studying two cohorts of post-operative gastric bypass patients. One cohort consisted of 100 consecutive patients (76 female, 24 male, mostly upper and middle class) receiving gastric bypass surgery examined one year post-operatively and the second non-overlapping cohort consisted of 60 consecutive patients (51 female, mostly upper and middle class) receiving gastric bypass at three

years post-operatively. Structured interviews, in which most of the questions were about post-operative changes and current functioning, were conducted telephonically by the same trained nurse. Unfortunately, a list of the questions asked was not presented in this article. The authors reported that about half the patients in both groups reported that surgery had improved both their marriage and sex life, and 92% described their marital relationships as harmonious. Only five patients in total had obtained a divorce. The remaining patients reported wanting to stay married although two patients reported that they were unsure about their spouse's commitment to the marriage. Patients reported increased self-confidence after surgery. Patients further noted that most maintained regular eating habits after surgery. The use of a sample of consecutive patients reduced the risk of selection bias and the fact that the researchers were able to follow-up with all but one patient indicated that patients did not self-select out due to their outcomes.

Unfortunately, it is unclear what the impact of gender of the bariatric patient might be on the outcomes, as the results were not presented based on patient gender. Also, the race and/or socioeconomic status of the bariatric surgery patients were not indicated; therefore, it is unclear if race and/or socioeconomic status were confounding variables in this study.

In a study that included the husbands of 75 female bariatric surgery patients, Hafner and Rogers (1990) studied the personal and marital adjustment of husbands in the couple relationship pre-and-post-operatively. This was the first study found that focused on the spouse, not the patient. Hafner completed a routine pre-surgical psychiatric assessment with all patients, and also interviewed their husbands during this process. Additionally, patients and their husbands completed the Crown Crisp Experimental Index (Crown & Crisp, 1979), the Hostility and Direction of Hostility Questionnaire (Philip, 1973), the Locke-Wallace Marital Adjustment Test (MAT, Locke & Wallace, 1959) and the Assertion Inventory (Gambrill & Richey, 1975).

Unfortunately, the researchers did not indicate the reliability or validity of any of these instruments. This study utilized an age-matched sample comparison group, but there is no indication if the comparison group (and their spouses) were obese or non-obese. Patient's husbands scored significantly higher on the MAT and reported a higher level of marital dissatisfaction compared to the control group. Also, patients reported an increase in assertive behavior while husbands reported a decrease in assertive behavior a year after surgery and this correlated with the husband's dissatisfaction. However, only 36 patients and their husbands completed the 12 month evaluations. With such a large drop-out rate, it is possible that those whose marriage was doing well did not respond. Furthermore, it is unclear that the comparison group was comparable to the study group in anything but age, making comparisons challenging.

In an exploration of a family systems view of obesity, Hafner (1991) examined the personal and marital adjustment of 80 morbidly obese women and 69 of their husbands utilizing the Family Systems Semantic Differential scale and several other unspecified "self-reported measures of personal and marital adjustment before and 12 months after wives' surgery" (Hafner, 1991, p. 163). Hafner (1991) described the 12 bipolar scales used to rate four different concepts that the Family Systems Semantic Differential scale was used to measure, and Hafner completed a pre-surgical psychiatric assessment with all patients and their husbands. At 12 months after their surgery, patients rated themselves as significantly more attractive and sociable than before surgery, and reported they found their husbands significantly less interesting and/or sociable after surgery. Husbands rated their wives as excessively sociable after surgery, even though prior to surgery, they reported that they wanted their wives to be more sociable. In this study, Hafner (1991) concluded that patient's weight loss "appeared to exert an overall negative effect on the marital system" (p. 165). There are many problems with this study. The researcher

utilized a Family Systems Semantic Differential scale, and yet there is no indication of the reliability or validity of this scale. Indeed, the researcher did not cite or acknowledge the creator of this scale; nor did he specify the other self-reported measures he administered, making replication of this study nearly impossible. It is unclear if the patients and their spouses were surveyed together or independently. As that is unclear, perhaps the alpha value should have been more stringent (Stevens, 1996). Hafner (1991) reported running Student t-tests, but did not report effect size; therefore, it is unclear what the strength of association might have been. Additionally, the patients were female, the spouses, male, and other than mean age; no other demographic information was included in the study, making it nearly impossible to generalize this to any population.

In an attempt to better understand the issues of change in relational and individual variables, including marital satisfaction in patients following rapid weight loss, Porter and Wampler (2000) studied 95 married vertical banded gastroplasty patients (79 female, 16 male, predominately upper and lower middle class) referred to one surgeon. Data were obtained from 77 of these participants (63 female, 14 male). Questionnaires were mailed to the patients prior to their scheduled surgery, and at six months and 12 months post-operatively. Questionnaires were comprised of the Beck Depression Inventory (Beck, Steer, & Garbin, 1988), the Coopersmith Self-Esteem Inventory (Coopersmith, 1981), and the Locke-Wallace Marital Adjustment Test (Locke & Wallace, 1959) and other non-specified measures, however, the researchers only reported analysis on the three aforementioned instruments. This is the only study included in this review in which the researchers reported the reliability and validity of the instruments they utilized. The researchers found that patients demonstrated increased self-confidence, decreased depression and weight loss. Based on the respondent's scores on the MAT (Locke & Wallace,

1959), only three out of 50 respondents indicated a decrease in marital satisfaction at six months post-operatively, and only two of 28 respondents demonstrated a decrease in marital satisfaction at 12 months post-operatively. However, the researchers found no statistically significant changes in marital satisfaction post-operatively. The researchers performed mixed-design MANOVAs to examine the changes across the three different times of assessment; however, it is unclear if the sample size was adequate. When utilizing MANOVA to analyze results, one must have more cases in each cell than dependent variables, and a sample size of at least 20 cases for each cell is recommended to ensure robustness (Tabachnick & Fidell, 2001). The researchers examined four dependent variables, some examining gender differences. As there were so few male patients, some of these results may not be reliable. The researchers did not provide any information on univariate or multivariate normality, nor did they indicate if there were any outliers. Therefore, it is unclear if the results of the statistical analysis on some of the MANOVAs are dependable. Another shortcoming of this study is the attrition rate. Only 63 female and 14 male patients responded to the first mailed questionnaire, a loss of approximately 20% of the identified subjects. Only 40 female and 10 male patients returned the six-month post-operative packets, and only 19 female and nine male patients returned the one-year post-operative packets. The researchers speculated that this might have been due to the length of the questionnaire, which was extensive, and that it might have been more effective to ask patients to return the packets at their scheduled follow-up appointments with the surgeon. Yet again, it is unclear what the impact of gender of the bariatric patient might be on the outcomes. Furthermore, the race of the bariatric patients was not indicated; therefore, it is unclear if any differences by race were observed. It is also unclear at point before the scheduled surgery the

questionnaires were sent, which may have been a factor in the response rate and/or the information shared.

Discussion

The purpose of this study was to elucidate the impact of bariatric surgery on the couple relationship. Of the nine reported studies, four suggest that bariatric surgery had a positive effect on the couple relationship for most couples (Goble, Rand, & Kuldau, 1986; Rand et al., 1984; Rand, Kowalske, & Kuldau, 1982; Rand, Macgregor, & Hankins, 1986). Several of the reported studies noted that after surgery, many patients found they enjoyed sexual relations more (Goble et al., 1986; Hafner & Rogers, 1990; Rand et al., 1984; Rand et al., 1982; Rand et al., 1986), felt more self-assured (Neill, Marshall, & Yale, 1978; Porter & Wampler, 2000; Rand et al., 1984), experienced greater self-image (Hafner, 1991), and felt more autonomy from their spouse than prior to surgery (Neill et al., 1978). However, the results of these studies varied somewhat. One study (Hafner, 1991) found an overall negative effect on the marriage and two studies reported deleterious effects, including major disruptions to the couple relationship post-operatively (Marshall & Neill, 1977; Neill et al., 1978). Marshall and Neill (1977) and Neill et al. (1978) were the first two studies (chronologically) reported, and each had very small sample sizes. Results of these two studies indicated that several spouses were found to be homosexual, a fact which came to light after the surgery when dynamics in the relationship shifted. No other included studies found this, and it is unclear if this is because the phenomenon did not repeat or if couples that might have reported an experience like this were not included in future studies. The more recent studies found that many couple relationships improved or remained stable after an initial adjustment period post-surgically (Goble et al., 1986; Rand et al., 1984; Rand et al., 1982; Rand et al., 1986).

The effects on the couple relationship may be viewed as a binary, i.e., a positive effect or a negative effect; however, the included studies do not enlighten the reader much beyond that. The reported studies do not provide much insight into which populations experience these positive effects and to what extent they are experienced by both partners. We do not know if differences exist in effects among racially and ethnically diverse population groups, vulnerable populations, or older or younger dyads. Additionally, the studies primarily reported the effects on the couple relationship when the bariatric surgery was performed on the woman, and the studies that did include male bariatric patients did not present results differentiated by gender. Furthermore, it is unclear if the findings might have yielded a more accurate description of the couple relationship if both members of the couple were included. There is much less data on whether the effect might be different if the patient was the man in the relationship.

It is interesting to note that the vast majority of these studies were conducted between the years 1977 and 1991, and not one study was reported later than 2000. This is of note because in 1991, the National Institutes of Health (NIH) developed a consensus statement (NIH, 1991) outlining the panel's recommendations of treatment options for obesity. For patients being considered for gastric restrictive or bypass surgery, evaluation by a multi-disciplinary team, including a mental health evaluation, was recommended. Furthermore, the panel recommended that the development "standardized, reliable, and valid questionnaires and structured interviews...to evaluate the patient's expectations about the changes and the psychosocial changes they actually experience during weight loss and maintenance" (NIH, 1991, p. 9). Prior to that, there was little or no standardization of care for bariatric surgery; therefore, it is difficult to determine how the patients included in the studies that comprise this review were evaluated for surgery, what co-morbid conditions they may have experienced, how they were selected for

surgery, and/or what their standard of care was. All of these factors may have contributed to each patient's outcomes, and the impact of this surgery on their couple relationship.

It is difficult to generalize these early results to the much larger bariatric surgery population of today. While the studies included in this review indicated some pre-operative evaluation, none of the studies outlined of what those evaluations consisted. Most of the study participants were Caucasian (Goble et al., 1986; Marshall & Neill, 1977; Neill et al., 1978; Rand et al., 1984; Rand et al., 1982). Three studies (Hafner, 1991; Hafner & Rogers, 1990; Rand et al., 1986) did not indicate the race of the bariatric surgery patients and/or their spouses. However, national trends indicate that Hispanics and non-Hispanic African-American females have the highest rates of obesity (CDC, 2010).

All of the studies included female patients, with seven of the studies including a small number of male patients (Goble et al., 1986; Marshall & Neill, 1977; Neill et al., 1978; Porter & Wampler, 2000; Rand et al., 1984; Rand et al., 1982; Rand et al., 1986). However, the prevalence of obesity has increased in men to the point that it is “virtually equal to that in women” (Ogden, Carroll, Kit, & Flegal, 2012, p. 4). There were several socio-economic classes reported in the various studies. Of the six studies that reported socio-economic class, most patients were middle class (Porter & Wampler, 2000), upper middle and middle class (Goble et al., 1986; Rand et al., 1982; Rand et al., 1986), lower middle and middle class (Hafner & Rogers, 1990) or mixed socio-economic classes (Rand et al., 1984). All but two of the studies were conducted in the United States, with two studies (Hafner, 1991; Hafner & Rogers, 1990) conducted in Australia.

Furthermore, four studies indicated that patients underwent a jejunioileal bypass (Goble et al., 1986; Neill et al., 1978; Rand et al., 1984; Rand et al., 1982). This type of bariatric surgery

is no longer performed, due to untoward complications found in patients who received this surgery. Complications included liver disease and/or failure, electrolyte imbalance, renal calculi, arthritis, cholelithiasis, intestinal difficulties, and possible carcinoma of the colon (Griffen, Bivens, & Bell, 1983). Of the four studies included in this review where patients underwent a jejunioileal bypass, one study indicated that the patient's experienced negative post-operative sequelae such as fatigue, nausea, diarrhea and vomiting (Neill et al., 1978). Rand et al. (1982) noted one year post-operatively, patients experienced a high rate of negative side effects, but did not elaborate. Goble et al. (1986) and Rand et al. (1984) did not indicate what, if any, physical problems patients experienced after surgery. It is unclear if complications due to the jejunioileal bypass might have been a factor in patient outcomes; however, increased medical problems may have been a confounding variable that was not taken into account when examining how the bariatric surgery impacted the couple relationship. It is not indicated in the studies what information or support was provided to the patients or the couple if these complications arose, or how they might have impacted the relationship.

Another goal of this study was to examine what methodologies have been utilized to assess the marital/couple relationship of bariatric surgery patients. All of the reported studies utilized relatively small convenience samples and there was no consensus developed over the years or reflected in the literature concerning the most appropriate tested and validated instruments. Most of these studies included a semi-structured interview (Goble et al., 1986; Marshall & Neill, 1977; Neill et al., 1978; Rand et al., 1984; Rand et al., 1982), and several utilized a formal measure or scale (Goble et al., 1986; Hafner, 1991; Hafner & Rogers, 1990; Porter & Wampler, 2000). Two of these studies (Hafner & Rogers, 1990; Porter & Wampler, 2000) included the Locke-Wallace Marital Adjustment Test, a scale developed to briefly

measure the couple's adjustment toward one another (Locke & Wallace, 1959). Other instruments utilized in any of these studies included Beck Depression Inventory (Beck et al., 1988) to measure depressive symptoms, the Coopersmith Self-Esteem Inventory (Coopersmith, 1981) to measure self-esteem, the Crown Crisp Experimental Index (Crown & Crisp, 1979) to measure neurotic symptomatology, the Hostility and Direction of Hostility Questionnaire (Philip, 1973) to assess punitiveness, the Assertion Inventory (Gambrill & Richey, 1975) to assess assertiveness, the Present State Examination (Wing et al., 1974) to identify psychiatric classifications, and/or the Paykel Life Stress Events Schedule (Paykel & Uhlenhuth, 1972) to evaluate stressful life events. One study (Hafner, 1991) utilized the Family Systems Semantic Differential, which the author described in the article; however, the researcher provided no information on the validity or reliability of this scale. One study (Rand et al., 1982) indicated the use of standardized instruments, but did not identify what instruments were utilized. No instruments utilized in these studies, other than the Locke-Wallace Marital Adjustment Test (Locke & Wallace, 1959), measure marital adjustment or satisfaction.

The convenience sampling methodology was logical, given the existence of potential bariatric patients who were being evaluated for surgery at the time the above studies were conducted. Therefore, the generalizability of these findings is limited. Furthermore, while statistical analysis run on such small samples may demonstrate some statistical significance, the results may not be meaningful and/or generalizable to a larger population. For example, three authors (Hafner, 1991; Hafner & Rogers, 1990; Porter & Wampler, 2000) reported the results of t-test, and yet none noted an effect size to note the strength of the association. Two studies (Neill et al., 1978; Rand et al., 1986) did not provide any statistical analysis - only percentages were reported. Although it may be difficult to conduct a study in which patients are randomized into

surgical and non-surgical groups it still might be possible to increase the rigor of the investigations through the use of randomization in the sampling methods among surgical patients. An alternative might be to use as a control a group of patients attempting to lose weight by non-surgical methods such as Weight Watchers. Only two of the included studies utilized a control group (Hafner & Rogers, 1990; Rand et al., 1982).

Recommendations

It is clear that there is a gaping hole in the literature regarding the impact of bariatric surgery on the couple relationship. All of the studies identified for this review focused on married couples, with the last study published in 2000. Since that time, the U.S. Census Bureau (2012) reported that both unmarried opposite-sex partner and same-sex partner households have increased dramatically. Unmarried, opposite-sex partner households grew to 6.8 million in 2010, and unmarried same-sex partner households doubled, from 0.3% of all households to 0.6% of all households, roughly 646,000 households in 2010 (U.S. Census Bureau, 2012). As the rate of obesity has continued to grow (CDC, 2012), it is reasonable to expect that unmarried partners, both opposite sex and same sex, may experience weight gain, possible morbid obesity, and eventually seek bariatric surgery for relief. If we are to take a biopsychosocial view of patients and healthcare, it is imperative to investigate the impact of this surgery on the couple dynamic, regardless of whether they are same-sex couples, opposite-sex couples, cohabitating or married. Furthermore, it is fitting to consider various dyadic research designs, enabling the researcher to better understand not only the individual perceptions, but also the mutual influences within the couple (Wittenborn, Dolbin-MacNab, & Keiley, 2013).

A second recommendation for further study is the obvious need to explore the dynamics of the change as the surgery and subsequent weight loss occur. Although all of the studies

reviewed here noted some impact on the marital satisfaction of the participants, the nature and dynamic of those changes are not well studied. We know very little about the dynamics of the couple as the patient seeks a surgical intervention. We do not know which physical or psychosocial conditions are most likely to predict changes, the direction of those changes, and the beneficial as well as deleterious effects of these changes. For example, if the partner is initially non-supportive of the surgery, what happens within the couple following surgery either to change the partner's opinion or to solidify it into a degree of conflict for the couple? This review suggests that this body of research is non-existent.

A systems perspective would suggest that this information would be a basic requirement to identifying approaches to the couple that would maximize the beneficial effects. Such a systems approach would yield information that would be extremely useful to medical family therapists. It is evident that for some patients and couples/families, a professional intervention may be indicated to assist them to reach maximum health and balance in their family systems. Knowledge of the dynamic nature of the changes that occur following bariatric surgery and the subsequent weight loss would be useful not only in guiding choices of therapeutic intervention but even, perhaps, in predicting who might do well after surgery and who might suffer deleterious consequences.

One step might be to conduct smaller, mixed method studies to explore what might be the possible impacts on the couple relationship. For example, utilizing the focus group format, a researcher might explore relationship themes that may be impacted by bariatric surgery such as relationship unchanged, changed, sex (better, worse, unchanged), life too busy and accommodating partner (Barbee, 2012) at specific intervals post-surgery. A further exploration of these themes might lead to a better understanding of the impact of the surgery on the couple

relationship. This understanding could lead to possible changes in the evaluation of bariatric surgery patients to include a more complete biopsychosocial evaluation. This information may also prove important as behavioral health providers work with bariatric patients.

Additionally, as these themes are distilled and more data is available, inclusion of questions and/or instruments to measure identified variables that are impacted by the surgery could be applied to a larger, more representative sample of patients. With this information, another option could be to insert appropriate scales and measurements into larger, ongoing studies (perhaps in an ancillary study). One such study is the Longitudinal Assessment of Bariatric Surgery (LABS) (e.g., Belle et al., 2007). One large database, the Bariatric Outcomes Longitudinal Database (BOLD) (e.g., Demaria, Pate, Wartheren, & Winegar, 2010) could be examined to at least provide descriptive data on larger populations of bariatric patients, perhaps being utilized to identify the larger potential study cohort discussed above.

Limitations

While thorough, this review was not exhaustive. It does not include a search of unpublished literature (e.g., dissertations) or articles not published in English, and though unlikely, there may be other databases not accessed that might include articles that met the criteria for inclusion in this review. Additionally, some articles may not have been included due to human error. Furthermore, as this study included only peer-reviewed journal articles, it is possible that studies that reported negative effects may not have been published, as there is a bias against publishing negative results (Cooper, 2010).

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Table 1

Key Word Search

CINAHL via EBSCO	<ol style="list-style-type: none">1. Bariatric and (marriage, marital, couples)2. Bariatric surgery and (marriage, marital, couples)3. Gastric bypass and (marriage, marital, couples)4. Metabolic and (marriage, marital, couples)5. Metabolic surgery and (marriage, marital, couples)6. Metabolic syndrome and (marriage, marital, couples)7. Obesity and (marriage, marital, couples)8. Obesity surgery and (marriage, marital, couples)
Medline via PubMed	<ol style="list-style-type: none">1. Bariatric and (marriage, marital, couples)2. Bariatric surgery and (marriage, marital, couples)3. Gastric bypass and (marriage, marital, couples)4. Metabolic and (marriage, marital, couples)5. Metabolic surgery and (marriage, marital, couples)6. Metabolic syndrome and (marriage, marital, couples)7. Obesity and (marriage, marital, couples)8. Obesity surgery and (marriage, marital, couples)
PsychINFO	<ol style="list-style-type: none">1. Bariatric and (marriage, marital, couples)2. Bariatric surgery and (marriage, marital, couples)3. Gastric bypass and (marriage, marital, couples)4. Metabolic and (marriage, marital, couples)5. Metabolic surgery and (marriage, marital, couples)6. Metabolic syndrome and (marriage, marital, couples)7. Obesity and (marriage, marital, couples)8. Obesity surgery and (marriage, marital, couples)

Figure 1

Literature Synthesis Methodology

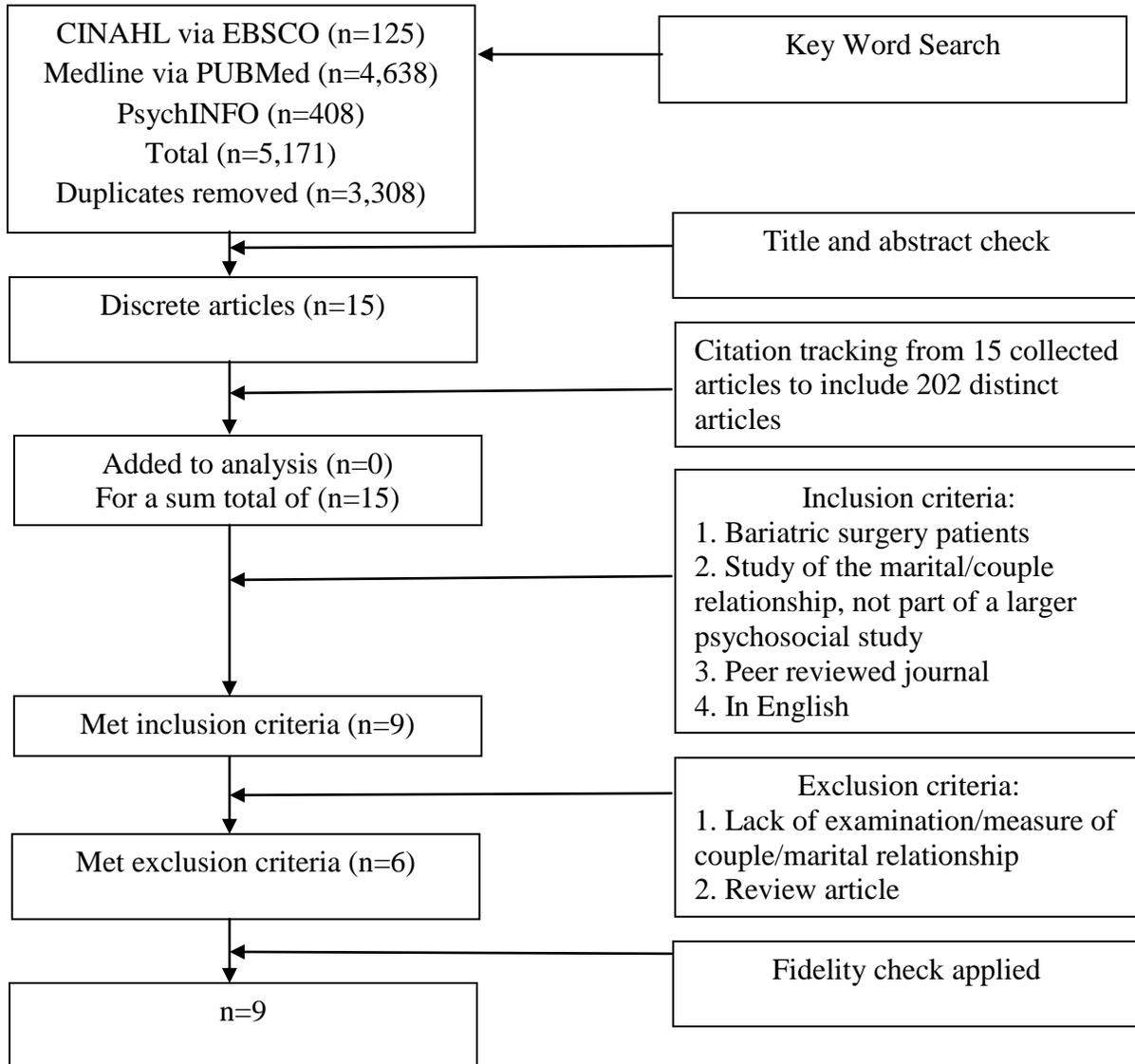


Table 2

Synthesis of studies of bariatric surgery and couple relationship

Author	Year	Participants	Race and gender of participants	Surgical technique used
1. Goble, Rand & Kuldau	1986	54 consecutive jejunoileal bypass surgery patients who were married at the time of surgery	Mostly Caucasian, 32 F*, 22 M**	Jejunoileal bypass
2. Hafner	1991	80 morbidly obese female patients and 69 of their husbands.	Race not indicated. 80 F, 69 M spouses	Gastric bypass
3. Hafner & Rogers	1990	75 married morbidly obese women and their husbands		Gastric bypass
4. Marshall & Neill	1977	12 married bypass surgery patients and their spouses	Caucasian, 10 F, 2 M	Intestinal bypass
5. Neill, Marshall & Yale	1978	14 spouse pairs in which one member had undergone an intestinal bypass	Caucasian, 12 F, 2 M	Jejunoileal bypass
6. Porter & Wampler	2000	95 married vertical banded gastroplasty patients referred to one surgeon	Race not indicated , 79 F, 16 M	Vertical banded gastroplasty
7. Rand, Kowalske & Kuldau	1984	14 jejunoileal bypass patients whose pre-operative marriage was intact, who rated their marriage as good at 3 years post-op	Mostly 1 Caucasian.10 F, 4 M	Jejunoileal bypass
8. Rand, Kuldau & Robbins	1982	54 married, morbidly obese patients receiving a jejunoileal bypass between 1976-1979	Mostly Caucasian, 32 F, 22 M	Jejunoileal bypass
9. Rand, Macgregor & Hankins	1986	2 cohorts - 100 consecutive patients receiving gastric bypass surgery at 1 year post-op and 60 consecutive patients receiving gastric bypass at 3 years	Race not indicated. 1 year cohort: 76 F, 24 M/3 year cohort: 51 F, 9 M	Gastric bypass

*F=Female

**M=Male

Design	Measures	Analysis
Pre/Post-test, non-randomized	The Present State Examination, The Paykel Life Stress Events Schedule	Kendall's Tau, McNemar test for significant changes, Wilcox signed-ranks matched pairs, Kristal-Wallis
Pre/Post-test, non-randomized	Family Systems Semantic Differential	Student's T-test
Pre/Post-test, non-randomized	Crown Crisp Experimental Index, The Hostility and Direction of Hostility Questionnaire, Locke-Wallace Marital Adjustment Test, The Assertion Inventory	Multiple regression, t-tests
Retrospective, non-randomized	N/A - only semi-structured interview	Only percentages reported
Retrospective, non-randomized	N/A - only semi-structured interview	Only percentages reported
Pre/Post/Post-test, non-randomized	Beck Depression Inventory, Coopersmith Self-Esteem Inventory, Locke-Wallace Marital Adjustment Test	MANOVA, ANOVA, t-tests, Reliable change index
Retrospective, non-randomized	Semi-structured interview	Fischer test of exact probability
Pre/Post/Post-test, non-randomized	Semi-structured interview	Chi Square, Wilcoxon matched pairs test, McNemar test
Retrospective, non-randomized	Structured interview	Only percentages reported

Results

Couples reported sexual frequency increased with few sexual problems reported. The number of psychiatric problems decreased. 52% relationships improved post-op, 42% no change, 6% worsened; however, the degree of marital conflict pre-op and post-op was significantly correlated. Additionally, patients with sexual problems pre-op were also those experiencing marital conflict.

The pts weight loss appeared to have an overall negative effect on the marital system in several areas. Women rated themselves as significantly more attractive and sociable, and rated their husbands as significantly less sociable and interesting than before surgery. Husbands rated their wives as excessively sociable after surgery, the reverse of their previous view, even though prior to surgery, they wanted them to be more sociable.

Pre-op, husbands reported more marital dissatisfaction than the control group. Post-op, the husbands' scores on the MATE were higher than the control group, but not statistically significant. Husbands' discomfort with wife's assertiveness decreased and their own assertiveness increased post-op. Correlations were found between pt and husband's marital satisfaction, symptoms and direction of hostility.

Majority of marriages characterized as unsatisfactory. Decision to have surgery, only 2 spouses supported, 7 were neutral, 3 opposed. Patients satisfied 1 yr post-op and all would do it again but spouses were concerned about the changes in relationships. Sexually, post-op 9 had increased interest in sex and 2 reported decreased interest. Spouses felt threatened, 2 were documented to be homosexual. Changes in dependence also reported this caused marital conflict.

69 While many patients felt fortunate to be married at all, the majority described mixed satisfaction with their marriage prior to surgery. The majority of female pts described their spouses as inadequate and dependent upon them, and the spouses confirmed the dependency. Post-op, most pts described marital discord and turmoil with much of the conflict around the issue of spousal autonomy. Both spouses expressed fears of abandonment. 9 pts reported increased interest in sex, and 3 reported a severe decline in their libido, and most spouses reported feeling threatened by this. 3 husbands of pts became openly homosexual, 5 couples, the non-pt reported a cooling of interest, and only 2 spouses reported being pleased with this change.

At 6 months, self-confidence improved, depression decreased, BMI decreased, and no significant changes in marital satisfaction.

Strong concordance between pts and spouses regarding marital adjustments (although no statistically significant differences between the groups). Increased frequency and enjoyment of social activities, improved sexual relations (easier and more pleasurable, greater interest in having sex, or did not change a good sex life), and positive changes such as increased self-confidence. At 5 years, 11 pts still felt the surgery caused an improvement in their marriage, while the others no longer thought that the surgery had a major impact on the quality of their marriage.

Marital quality was at least as good post-op as pre-op, with some improvement overall. GOP surgery can greatly expand the pt's physical and social activities and thereby effect changes in the marital routines and relationships. The incidences of divorce were slightly higher than the control group at 3 years. The sexual aspects of marriage improved post-op.

About half the pts in both groups reported that surgery has improved both their marriage and sex life. 92% described their marital relationships as harmonious. Only 5 pts total had obtained a divorce, and all the rest reported wanting to stay married although 2 pts were unsure about their spouse's commitment.

Table 3

Article Analysis Criteria

Author	Year	Defined sample	Representative sample	Follow-up rate >85%	Methods of assessment	Outcome data reported	Statistical adjustment
1. Goble et al.	1986	Y	Y	Y	Y	Y	N*
2. Hafner	1991	Y	Y	N	U	Y	N*
3. Hafner & Rogers	1990	Y	Y	N	Y	Y	Y
4. Marshall & Neill	1977	N**	N	Y	U	Y	N/A
5. Neill et al.	1978	N**	N	Y	U	Y	N/A
6. Porter & Wampler	2000	N**	N	N	Y	Y	Y
7. Rand, Kowalske, et al.	1984	Y	N	Y	U	Y	N/A
8. Rand, Kuldau et al.	1982	U	N	Y	Y	Y	N*
9. Rand, Macgregor, et al.	1986	Y	Y	Y	Y	Y	N/A

Y=Yes

N=No

U= Article did not provide significant information for author to ascertain this category

N/A=Not applicable (no statistics run)

*Did not adjust for possible confounding factors

**No exclusion criteria identified

CHAPTER THREE: METHODOLOGY

More than one-third of US adults suffer from obesity (Center for Disease Control [CDC], 2012), and thus, obesity is the leading cause of healthcare costs in the United States (The Obesity Society, 2013). Not only has bariatric surgery been found to be the most effective intervention for morbid obesity (Buchwald et al., 2004; Buchwald et al., 2009; Chang et al., 2013; Garb, Welch, Zagarins, Kuhn, & Romanelli, 2009; Maggard et al., 2005; Ribaric, Buchwald, & McGlennon, 2013), it has also been shown to be cost effective (Wang et al., 2013).

Coping with a chronic illness, such as obesity, is not a transient event, but rather “a life circumstance involving a series of interrelated life strains” (Revenson, 2003, p. 351) most often managed not only by the individual, but also the spouse and family. Because the spousal, or couple, relationship involves commitment from both persons to the other’s well-being, this committed relationship is most often the primary source of support (Bodenmann, Pihet, & Kayser, 2006). Indeed, for individuals experiencing a chronic disease, pre-illness marital satisfaction has been found to predict later coping (Badger, 1992). Both the obesity and the dramatic changes brought about by the subsequent bariatric surgery may impact not only the patient but others in the patient’s family. Little is known, however, about the impact of weight loss surgery (WLS) on the couple relationship or vice versa.

Study Design

In an attempt to better understand the impact of bariatric surgery on the relationship dynamics after one member of the couple undergoes WLS, a phenomenological approach was used to explore the lived experience of the couple when one member undergoes WLS. Phenomenology is a research paradigm utilized by investigators to describe the lived experience of a phenomenon or concept (Creswell, 2007, 2013), allowing investigators to describe what

participants "have in common as they experience a phenomenon" in an effort to "reduce individual experiences with a phenomenon to a description of the universal essence" (Creswell, 2007, p. 58). This is particularly relevant when examining a topic in which little research has been conducted (Colaizzi, 1978). Use of the phenomenological method can be useful and relevant for issues related to health and health care, because "the phenomenological method aims to describe, understand and interpret the meanings of experiences of human life" (Bloor & Wood, 2006, p. 128). Indeed, McWilliams (2010) noted that:

Health, health care and health services delivery are subjective phenomena that are understood, enacted and experienced by human beings. Objective measurement and analysis of these phenomena can inform rational decisions about maximizing health as a social good. However, greater understanding of the complex, multidimensional nature of humanity, human consciousness, subjectivity, intentionality and actions is essential if we are to optimize the quality of health care, health services delivery and, ultimately, the health of individuals, communities and society at large. Phenomenology offers a way for researcher to address these human aims. (p. 229)

In this study, the investigator, along with a triangulated co-investigator (hereafter referred to as co-investigator), collected data from couples in which one member had undergone WLS. They interviewed each member of the couple unit jointly instead of separately. This provided the participants an opportunity to not only share their experiences together, but also enabled the investigators to observe the non-verbal modes of communication between the participants for added depth and insight into the nature of their relationship (Pahl, 1989). Joint interviews allowed the participants the opportunity to interact and provide information on the same issues as well as how each perceived the same event (Arskey, 1996; Beitin, 2008; Wittenborn, Dolbin-

MacNab, & Keiley, 2013), which enhanced the richness of the interview while generating more comprehensive data (Arskey, 1996). In addition, joint interviewing provided an opportunity to elicit dissimilar and/or shared understanding of an event (Arskey, 1996) as sometimes, one member of the couple filled in gaps in the narrative (Morris, 2001) and the participants had the opportunity to probe, challenge or correct each other as they corroborated or supplemented each other's descriptions (Taylor & de Vocht, 2011). Additionally, "when interviewing couples together, the participants have more control of the common story of which they are a part, and the problems of anonymity and consent among interviewees are reduced, as both are present" (Bjornholt & Farstad, 2012, p. 4). This sense of equality in the interview process may have allowed for a more comprehensive immersion into the essence of the experience for both participants. While there are advantages and disadvantages to joint interviewing, in separate interviews participants might have felt more freely able to express their individual views; however, in joint interviews, the participants might "represent themselves not just as individuals but also as concurrent participants in a relationship" (Taylor & de Vocht, 2011, p. 1577).

Role of the Investigator and Co-Investigator

The lead investigator addressed several issues when developing this study and applying the phenomenological approach. Willis (2001) noted that "all knowing is at one level subjective since it is always related to, and constructed by, the person engaged in knowing" (p. 2). Because the investigator is the primary research instrument in many qualitative studies (McCaslin & Scott, 2003), and was so in this study, investigators work to suspend our own pre-understandings and pre-judgments in order to discover the meaning of the phenomenon. This suspending, or setting aside, of personal pre-judgments so as to conduct interviews with an unbiased presence is referred to as epoche (Moustakas, 1994). To achieve epoche, both investigators in this study

engaged in reflexivity (separately) as outlined by Ahern (1999) in an attempt to suspend our thoughts, feeling and pre-conceived notions of what could be the experience of the couple when one member has undergone WLS so as to be fully present and attuned to the participants' experiences and perspectives.

Through journaling, both investigators engaged in reflexivity by bracketing their beliefs, assumptions, preconceptions and feelings prior to initiating the investigation, and through-out the process in an effort to be more fully present and immersed in the participants' experiences and perspectives of the phenomenon. Additionally, both investigators explored and created their individual bias statements prior to initiating the study in an effort to reflect upon factors that could bias or influence how each interprets the information shared by the participants.

Setting

The setting for this research study was a southeastern regional academic bariatric surgery clinic. This clinic is a certified center of excellence, which means that the clinic has met a stringent set of requirements for comprehensive, research-based care, with a proven commitment to long-term patient care. Additionally, to gain this certification, the surgeons operating the clinic must have performed at least 125 qualifying bariatric surgery procedures in their lifetime, at least 50 cases in the previous 12 months, and maintain an overall mortality rate of $\leq 1.2\%$ at 90 days, with a Roux-en-Y gastric bypass (RYGB) mortality rate of $\leq 0.6\%$ at 90 days, sleeve gastrectomy at $\leq 0.4\%$ at 90 days and gastric banding at $\leq 0.2\%$ at 90 days (Surgical Review Corporation, 2013). The surgeons in this clinic routinely provide three types of bariatric weight loss surgery - the RYGB, the laparoscopic adjustable gastric banding and the vertical sleeve gastrectomy. This clinic serves the populations of eastern North Carolina, although patients from other regions of the state also utilize this clinic for their bariatric surgery needs. Data

collection occurred at a setting (clinic conference room, participant's home or place of participant's choosing) agreed upon by the participants and this investigator where the interview was conducted in a safe, private atmosphere.

Participants

Potential participants included all patients who had undergone either a RYGB or vertical sleeve gastrectomy at this bariatric surgery clinic who were between three to 10 months post-surgery, and their significant other. Specifically, the inclusion criteria specified that: (a) the patient participant be age 18 years or older, (b) have undergone a bypass or sleeve procedure in the previous 3-10 months, (c) be English-speaking and able to communicate verbally, and (d) be married or involved for at least one year in a self-defined committed relationship (Melvin, Gross, Hayat, Jennings, & Campbell, 2012) prior to WLS. A self-defined committed relationship was operationalized as occurring when both partners identify as part of the couple (Simmons & McMahon, 2012). Couple was broadly defined to include married, cohabitating, dating, single or other self-identified categories (Gangamma, Bartle-Haring, & Glebova, 2012). Exclusion criteria included: (a) patient participants who have undergone a previous WLS and have returned for a different (e.g., prior WLS was a gastric band and new surgery was for a bypass) or revisionary (e.g., vertical banded gastroplasty conversion to a RYGB) WLS, (b) patient participants and/or significant other participants who were not English speaking and/or not able to communicate verbally, and (c) participants who were not involved in the same couple relationship prior to their WLS as they were after the WLS.

The number of participants included in phenomenological studies can vary, however, it should be noted that the phenomenological approach does lend itself to small sample sizes (Boss, Dahl, & Kaplan, 1996; Dahl & Boss, 2005). When using any qualitative research method,

"decisions about samples, both sample size and sampling strategies, depend on prior decisions about the appropriate unit of analysis to study" (Patton, 1980, p. 99), which can be even be a sample size of one (Dukes, 1984). Polkinghorne (1989) recommended anywhere from 5 to 25 participants who have experienced the phenomenon be included in a phenomenological study, whereas Dukes (1984) recommended three to 10 participants. However, it was important to include enough participants to reach a point of saturation (Colaizzi, 1978), so the investigators can distill and articulate a clear description of the essence of the lived experience (Creswell, 2007). This point of saturation was deemed to have been met when the investigators agreed that there were no new themes emerging from the data.

Recruitment Procedures

IRB consent (Appendix A) and informed consent documents (Appendix B) and HIPAA documents (Appendix C) were approved by the East Carolina University Institutional Review Board prior to the initiation of this study. A purposeful, convenience sample was utilized in this study. Purposeful sampling, commonly utilized in qualitative research (Lincoln & Guba, 1984), is a sampling procedure where the investigator "selects individuals and sites for study because they can purposefully inform an understanding of the research problem and central phenomenon in the study" (Creswell, 2013, p. 156). Colaizzi (1978) noted that "experience with the investigated topic and articulateness suffice as criteria for selecting subjects" (p. 58).

Possible participants were identified for this study in two steps. First, after obtaining institutional approval, on a weekly basis, the investigator reviewed the surgeons' clinic schedule for any three and/or six month bariatric surgery follow-up appointments. The names and date/time of the scheduled appointment were noted for each possible participant. Second, prior to the scheduled appointment, the identified possible participants were pre-screened based upon

the eligibility criteria. Those potential participants who meet the eligibility requirements were approached by the investigator at their regularly scheduled three month and/or six month post-op visit surgery appointments. The lead investigator introduced herself to the potential participants in the clinic room and introduced the study (see Appendix D). It was at that time that patients were invited to participate. If the patient was willing to participate, s/he reviewed and signed the informed consent and HIPAA forms. The investigator and participant agreed on a time for the investigator to call and schedule a time to meet with the participant and their significant other (SO). The investigator also provided the participant with a flier (see Appendix E) with information about the study for the participant to share with his/her SO. The investigator then called and scheduled a time to meet with the participant and SO for the interview at a place of the participant's choosing (i.e., in a clinic conference room, participant's home, somewhere in the participants' community where the interview could be conducted safely and privately). If the participant's SO accompanied them to the clinic visit, after the patient agreed to participate, the SO was also invited to join the study. If agreeable, the SO was provided with the consent and HIPAA forms to review and sign. The investigator either scheduled a time and place to meet the couple for the interview, or scheduled a time to call the participants to schedule the interview. The investigator and co-investigator met with each participant and their SO together at the agreed upon time and place to conduct the interview. At that time, if the SO was not present at the patient participant's clinic visit, the SO was provided with the consent and HIPAA forms to review and sign, after any questions s/he may have had were answered, prior to gathering any information from the SO.

Data Collection

Prior to beginning the interview, each participant was asked to consent to participate in the study, if s/he has not already done so (see Appendix B and Appendix C) and was asked to complete a brief demographic survey (see Appendix F). Once that was completed, the interview began following the outline listed in Appendix G. Ms. Mary Lisa Pories (investigator) conducted the interviews and Dr. Mary Ann Rose (co-investigator) audio-recorded the interviews and took detailed notes on the couple's non-verbal responses to each other. The co-investigator was present for the interviews for the purpose of triangulation for added study validity. She took field notes that were later integrated into the margins of each transcribed interview.

In-depth, semi-structured interviews were conducted with both members of the couple unit simultaneously. The grand tour, or central, question in a phenomenological study is the broadest question the investigator can think of to explore the phenomenon in question (Creswell, 2009). In an effort to encourage the participants to describe their experiences for themselves (Dahl & Boss, 2005), each interview began with the same grand tour question related to the couple's lived experience after the WLS. The grand tour question was: "Please describe what your weight loss surgery experience has been like as a couple." Subsequent questions varied, including circular (Brown, 1997) and/or probing (Patton, 1980) questions. Each couple was interviewed once and offered the opportunity to review the transcript of their interview for accuracy or added detail.

Circular questions are questions about differences between the views of each interviewee around a presenting problem (Brown, 1997; Scheel & Conoley, 1998). As such, circular questioning highlights the differences between people, their relationships and perceptions over time (Tomm, 1984). Indeed, circular questioning may have a liberating effect, encouraging

participant couples to highlight similarities and differences between them (Brown, 1997) for a more systemic description of the experience (Scheel & Conoley, 1998). This can add further richness and depth of description of their experience (Loos & Bell, 1990; Tomm, 1988). Circular questioning was utilized with the participants by asking each of them the same specific probing questions to allow each to share their perspective of the same event or issue.

Probing questions are "an interview tool used to go deeper into the interview process" (Patton, 1980, p. 238) which are situation specific and allow the investigator to assist the participants to clarify their own views (McKinnon, 1988). Probing questions such as "have there been any changes in your role in the relationship as a result of the surgery" or "please describe changes, if any, in your sexual relationship with each other since the surgery" were utilized throughout the interview process. Additionally, non-specific probing questions such as "can you say more about that" or "can you explain that a little more" were inserted to assist participants in deepening their response to the prior interview questions (Patton, 1980).

Data Analysis

Audio-recordings were transcribed by a trained transcriptionist as soon as possible after each interview was completed. Prior to transcription, each participant was issued a pseudonym and that name was used during the transcription process. The participant's names and de-identified names were stored in a locked filing cabinet separate from the transcribed data. All efforts were taken to ensure that no identifying information was associated with the final transcripts. All audio recordings were kept in a locked filing cabinet in the investigator's office when not used for analysis or by the transcriptionist, and were deleted after the participants had the opportunity to review the typed transcripts for accuracy. Transcriptions were stored on the

secure departmental PirateDrive, accessed by this investigator's password protected computer that is located in a private, locked office.

Upon completion of each interview, both investigators wrote their field notes before the investigators discussed their thoughts with each other. These field notes were added in the margins to the verbatim transcriptions of the interviews as soon as they were transcribed. At that time, the investigator and co-investigator followed the steps outlined below to analyze the transcripts.

Colaizzi's (1978) method of analysis for phenomenological studies was utilized to distill the essence of the participants' experience. The following steps were taken in the analysis:

1. The investigators independently read each transcript in one sitting, identifying possible significant codes. Each highlighted significant phrases, sentences or meaning words that pertained to the essence of the couple experience (extracting significant statements). By completing this step in one sitting, and independent of one other, both were able to track any personal biases. The investigators then shared and compared their findings after both completed reviewing the transcript. If there were times the investigators did not agree, they discussed the issue. If they could not reach consensus, the investigator consulted the study's peer debriefer for additional input.
2. The investigators spelled out the meaning of each significant phrase, word or sentence, in an effort to formulate meaning statements.
3. The investigators organized the significant phrases, words or sentences into thematic clusters. In doing this, the investigators also referred back to the original transcripts to determine if there was anything that was not accounted for and if the thematic clusters proposed anything which was not implied in the original transcripts.

4. This investigator formulated an exhaustive description of the experiences of the couple after WLS. The co-investigator then reviewed this description to verify how accurately the investigator represented the phenomenon.
5. Both investigators participated in verification strategies outlined below to help increase the accuracy of the description. This process included a final validation of a member check, in which this investigator asked the participants about the findings and if any new relevant data was obtained in this member-checking process, it was included in the final data set. The investigators returned to the transcripts and reviewed for significant phrases, words or sentences to determine if this newly identified finding was a theme or specific only to one couple. If a new theme was identified, this theme was added to the final description.

Verification Strategies

Dahl and Boss (2005) noted that "in phenomenological inquiry, it does not make sense to search for traditional kinds of measurement reliability and validity" (p. 79). As such, it is incumbent upon the investigators to ensure that the data presented in the findings represent the truth, in as unbiased a manner as possible. Because the investigator is the primary research instrument, it is imperative to actively examine any personal feelings and biases that emerge during the data collection.

Instead of seeking reliability, qualitative researchers seek dependability and confirmability (Creswell, 2007), both of which are established through the investigator's maintaining an ongoing audit of the research process. In efforts to seek dependability and confirmability, the investigators engaged in several activities to promote these elements. First, each investigator maintained a research diary for an audit trail (Bloor & Wood, 2006; Lincoln &

Guba, 1985). These dairies included notes about field work/interviews, the analysis process and each investigator's reflexive journaling and bracketed assumptions. The investigator journaled before and after each recruitment interview, each telephone call or in person contact with a participant and throughout the analysis process. Additionally, the investigators continually strived to achieve epoche by journaling their thoughts, feelings and biases throughout the process, after every couple interview and throughout the analysis process.

Bloor and Wood (2006) suggested an alternate way to distinguish between reliability and validity. They suggested thinking of reliability as a "measure of precision (the degree to which a research finding remains the same when data are collected and analyzed several times) and to think of validity as a measure of accuracy (the degree to which a research finding reflects reality)" (Bloor & Wood, 2006, p. 148). To enhance the validity of the results, this investigator utilized two forms of triangulation - member checks and triangulating observers. Member checking involved just that, checking the accuracy of the categories (themes) and conclusions with the participants to allow the participants to react and respond and ensure that the themes identified were adequate representations of the participants' experience (Lincoln & Guba, 1985). Indeed, Lincoln and Guba (1985) noted that member checking "is the most crucial technique for establishing credibility" (p. 314). After each interview, the investigators offered to share a copy of the transcript with the participants in an effort to elicit their feedback on whether the information was captured accurately. Participants were given the option of receiving a hard copy or an email copy of the transcript and analysis. After the participants had time to review the transcripts, the participants provided the investigator with written feedback recorded on the transcript and the opportunity to email or discuss their feedback. Additionally, all participants were offered a copy of the results of the study and given the opportunity to provide feedback.

"Triangulating observers provides a check on bias in data collection" as well as providing a "means of more directly assessing the reliability and validity of the data obtained" (Patton, 1980, p. 331). As such, the co-investigator observed all interviews, documented field notes, reviewed the transcripts and assisted with data analysis. A second form of triangulation of the data included comparing the interview data with the observational data (Patton, 1980) obtained through the field notes that each investigator recorded immediately after each interview. For additional credibility, if the investigator and co-investigator did not reach consensus on an issue, the study peer debriefer was consulted. Lincoln and Guba (1985) outlined several ways in which the use of a peer debriefer can strengthen an analysis. By playing devil's advocate, the peer debriefer can probe the investigator's biases, explore meanings and assist in clarifying the interpretations, as well as provide an opportunity for catharsis - an opportunity to clear the "mind of emotions and feelings that may be clouding good judgment or preventing emergence of sensible next steps" (Lincoln & Guba, 1984, p. 308). These multiple methods of verification and triangulation, along with the investigators' continual monitoring of their own bias provided both validity and reliability to the findings (McKinnon, 1988).

Presentation of Findings and Dissemination Plan

Dahl and Boss (2005) noted that "researcher and audience share a commitment to understand a phenomenon more clearly, often for a purpose such as personal, familial, institutional, or community change" (p. 80). In an effort to share this new-found understanding of the impact of WLS on the couple relationship, the investigators plan to disseminate this information in several venues. First, in an effort to reach a national multi-disciplinary audience, this investigator plans to submit the findings to professional peer-reviewed journals in manuscript form. This manuscript (see chapter 4) includes an introduction to the reasons for this

study, a description of the methodology, the findings of the investigation, including quotes to highlight and illustrate the various thematic clusters identified in this study, and a discussion of the implications and possible next steps of this information.

Second, this investigator plans to attend and present the findings at professional meetings attended by others interested in couples and bariatric surgery patients. Such venues could include Obesity Week 2014 (the national American Society for Metabolic and Bariatric Surgery/Obesity Society annual meeting) and annual conferences for the National Association of Social Workers, the National Association of Bariatric Nurses and/or the American Association of Marriage and Family Therapists. Without disseminating the results of the study, this investigator is failing to fulfill a responsibility of qualitative research, to "create spaces for those who are studied...to speak. The evaluator becomes the conduit for making such voices heard" (Denzin & Lincoln, 1994, p. 15). As such, it is a goal not only to disseminate this information to other interested professionals, but also to all the participants who are interested in and consented to the sharing of this information.

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CHAPTER FOUR: FOLLOWING BARIATRIC SURGERY: AN EXPLORATION OF THE COUPLES' EXPERIENCE

Obesity is the leading cause of mortality, morbidity, and disability in the United States (The Obesity Society, 2013). The worldwide prevalence of obesity has more than doubled since 1980 (World Health Organization, [WHO], 2012), with approximately 300 million women and 200 million men identified as being obese, and more than 1.4 billion adults overweight worldwide (WHO, 2012). More than one-third of US adults suffer from obesity (Centers for Disease Control [CDC], 2012a). Obesity has become a major health problem in this country.

Weight and Couples

Obesity represents a challenge to the health and well-being of the individual and may have profound effects on those closely associated with him or her as well. For this reason, the relationship between weight and marriage/divorce is under intense investigation, yielding sometimes conflicting results. For example, Jeffery and Rick (2002) found that among Americans, body mass index (BMI) did not predict the likelihood of marriage, and yet Mukhopadhyay (2008) noted that obese American men were less likely to be accepted into cohabitating relationships and obese women were less likely to be accepted into either marriage or cohabitating relationships. Once in cohabitating relationships, differences in weight gain and/or loss have been found in couples entering and exiting them. While entering into marriage was not associated with weight gain in men, Sobal, Rauschenbach, and Frongillo (2003) uncovered that it was associated with weight gain in women. Averett, Sikora, and Argys (2008) found that married women had lower BMIs than single, never married women while Sobal and Hanson (2011) confirmed that these single, never married women were more often obese and/or heavier than married women. Averett et al. (2008) further found that married and cohabitating men had higher BMI than men who were not married or cohabitating and Sobal and Hanson

(2011) found that married men weighed more than separated and/or divorced men. These confusing findings suggest a need for, and in particular, an understanding of the dynamics when weight is gained or lost during the context of a relationship.

Given that marriage rates have fluctuated around a relatively stable mean while divorce rates have risen in the US in the past 50 years (Stevenson & Wolfers, 2007), the possible relationship between weight and divorce has been of interest among researchers. Fu and Goldman (2000) noted that physical characteristics, including obesity for men or women, were not significantly related to the risk of divorce, and Jeffery and Rick (2002) found that BMI did not predict the likelihood of divorce. Interestingly, Sobal et al. (2003) noted that the dissolution of a marriage was not associated with weight loss in women, but was associated with weight loss in men. However, a recent review of the literature, Dinour, Leung, Tripicchio, Khan, and Yeh (2012) found that "transitions into marriage were associated with weight gain, whereas transitions out of marriage were associated with weight loss" (p, 1). These findings do not provide a clear picture of the relationship between weight and the marital or couple dyad. Bariatric surgery, when introduced into this complex dynamic, adds a further and largely unexplored variable.

Bariatric Surgery

The CDC (2012a) defines obesity in an adult as having a BMI of 30 or higher and the National Institute of Health (NIH) Consensus Conference Statement of Gastrointestinal Surgery for Severe Obesity (NIH, 1991) defined morbid obesity as a BMI of 35 or higher. Obese or morbidly obese persons have higher health care costs than non-obese persons (CDC, 2012b), in part because morbid obesity is generally accompanied by a series of illnesses (co-morbidities), which are also serious health concerns. They can include, among other things, type-2 diabetes, sleep apnea, hypertension and/or urinary stress incontinence (Guh et al., 2009). Diet, exercise,

and medical therapies alone have not been effective in resolving these problems, however, bariatric surgery has been effective (Gloy et al., 2013; Mingrone, et al., 2012; Schauer et al., 2012). Bariatric surgery has been shown to be the most effective intervention for morbid obesity (Buchwald et al., 2004; Buchwald et al., 2009; Chang et al., 2013; Garb, Welch, Zagarins, Kuhn, & Romanelli, 2009; Maggard et al., 2005; Ribaric, Buchwald, & McGlennon, 2013). Although there are several different operative techniques (i.e., Roux-en-Y gastric bypass [RYGB], adjustable gastric banding, sleeve gastrectomy), the result of each of them is either a restriction of the patient's intake and/or malabsorption of nutrients (Pender & Pories, 2005; Pories, 2008; Vetter, Dumon, & Williams, 2011). Not only is the weight loss dramatic, but many of the co-morbid conditions associated with morbid obesity are substantially improved after bariatric surgery (Ali, Maguire, & Wolfe, 2006; Buchwald et al., 2004; Buchwald et al., 2009; Padwal et al., 2011; Peluso & Vanek, 2007).

Not surprisingly, bariatric surgery outcomes and predictors of success are being researched continually (e.g., the Longitudinal Assessment of Bariatric Surgery, 2013). Numerous psychological and psychosocial issues are also being examined as possible precursors and/or outcomes of bariatric surgery such as depression/anxiety/mood disorders (e.g., de Zwaan et al., 2011; Sarwer, Wadden, & Fabricatore, 2005; Song & Fernstrom, 2008; Thonney, Pataka, Badel, Bobbioni-Harsch, & Golay, 2010), and predictive psychosocial factors (e.g., Kinzl, Schrattecker, Mattesich, Fiala, & Biebl, 2006; van Hout, Hagendoren, Verschure, & van Heck, 2009; van Hout, Verschure, & van Heck 2005).

Bariatric Surgery and Couples

In the context of studying psychosocial outcomes, some researchers have noted positive or negative changes in the couple relationship (e.g., Herpertz et al., 2003; Kinzl et al., 2006; Livhits et al., 2011; Lutfi, Torquati, Sekhar, & Richards, 2006; van Hout et al., 2005). For

example, Lutfi, Torquati, Sekhar, and Richards (2006) studied the independent predictors of successful weight loss after WLS by examining prospective data of WLS patients. They found that marital status was a predictor of successful weight loss after WLS, noting that married patients were at a higher risk of not achieving optimal weight loss compared to unmarried patients. Sadly, the researchers provided no context from the data for possible reasons. Indeed, in their discussion, they noted that perhaps this was due to having only one income, or having more free time to for regular exercise. Furthermore, they only utilized data from the WLS patients, with no input from significant others. Unfortunately, as noted by Bocchieri, Meana, and Fisher (2002), “isolated questions in larger psychosocial batteries are likely to be inadequate indices of the complexity of marital relations and concentrated attention on the measurement of marital outcomes is sorely lacking” (p. 161). These studies of precursors or outcomes of WLS and their relationships to weight loss are focused primarily on enhancing the efficacy of the surgery itself. They are not focused as strongly on the couples being affected by the weight loss and the dynamics around that process. In fact, even in studies focusing primarily on the effects of WLS and the couple, the couple is rarely the unit of investigation. For example, of the five studies discussed below, only two (Hafner & Rogers, 1990; Rand, Kowalske, & Kuldau, 1984) studied both members of the couple, and even then, the researchers interviewed and/or surveyed the members of the couple separately.

Of the published studies focusing primarily on the effects of weight loss surgery and couples, the vast majority of these studies were conducted between the years 1977 and 1991, with the most current study published in 2000 (Porter & Wampler, 2000). The more recent researchers found that many couple relationships improved or remained stable after an initial

adjustment period post-surgically (Goble, Rand, & Kuldau, 1986; Rand, et al., 1984; Rand, Kuldau, & Robbins, 1982; Rand, Macgregor, & Hankins, 1986).

More specifically, Rand, Kuldau, and Robbins (1982) examined patients' perceptions of their marriage before and after their bariatric surgery. Prior to surgery, 40 of the 54 patients (32 female and 22 male) rated their marriages as good. One-year post-operative, 51 patients were still married to the same spouse as when they had surgery, and three were separated and planned to divorce. Of the 51, 21 thought their marriage was as good as it had been prior to surgery, while 26 thought their marriage had improved. The researchers noted that "the quality of the patient's marriage was determined through a series of questions probing marital satisfaction; frequency, seriousness, and resolution of arguments; frequency and enjoyment of sexual relations; and expectations regarding future marital quality" (Rand et al., 1982, p. 1419), however, no information was provided around the specific questions. Furthermore, other than noting changes in the number of remarriages and increased friction in some pre-operative marriages post-operatively, the only other variables the researchers reported on were marital status and sexual relations. The variables neither provided details as to why the marriages were rated well, nor details on how or why a significant number of marriages improved.

In a follow-up study to examine the nature of the marital improvement, Rand, Kowalske, and Kuldau (1984) conducted a five year follow-up of 14 patients (10 female, mostly White) and 13 of their spouses. Those included in the follow-up study were patients who had previously indicated bariatric surgery had benefitted their marriage and were all still married to the same person as when they underwent WLS. The researchers inquired about marital history, post-operative changes in mealtime interactions, sexual relations, social activities, and a "global evaluation of current marital satisfaction" (Rand et al., 1984, p. 222) during telephone interviews

with each member of the couple. Patients and spouses noted that patients had increased assertiveness, greater self-confidence, and a more positive attitude. Eleven of 14 patients and eight of 13 spouses reported sexual relations were easier and more enjoyable, however "six respondents said that surgery did not change an already good sex life" (Rand et al., 1984, p. 223). The researchers reported that 13 patients and 12 spouses, in response to questions about the global evaluation of their marital satisfaction, "described their marriage as 'good'" (Rand et al., 1984, p. 223). Unfortunately, the researchers did not provide specifics around why it was good, rather left the readers to speculate that it was due to the other variables they reported. Furthermore, these couples were selected to participate in the study because they had previously rated their marriages as good after surgery. Additionally, five years after surgery, it would be difficult to control for other variables that might impact the couples' thoughts and feelings about their relationship.

In two separate studies, researchers noted that patients reported their marriages and sexual relations had improved post-operatively. Goble, Rand, and Kuldau (1986) studied 54 consecutive jejunoileal bypass surgery patients who were married at the time of surgery and found that 52% of the patients in this study reported that their marital relationships improved post-operatively, 42% reported no change in their marital relationship, and six percent reported that their marital relationship worsened after surgery. Additionally, patients reported sexual frequency increased, with fewer sexual problems. Interestingly, those patients reporting sexual problems pre-operatively were also those experiencing marital conflict. Similarly, Rand, Macgregor, and Hankins (1986) studied two cohorts of post-operative gastric bypass patients and found that about half the patients in both groups reported that surgery had improved both their marriage and sex life. Ninety-two percent of the patients described their marital relationships as

harmonious. Patients reported increased self-confidence after surgery and that most maintained regular eating habits after surgery.

In the only study that focused specifically on the significant others, Hafner and Rogers (1990) studied the personal and marital adjustment of the husbands of 75 female bariatric surgery patients both pre-and-post-operatively. Patient's husbands reported a higher level of marital dissatisfaction compared to the age-matched sample comparison group. Also, patients reported an increase in their own assertive behavior while husbands reported a decrease in assertive behavior a year after surgery and this correlated with the husband's dissatisfaction. It is evident that further study of the couples as a unit is needed to illuminate the impact of rapid weight loss on both members of the dyad.

Systemic Interplay of Couples and Health

Researchers have found that a "close relationship plays a critical role in illness management. In turn, chronic illness takes a toll on the well partner" (Martire, Schulz, Helgeson, Small, & Saghafi, 2010, p. 339). However, close, secure personal relationships can support patients in dealing with the emotional distress that sometimes accompanies illness or disease (Weihs, Fisher, & Baird, 2002). Indeed, "supportive relationships can directly influence health by facilitating health-promoting behaviors and decreasing maladaptive coping behaviors" (Kiecolt-Glaser & Newton, 2001, p. 490). Because the couple relationship involves commitment from both persons to the other's well-being, this committed relationship is most often the primary source of support (Bodenmann, Pihet, & Kayser, 2006).

Theoretical Perspective

A theoretical perspective for these relationships is gained through von Bertalanffy's systems theory (1950). He postulated that systems are interactive, and a change in one part of

the system resulted in changes in other parts of the system (von Bertalanffy, 1950). Systems theory has general applicability and thus the "system" might be an organism, a physical system, a family, or a complex organization, to name a few examples. von Bertalanffy's theory informed Engel's biopsychosocial model (Engel, 1977, 1980). Engel's model emphasizes the importance of considering the patient and the social context in which the patient lives (Engel, 1977) not just the presenting biological problem for organizing medical care for a patient. Engel stressed the importance of attending to the interrelationships among the systems, the mind and body of the patient as well as the patient's social dimensions and environment as it relates to health and illness (Borrell-Carrio, Suchman, & Epstein, 2004; Ruddy & McDaniel, 2003; Taylor, 2002).

Systems are dynamic, have the capacity to change, and are interdependent (Bronfenbrenner, 1977), and the actions of one part of the system influence and affects all other parts of the system (Bateson, 1972). WLS and the subsequent changes patients experience due to the surgery affects not only the patient, but all aspects of the patient's life, including their relationships. The purpose of this study was to explore and better understand the impact of bariatric surgery on the relationship dynamics after one member of the couple undergoes WLS.

Method

Utilizing a Husserlian phenomenology approach (Husserl, 1901; Smith, 2013), this investigator, along with a triangulated co-investigator, explored the lived experience of the couple when one member undergoes WLS. After receiving approval from the investigators' Institutional Review Board, the investigator began recruiting participants from a southeastern regional academic bariatric surgery certified center of excellence clinic. A purposeful sample (Lincoln & Guba, 1984) of couples in which one member of the couple had undergone a RYGB or sleeve gastrectomy in the previous three to ten months was sought. All recruited couples were

either married or involved in a self-defined committed relationship with one another for at least a year prior to WLS. A self-defined committed relationship was operationalized as occurring when both partners identified as part of the couple (Simmons & McMahon, 2012). Couple was broadly defined to include married, cohabitating, dating, single or other self-identified categories (Gangamma, Bartle-Haring, & Glebova, 2012).

Informed consent was obtained from the patient in a private room in a southeastern WLS clinic. A date, time, and place for the interview was either scheduled at the time of initial recruitment or when the investigator agreed to call and schedule a time later, after the participant had the opportunity to introduce the study to his or her significant other (SO). Participants were permitted to select an interview setting (i.e., in a clinic conference room, participant's home, somewhere in the participants' community) as long as the interview could be conducted in a private location where the participants felt safe sharing their experiences. Informed consent was obtained from all significant others prior to the face-to-face interview.

In-depth, semi-structured interviews were conducted with both members of the couple simultaneously. All interviews were observed by a co-investigator who also collected field notes. Interviews were digitally audio-recorded. After completing a short demographic survey, each interview followed the same interview protocol (Table 1). The grand tour question asked at the beginning of each interview was: "Please describe what your weight loss surgery experience has been like as a couple." Specific questions then followed to further elucidate the dyadic experience of the couple. Questions were circular (Brown, 1997), allowing for comments from the partners about one another's responses. Probing (Patton, 1980) questions were only used if the couple did not address certain components of their experiences that the investigators hoped would have been discussed.

Circular questions are questions about differences between the views of each interviewee around a presenting problem (Brown, 1997; Scheel & Conoley, 1998). Circular questioning may have had a liberating effect, encouraging participant couples to highlight similarities and differences between them (Brown, 1997) for a more systemic description of the experience (Scheel & Conoley, 1998). This can add further richness and depth of description of their experience (Loos & Bell, 1990; Tomm, 1988). Circular questioning was utilized with the participants by asking each of them the same specific probing questions such as "have there been any changes in your role in the relationship as a result of the surgery" or "please describe changes, if any, in your sexual relationship with each other since the surgery." Additionally, non-specific probing questions such as "can you say more about that" or "can you explain that a little more" were inserted to assist participants in deepening their response to the prior interview questions (Patton, 1980).

Data were collected from 10 couples. The investigators agreed they had reached a point of thematic saturation (Colaizzi, 1978) where no new themes emerged after completing 10 interviews. The audio-taped interviews were transcribed verbatim, and the participants' actual names were removed and assigned a pseudonym. Each couple was only interviewed once. All the couples were offered the opportunity to review the transcript of their interview for accuracy or added detail (member checking), and 50% returned responses with only minor grammatical changes noted. The other 50% reported they either did not have time to respond or had indicated that they only wanted to review the final analysis. The grammatical changes put forth by the participants were included on the final transcripts that were used in the analysis process. Interviews lasted approximately 60 minutes. The final analysis was member checked by 100% of the couples for validation.

Data Analysis

Colaizzi's (1978) method of analysis for phenomenological studies was utilized to distill the essence of the participants' experience (See Table 2). After the emergent themes were identified (Table 3), these themes were integrated into an exhaustive description of the couples' experience after one member of the couple undergoes WLS.

In traditional empirical research, the researchers are mindful of the reliability and validity of their measures and outcomes. As it is the responsibility of all researchers to ensure that findings are based on critical investigation and are truthful, qualitative researchers utilize different techniques to validate that the method and results are trustworthy, if not necessarily reproducible. Various techniques were employed by the investigators in this study to ensure that the data presented in the findings represents the truth, in as unbiased a manner as possible. Efforts to maintain the dependability, confirmability, credibility and transferability (Lincoln & Guba, 1985) of this study are presented in Table 4.

Findings

All participant couples met the inclusion criteria. Participants included one cohabitating and nine legally married heterosexual couples who had lived together from four to 42 years. Six couples had lived together for more than 20 years. Seven of the couples were Caucasian, two were African-American, and one couple was bi-racial. Participants' ages ranged from 30 to 64. A summary of the demographic data appears in Table 5.

A total of 323 significant statements and 140 meaning statements were formulated from the 10 verbatim transcripts. Five themes emerged when the statements were collapsed into clusters: (a) changes in physical health; (b) changes in emotional health; (c) changes in eating habits; (d) greater intimacy in the relationship and; (e) the joint journey. What follows is an in-

depth description of each emergent theme including quotes from participants, followed by an exhaustive description of the couples' experience after one member of the couple undergoes WLS. The participants are designated as WLS participant for the participants who underwent WLS, or SO participant for the WLS participant's significant other.

Theme 1: Changes in Physical Health

The participants all noted apparent and more subtle physical changes that occurred after the WLS. While all of the WLS participants reported weight loss, the other health changes such as increased energy, the ability to move easier and be more active, as well as the decreased need for medications (for pre-surgical co-morbid conditions that had improved or resolved completely) impacted each couples' lives.

Thematic cluster 1a: Significant weight loss.

Weight loss is the most obvious change in physical health each WLS participant experienced. All of the WLS participants in this study reported significant weight loss, in a relatively short amount of time post-operatively. In fact, one WLS participant reported that he was one pound shy of his target weight only six months after surgery. Overall, the female WLS participants (n=4) were all between six to ten months post-operative and had lost between 52-111 pounds. The male WLS participants (n=6) were all between three to eight months post-operative and had lost between 60-122 pounds (See Table 5). One WLS participant, Paul, succinctly stated "I lost *some* weight before surgery on my own, but I've lost 100 pounds since surgery." One SO participant, Sarah, stated that she felt the change in size was an adjustment: "I think he would say the biggest change is probably something physical. The size; he's just smaller. And he just can't believe he shrunk that much that fast."

Thematic cluster 1b: Decreased need for medical interventions.

All of the WLS participants had experienced some health problems prior to their surgery. Six couples specifically noted that the WLS participants were on fewer medications and/or did not need medical assistance for matters such as diabetes or sleep any longer. Ralph noted that prior to surgery “I was pre-diabetic and the sleep apnea and the blood pressure and [I] didn’t feel good” and three months after the surgery reported “Yeah, all the sleep apnea is gone; it’s gone!” Sue, another WLS participant noted “George said I was sleeping so much better at night. I’m not [sure] – because I don’t know how I was sleeping, but I’m off of all that medicine, I’m off the machine and everything now.”

The most physically challenging recovery process among the WLS participants was that of Sampson. Sampson was the only WLS participant to report needing re-hospitalization due to an adverse event after surgery. Several days after being discharged from the hospital after his surgery, he spiked a temperature of 102 degrees:

and she [SO] called [the surgeon] and he wanted me to get the hospital as quick as I can. So when I got there they gave me some kind of test, with something that tasted like lemonade and the next thing I knew I was in surgery. And after that, they checked it, the day after and it was still leaking. So they had to put a metal sleeve down here, and I had to stay in the hospital 24 days, until they gave me a swallow test. And it wasn’t leaking, staying that long and they took all my medicine away from me. And I caught gout....And just like that (*fingers snapping*), I couldn’t feed myself, couldn’t wipe my own hind parts, couldn’t bathe myself, couldn’t brush my teeth.

Sampson noted that prior to surgery he had been taking 18 different medications, and in a little over three months since his surgery, after recovering from a leak, a bout of gout and thrush, had

recovered, returned home, and was only on two medications with “no more shots to my belly [for diabetes].” All of the participants agreed that the resolution of co-morbid conditions and their subsequent decreased need for medical intervention has positively impacted their lives.

Thematic cluster 1c: Increased energy, able to move easier and be more active.

Four SO participants noted that the WLS participants’ energy levels had improved, one WLS participant and two SO participants noted that the WLS participants were able to move more easily and/or be more active and six WLS participants and one SO participant noted that WLS participants were able to exercise more. SO participant Joe noted that "Jane seems to have a lot more energy than she used to. She’s been exercising." Prior to surgery, WLS participants described that they did not have the energy or drive to do many of the things that they might have wanted to, including exercise:

It’s a whole lot easier now. I’m lighter and I can do things. I want to learn to water ski; that’s my next goal, to learn to water ski. I *tried*, but couldn’t do it when I so overweight. And now I’ve lost weight, I want to try, I want to learn. (Paul)

While most of the WLS participants had been exercising, three couples described their efforts to exercise together. Jack and Sarah commented together “We walk. The last month, because it started to get cold and we don’t go as much, but we try to walk a little bit. And we’re going to start back swimming probably next month.”

Thematic cluster 1d: Sexual functioning.

Five of the couples specifically reported that their sexual relationship had become more physically enjoyable since the WLS, and another four simply noted that it remained "good." One couple preferred not to discuss this issue. All attributed the weight loss to improvement in sexual functioning and enjoyment. Of the five couples who reported that their sexual

relationship improved after surgery, most simply stated "sex is better" and attributed this to the weight loss. Sue noted "I got rid of all that weight that was in my way." A couple of SO participants also commented on how the weight loss impacted their sexual relations. SO participant Summer shared "it was the weight loss. There's not as much tummy there, so there's more of everything else" and SO participant Sarah responded "you can feel things more. And maybe fat was a barrier, and now that barrier's gone, so things are more intense than they were previously." Another SO participant, Becky, reported "I think he enjoys in more than he did because I think a lot of times weight does have a *lot* to do with the enjoyment of it."

Theme 2: Changes in Emotional Health

While all of the WLS participants experienced many physical changes, five of the SO participants described changes in the WLS participants' emotional health, as did one WLS participant. Emotional health refers to "a state of emotional and psychological well-being" (The Free Dictionary, 2014), as well as a decrease in, or absence of, mental health issues. It includes one's thoughts, feelings and behaviors.

Thematic cluster 2a: Alleviation of depression.

Three WLS participants experienced some level of depression or depressive symptoms prior to their WLS; however, they appeared to be unaware of this. Three SO participants pointed this out during the interviews. SO participant Judy informed Roger "I think there was some depression in there too. You don't think so, but I think so." Another SO participant Betty noted that "before all this transpired, he was depressed. I mean, really. You sat on the couch a lot; you ate a lot....and he can deny that he was not depressed" to which Ralph later responded "OK, depression. I was too depressed to talk. But that's all changed." For these WLS participants,

the depressive symptoms they experienced prior to surgery dissipated during the post-operative period.

Thematic cluster 2b: Mood changes.

Changes in mood can be positive or negative. Some changes, such as increased self-esteem, are considered positive, whereas becoming irritable or cranky might be considered a negative change in mood. Seven WLS participants in this study noted improvements in their self-esteem and self-confidence, and their SO participants commented on the changes. SO participant Becky shared "just his morale, his self-esteem has improved so much." Oscar, another SO participant noted "I'm happy to see the way she feels about herself. I can see her self-esteem has come up immensely."

Three SO participant noted unpleasant mood changes, such as irritability, in the WLS participants after surgery, and one WLS participant noted it in herself. These couples noted that some of these changes were during the initial post-operative period while one couple noted that the changes have been enduring through-out the post-operative period. WLS participant Jack described the experience as:

I haven't had any major complaints, feelings, or feeling bad. Just kind of strange mood swings sometimes....Sometimes my mood swings have made me different, but we understand, due to the fact that this surgery has a little mood swing to it.

WLS participant Helen noted "Sometimes I get, I've gotten to where I'm real impatient...some of that has gone away some now. But in the beginning...I was just cranky...But that's eased off a lot now."

Theme 3: Changes in Eating Habits

Prior to surgery, all the WLS participants were prescribed a two-week pre-operative liquid diet, and then prescribed a different liquid-diet for approximately two more weeks immediately following surgery. All WLS participants were also prescribed a restrictive, high protein diet that began upon completion of the liquid diet regiment. Each WLS participant met with a registered dietician who advised and counseled him or her on the changes in their diets and eating habits. WLS participant Jane summarized this when she the change as "not being able to eat very much at one time." Additionally, WLS participants often had to experiment with foods to determine which foods they could tolerate, and which foods tasted good to them because, as WLS participant Jack noted, "[my] taste buds are very different now." Every participant described changes in what the WLS participants ate, where they ate, and/or the necessity of following the prescribed food regiment.

Thematic cluster 3a: Portion size.

How much food WLS participants were able to consume dramatically changed after their surgeries. WLS participant Sampson noted that prior to surgery, he could eat 12 eggs at one sitting and that the change to only two ounces of protein (after the post-operative liquid diet) was a major adjustment. WLS participant Ralph noted "I've learned to eat slower and maybe take, you know, a little bit more time and eat less. My portions have gone down." These sentiments were shared by six of the WLS participants. Ralph went on to summarize the importance of following the prescribed high protein diet. "I know one more thing...if I don't eat meat, I have a totally different attitude. I got to eat that meat, seriously...If you don't eat the meat first, it's a different ballgame."

As the WLS participants adjusted to their new diets, four SO participants worried about eating in front of their partners after the WLS. WLS participant Helen stated "I do know that he wanted to kind of retreat a little bit and not eat in front of me." SO participant David noted that "we go out to eat, I still eat what I want, and it don't bother her. It did *me*, to start off with." All of the couples reported that they worked through this, finding ways to accommodate the changes and work them into their lifestyle.

Thematic cluster 3b: Eating out.

All of the couples reported that they ate out a lot prior to the surgery, and three couples noted that "going out to eat has probably been the biggest change to adjust to." Frank and Ginger reported that "we used to go out three, four times a week...[now] we don't go out to eat as often." WLS participant Paul noted that "when we would go out to restaurants or whatever, we would still split something," as did six other couples. SO participant Sarah reported "we can go to Wendy's for lunch and get a small chili and share it, and we're both full." Five of the WLS participants noted that when they did go out to eat, they brought much of their meal home with them. WLS participant Helen noted "I took most of mine home. I've eaten three meals out of it, even off the kids' menu!"

Theme 4: Greater Intimacy in the Relationship

All of the couples described small moments of increased intimacy in their relationship since the WLS. Separate from the physical act of sexual relations, intimacy is defined as demonstrating feelings of love, caring and trust (Jekielek, Bronte-Tinkew, Guzman, Ryan, & Redd, 2004) as evidenced by the "expressions of affection, compatibility, cohesion, identity and the ability to resolve conflict" (Waring, Tillman, Frelick, Russell, & Weisz, 1980, p. 471). Both members of one couple pointedly stated "the intimacy is better."

Ralph and Betty described how they flirt with and complement each other more now. SO participant Betty noted that "we talk more trash to one another in a positive way and we fool around a little bit...we flirt" and WLS participant Ralph noted "she's been very complimentary, tells me how good I look." Other WLS participants noted that their significant others' compliments made them feel good, such as WLS participant Helen:

And it's nice when he comes up behind me and puts his arm around me and gives me a little squeeze or he'll pat me on the butt and say, "Your butt's getting smaller. You've got a cute butt. How about that butt!"

Indeed, the couples described ways in which they show affection for each other. SO participant Oscar joked "we're more playful....You've heard of foreplay?...We have five-play!" WLS participant Roger noted "I think it's just been really much more intimate, kind of – we've just spend much more time just sort of holding each other."

For some, this was a newer experience. WLS participant Helen noted a change in her partner's attention toward her. "He's a lot more cuddly now and holding my hand" and "he seems more loving and more open." She attributed these changes in her partner to the changes in her after surgery. "I think he is reflecting back what's – I think the change in me allows him to be more demonstrative and more open."

Another aspect of intimacy as we have defined it includes being able to resolve conflicts. Five of the couples noted that they still argue, but that they feel safe and can work things out. SO participant Ginger noted "I would get mad with him, and I think we probably did a little fussing" as did three other couples, but all reported that was okay. Oscar and Helen described how these changes after her surgery have allowed them to "open up more boundaries" and communicate more intimately even if the topic was difficult to discuss:

We're not really afraid, more or less, to talk about stuff that is bothering us. And sometimes it gets heated; it gets sharp, you know. But once you get it out in the open, then the sea calms. (Oscar) It's kind of like a wound, that if you have things that you're not sharing and things build up, it becomes toxic. And I think he sees that I'm feeling better about myself and feeling about things. And he can be more open with me without thinking that if he says something I'm just going to shut down. (Helen)

Theme 5: The "Joint Journey"

All of the participants noted that they were in this together, and all of the WLS participants described feeling supported by and cared for by their significant others while dealing with the changes the surgery brought to their lives. Indeed, three different couples described this as "a joint effort" or "a team effort" and/or "a joint journey."

All of the couples described various ways in which the SO participants supported and helped the WLS participants care for themselves during the process, including assistance with staying on track with the new regiment. WLS participant Sue noted that she still does not get hungry, and that her SO George "has to remind me to eat sometimes." SO participant Sarah shared that "I'm taking care of him, making sure he gets the vitamins and all that stuff" while SO participant Ginger shared similar sentiments. "Just trying to get his vitamins straight and trying to get liquid Tylenol...I'm telling you, I'd go to the moon and back. It's like I'm on a mission."

All but three of the SO participants changed their eating habits after their partner underwent surgery in an effort to support the changes their partners were making. SO participant Sarah reported "I come in and like we eat yogurt or something small" while WLS participant Frank noted "we've been strictly protein and smaller quantities. And she would actually try to

eat the same thing I was eating." SO participant Judy described her decision to make this change to support Roger:

So I thought, "Well, I can either kind of sneak around or I can be more diligent about what I'm eating and support him by eating the same things he's eating, and just get rid of all this stuff in the house. Or I can do a little bit of both" [and] another commitment I made, also, is that he can't have alcohol with his surgery – so I thought, "Well, I'm certainly not going to have a cold beer in front of him." I mean, that's not going to feel very good. So I've given up alcohol too.

Interestingly, two SO participants reported not only changing their eating habits, but also participating in the pre-operative liquid diet as a way to support their partners as they began the process.

All of the couples described working together toward the WLS participants' success. WLS participant Paul described his SO Becky's support as unwavering stating "that whole time, she's been right there with me...she's supported me the whole time...she's been right there, no matter what." SO participant George simply stated "we are as one, husband and wife, and we just stuck it out together." WLS participant Frank acknowledged that "it would have been a lot harder if I hadn't had her to help me" and WLS participant Roger summed it up for many of these couples when he stated "we've done this together though, we really have."

Exhaustive Description

The weight loss surgery (WLS) and subsequent life-style changes were a team effort for these couples. Most made the decision to move forward with the surgery together, and all of the WLS participants felt supported and cared for by their significant others as they moved through the recovery period and into the first year of their post-operative experience. SO participants

supported WLS participants in many ways such as reminding them to eat and ensuring they had the things they needed after surgery such as the right vitamins. Many attended appointments with their WLS partners, and even more still made changes to their own eating habits to accommodate and support the new lifestyle changes WLS participants had adopted.

While all the WLS participants experienced weight loss, other physical changes also occurred. All of the WLS participants experienced an alleviation of many if not all of their pre-operative health problems such as diabetes or sleep apnea. This led to a decreased need for medical interventions including medications and/or assistive devices such as a c-pap machine. This improvement in health and decreased need for medical interventions corresponded with an increase in energy, allowing WLS participants to move more easily, be more active and exercise more. All WLS participants found that they also had more energy to participate in activities such as assisting with household responsibilities or participating in recreational activities with their significant others. Some of the couples started to exercise together. The SO participants found that this increased health and energy resulted in the couples' being able to do more things together.

Many WLS participants began to feel more confident and noticed a change in their self-esteem. Still others found that the depressive symptoms they experienced prior to surgery had lifted. These changes positively impacted both members of the couple. However, some WLS participants experienced changes in their mood that both members of the couple had to deal with, such as irritability or mood swings. Couples found a way to manage this with kindness, understanding, reflection on what was happening and discussing how to weather it together.

Couples attributed good or improved sexual relations after surgery to the weight loss and greater intimacy between them to both the weight loss and the WLS. They reported being more

openly flirtatious and affectionate toward each other while also sharing more intimate moments together, such as hugging or holding each other, or even just lying in bed talking to one another. WLS participants noticed that their significant others began complimenting them on their appearance.

Changes in eating habits affected both members of the couple. While some WLS participants experienced minor bumps in the road adjusting to a restrictive, high protein diet, the support of their significant other made coping with the challenges of a new diet, eating regiment, and changes in taste easier to bear. In fact, many couples changed their eating habits together, dining out less and/or sharing meals when they did. Some of the SO participants even changed their own eating habits all together, eating more of the foods on the restricted diet and consuming smaller portions to accommodate and support the changes their WLS partners were going through.

Most importantly, couples felt that the surgery and subsequent life-style changes were life-changing and required a team effort. From the decision to pursue the surgery, committing to the changes that the WLS participants had to make before and after the surgery to figuring out how to accommodate the changes each was making after the surgery, the couples felt that this was a joint journey. All of the couples felt that this joint journey brought them closer together.

Discussion

The purpose of this study was to explore the impact of WLS on the couple relationship when one member undergoes the surgical intervention. While the first studies looking at the impact of WLS on the couple system reported negative results (Marshall & Neill, 1977; Neill, Marshall, & Yale, 1978), with the majority of the couples in these studies characterizing their marriages as unsatisfactory post-operatively, this study aligns with findings from later studies

(Goble et al., 1986; Rand et al., 1984; Rand et al., 1986) that WLS surgery had a positive impact on the couple relationship in the following ways: (a) improved sexual relations (Goble et al., 1986; Rand et al., 1984), and (b) increased self-confidence (Rand et al., 1984; Rand et al., 1986). A few years later, Hafner and Rogers (1990) again found decreases in marital satisfaction as reported by patients after WLS. The novel component of their study was that marital satisfaction was correlated with increases in patients' assertiveness and decreases in spouses' assertiveness. While the couples in this study did not report these challenges, it is possible that patients today are better screened, prepared, and supported biopsychosocially throughout their pre and post-surgical experience.

After a 13 year gap in the literature, four researchers conducted studies of marital satisfaction post-operatively in WLS patients (Barbee, 2012; Childs, 2007; Ricciardi, 2005; Tinsley-Mathias, 2008). While each of these studies are unpublished dissertations, it is important to note that activity in the literature is beginning to take place again. In 2005, Ricciardi assessed relationship functioning of WLS patients pre-and-post operatively utilizing the Dyadic Adjustment Scale (DAS, Spanier, 1976). She reported no significant changes in the 33 participants' pre-and-post operative DAS scores. Similarly, Tinsley-Mathias (2008) found no significant differences in pre-and-post operative marital satisfaction when measured with the DAS. Childs (2007) conducted a grounded theory study of how WLS impacted marital relations and reported improved or good marital relations post-operatively, noting the improvements were attributed to the patients' increased self-esteem and the husbands' ability to adjust. Lastly, Barbee (2012) identified four emergent themes: (a) no longer a slave to food, (b) good and bad, (c) just a tool, not the solution, and (d) support and accommodation in her phenomenological study of the experience of the romantic dyad after WLS. However, the accuracy of her findings

is not clear, as she reported that only 30% of the respondents completed a member check to verify the validity of her findings. In three of these studies, only the WLS patient was interviewed (Childs, 2007) or surveyed (Ricciardi, 2005; Tinsley-Mathias, 2008) and in the fourth, Barbee (2012) interviewed members of the couple separately. It is unclear if Childs' (2007), Ricciardi's (2005) or Tinsley-Mathias' (2008) findings would have been any different had they interviewed and/or surveyed both members of the couple unit, nor is it clear if Barbee's (2012) findings would have been different if she had interviewed the couples jointly.

The unique finding of the current study, as compared to the known literature, is the couples' experience of WLS being a joint journey. Couples described the importance of approaching WLS and the subsequent life-style changes as a team effort. They highlighted ways in which the SO participants supported and helped the WLS participants care for themselves during the post-operative process. Some of these efforts included the SO participants helping the WLS participants cope with or manage their new eating regime by reminding them what and when to eat, assisting with portion control, and even changing some of their own eating habits (such as not going out to eat as much or changing their diets to be more in line with the new regime) in an effort to support the WLS participants. Some even started exercising together to encourage and support the WLS participants' new exercise program. The SO participants also supplied encouragement and often expressed their pride in the WLS participants' weight loss, improved health, and overall success after surgery. Most importantly, all of the participants in this study felt that this "joint journey" of WLS and the subsequent life-style changes brought them closer together as a couple. This finding of the support and team effort of the joint journey impacting the couple relationship has not been documented in any of the prior studies.

Additionally, unlike the current study, the four studies that did gather data from both members of the couple interviewed them separately (Hafner, 1991; Hafner & Rogers, 1990; Marshall & Neill, 1977; Neill et al., 1978), and five of the aforementioned research teams collected marital impact data from the WLS patients' perspectives only (Goble et al., 1986; Rand et al., 1984; Rand et al., 1982; Rand et al., 1986; Porter & Wampler, 2000). While Rand et al. (1984) conducted telephonic interviews with both the patient and SO separate from one another, Marshall and Neill (1977), Neill et al. (1978), Hafner and Rogers (1990), and Hafner (1991) conducted face-to-face semi-structured interviews with each member of the couple separately. Unfortunately, members of the couple unit were not offered the opportunity to agree, disagree, or expand on one another's experience. By only gathering data from one member of the couple unit, it is unclear if the findings are indeed representative of both partner's perspectives.

Joint interviews allow participants the opportunity to interact and provide information on the same issues, as well as how each perceives the same event (Arskey, 1996; Beitin, 2008; Wittenborn, Dolbin-MacNab, & Keiley, 2013). This method enhances the richness of the interview while generating more comprehensive data (Arskey, 1996). In addition, joint interviewing provides an opportunity to elicit dissimilar and/or shared understanding of events (Arskey, 1996) as sometimes, one member of the couple fills in gaps in the couple story or recollection of events (Morris, 2001). Joint interviewing affords participants the opportunity to probe, challenge or correct each other as they corroborated or supplemented each other's descriptions (Taylor & de Vocht, 2011). Without this method being central to this study's design, we would not have uncovered the emerging theme of the couples' joint journey.

While this study's findings expand what is known, research is needed to better understand the couples' biopsychosocial experience of WLS. For example, little is known about

ethnic and cultural differences that may exist across groups who elect to have WLS. It is important to note is that all nine of the aforementioned studies were with mostly white, middle or upper middle class married females who were generally in their 30s, as was the case in three of the four dissertations (Barbee, 2012; Childs, 2007; Ricciardi, 2005). Only Tinsley-Mathias (2008) reported 33% Hispanic respondents and only Goble et al. (1986) and Hafner and Rogers (1990) included 54% and 65% (respectively) of respondents who identified as being in the lower middle to lower socioeconomic status. Since the time when the majority of these WLS studies were done, the demographics of the eligible WLS patient and the American couple have changed. The U.S. Census Bureau (2012) reported that both unmarried opposite-sex partner and same-sex partner households have increased dramatically. Unmarried, opposite-sex partner households grew to 6.8 million in 2010, and unmarried same-sex partner households doubled, from 0.3% of all households to 0.6% of all households, roughly 646,000 households in 2010 (U.S. Census Bureau, 2012). The current study included two African-American couples, as well as a bi-racial couple, although all the couples were middle class. Furthermore, the current study did not exclude unmarried and/or gay and/or lesbian couples, although only one unmarried, cohabitating couple participated in the study. Most of the aforementioned studies were limited to married couples, which excluded gay and lesbian couples, as well as those who were not legally married. Exclusion of such couples may hinder our efforts to better understand the biopsychosocial impact of the couple and more studies are needed to understand similarities and appreciate differences across groups.

Lastly, it is unclear if participants' gender is an influential variable in couples' adjustment to WLS. In this study, WLS participants of both genders reported similar experiences with marital impact although studies with a larger sample size are warranted to confirm that this

finding is generalizable on a larger scale. In previous studies, the WLS participants were overwhelmingly female (Goble et al., 1986; Hafner, 1991; Hafner & Rogers, 1990; Marshall & Neill, 1977; Neill et al., 1978; Rand et al., 1984; Rand et al., 1982; Rand et al., 1986; Porter & Wampler, 2000). Similarly, socio-economic class, number of years living together, and relevance of marital status may be important factors that warrant further study as there has been little to no focus on their influence. While the two participating married couples who had lived together for four years reported similar experiences to that of the couple who had lived together for 42 years in the current study, and the one unmarried couple reported similar experiences to those of the married couples in this study, more research is needed.

Next Steps

What is not made clear in this or the other studies noted above is the impact of WLS on the couple if the surgical outcomes are not positive and/or if the significant other is not supportive. After one of the interviews, a significant other asked:

Does it [WLS] enhance a good relationship and make it better? Does it about equal out?

Or if the relationship is already shaky to begin with, is it kind of the nail in the coffin?

My hunch would be if the relationship is good, it's going to get better. If it's so-so, it could go either way. If it's already crappy, then this could be the thing that sends it down the tubes.

While this study did not answer that question, it did provide some insight into the changes that couples experience after WLS, and how these changes impacted their relationship. Clearly, further study is needed in this area to develop appropriate culturally-appropriate interventions specific to the biopsychosocial needs of diverse couple units.

Studies that enhance and expand the findings from qualitative studies such as this one can help to further promote a more relational screening protocol for couples where one member is considering WLS. Analyses such as Structural Equation Modeling may help to explain the influence of specific mediating and moderating variables (e.g., SO level of support prior to surgery, SO understanding, concerns or bias about WLS) on couple adjustment and/or WLS success. In addition, studies utilizing a grounded theory design may help to understand the steps and stages that couples pass through pre and post operatively. This information would be empowering to couples who are uncertain about how things are going and whether or not the thoughts, feelings, and/or behaviors they are witnessing are normative or non-normative relational events. Eventually, a longitudinal study of general marital/couple satisfaction and distress initiated pre-operatively with post-operative follow-up might help to determine critical points for relational intervention.

Conclusions

The use of a phenomenological method in this study allowed the investigators to understand and describe the lived experience the couple participants in an effort to reduce their individual descriptions of the impact of the WLS on their couple relationship into a "universal essence" (Creswell, 2007). Part of that universal essence, the theme that permeated this study, was that of the joint journey - that this was a team effort. Significant others expressed pride in and support for their WLS participant as she or he moved through this process. Many of the significant others made changes in their own lifestyles, particularly their eating habits, to support the WLS participants. More importantly, all of the significant others in this study were supportive. SO participants assisted with portion control, reminded WLS participants to take their vitamins, drink their water and stick to their regiment. Several even participated in the

liquid diet pre-operatively to show their support. It is this type of information that adds texture and richness to the understanding of what the impact of WLS on the couple relationship, and allows future researchers to build upon this more intimate understanding of the phenomenon in further studies.

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Table 1
Interview Protocol

Grand Tour Question asked of each participant	Please describe what your weight loss surgery experience has been like as a couple.
Sub-questions	<p>What changes have you observed in your relationship, if any, as a result of the surgery?</p> <p>What changes would your partner say have been most beneficial to your couple relationship? Please explain your response. [Partners will be asked to comment on one another's responses.]</p> <p>What changes would your partner say have been the most difficult on your couple relationship? Please explain your response. [Partners will be asked to comment on one another's responses.]</p>
Probing questions	<p>Have there been any changes in the roles each of you have in the relationship since the surgery?</p> <p>a. [follow up asked of each partner] What changes do you think your partner had the most difficulty adjusting to and what changes were easiest? Please explain. [Partners will be asked to comment on one another's responses.]</p> <p>Have there been any changes in the way you communicate with your partner since the surgery? If changes occurred...</p> <p>a. [follow up to be asked of each partner] What changes in communication do you think your partner had the most difficulty adjusting to and what changes were easiest? [Partners will be asked to comment on one another's responses.]</p> <p>Have there been any changes in your sexual relationship with each other since the surgery? If changes occurred....</p> <p>a. [follow up asked of each partner] What changes do you think your partner had the most difficulty adjusting to and what changes were easiest? [Partners will be asked to comment on one another's responses.]</p> <p>Have there been any changes in your household responsibilities since the surgery? If changes occurred....</p> <p>a. [follow up asked of each partner] What changes do you think your partner had the most difficulty adjusting to and what changes were easiest? [Partners will be asked to comment on one another's responses.]</p> <p>Have there been any changes in your caregiving responsibilities for one another since the surgery? If changes occurred...</p> <p>a. [follow up asked of each partner] What changes do you think your partner had the most difficulty adjusting to and what changes were easiest? [Partners will be asked to comment on one another's responses.]</p> <p>Have there been any changes in your eating habits as a couple since the surgery? If changes occurred...</p>

	<p>a. [follow up asked of each partner] What changes do you think your partner had the most difficulty adjusting to and what changes were easiest? [Partners will be asked to comment on one another's responses.]</p> <p>Have there been any changes in your social activities as a couple since the surgery? If changes occurred....</p> <p>a. [follow up asked of each partner] What changes do you think your partner had the most difficulty adjusting to and what changes were easiest? [Partners will be asked to comment on one another's responses.]</p>
Closing question:	Is there anything I did not ask you related to your relationship after WLS that you think is relevant to this study?

Table 2

Application of Colaizzi's procedural steps of analysis (1978)

-
- Investigators independently reviewed the verbatim transcripts several times to immerse themselves in the data
 - Investigators underlined significant statements and formulated a meaning separately
 - Investigators reviewed and agreed upon the significant statements and formulated meanings
 - Investigators grouped the common themes into clusters
 - Each cluster was carefully examined and gradually distilled into five emergent themes common to the participant couples' experiences
 - The themes were then integrated into an exhaustive description of the couples' experience after one member of the couple undergoes WLS
 - Member checking of exhaustive description completed for final validation of findings
-

Table 3

Excerpt from data analysis framework

Significant Statement	Formulated meaning	Theme cluster	Emergent theme #5
this really needs to be a couple's decision. It needs to be a family decision; it needs to be a commitment that you've made (C5)	Need to be a couple's decision, not just patient's decision	Awareness of being in this together	"Joint Journey"
We've done virtually all the appointments together. Yeah, that's right. And that was, yeah, it's been really kind of a joint journey (C7)	Appointments together/joint journey		
(SO) We work together. (PT) We'll work together. (C5)	Working together		
We have been closer together and I guess part of this would be because of the weight-loss surgery. We kind of had to stick together, to be a good team (C2)	Stick together, be a good team, became closer		
it's really been a joint effort. (C7)	Joint effort - teamwork		
We do more things together. We just – seems like we're more supportive of each other in some areas. (C8)	Supportive of each other, do more things together now		
So when he said to me, "Would you do this with me?" I saw that as a real opportunity for us to do something together that we could be successful at. (C7)	Pt invited SO to be part of the experience - joint journey		
I mean, we are as one,	As one, together		

husband and wife, and we just stuck it out together. (C8)		
She's been very supportive. (C3)	SO supportive	
It had to be a team effort to pull it off. I don't think anyone could go into it one-on-one and tackle it and be successful; I really don't. (C5)	Team effort, support to be successful	
He's always been supportive, but during this surgery, seems like he's been there more (C8)	SO supportive	
this project has kind of gotten us both coming together (c7)	WLS united couple	
If we can get through the holidays and it gets dark at five and it's freezing, we can do this. (C7)	Made it through the holidays and winter together - teamwork	Awareness of struggles through the process
And whatever challenges came along, we were there to work through them together (C2)	Work through challenges together	
Even when something bad happens, we figure we'll get through it (C1)	Get through bad times together	
It was a lot harder than she thought it was going to be; it was a <i>lot</i> harder. (C1)	Surgery and recovery a lot harder than pt thought it would be	
I still have to harp on him about drinking his water. (c2)	SO support, has to remind him to follow process	
I'm taking care of him, making sure he gets the vitamins and all that stuff. (C4)	SO support, has to remind him to follow process	

Table 4

Examples of qualitative rigor during study

Criteria	Definition	How met in this study
Dependability	Reliability - "the degree to which a research finding remains the same when data are collected and analyzed several times" (Bloor & Wood, 2006, p. 148)	Investigators: (a) maintained a reflexive journal, (b) audit trail, (c) kept field notes, (d) bracketed assumptions and recorded them in the reflexive journal; and (e) audio-taped and transcribed interviews verbatim
Confirmability	Objectivity - dependability that the process ensures neutrality and "intersubjective agreement" (Lincoln & Guba, 1985, p. 292)	
Credibility	Internal validity of the interpretation of the data	Methods of triangulation: (a) triangulated co-investigator observed all interviews, documented field notes, reviewed the transcripts and analyzed data; (b) peer debriefer consulted throughout the analysis process; and (c) participants member checked transcripts and final results
Transferability	Rich description of the data provides sufficient information to determine "fittingness" (Lincoln & Guba, 1985, p. 124)	Participants member checked final results and exhaustive description

Table 5

Couple Demographics

Participant Pseudonym	Gender	Age	Race	Education level	Employment	Relationship Status	Years married/cohabitating	Household income	Months since WLS	Percent weight lost since WLS**
*Jane	F	49	White	Graduate School	Full-time	Married and living together	25 years	\$60,000-\$80,000	6 months	21.7%
Joe	M	50	White	College graduate	Full-time					
*Paul	M	30	White	High School grad	Full-time	Married and living together	4 years	\$60,000-\$80,000	8 months	33.9%
Becky	F		30	White	College graduate					
*Ralph	M	64	White	College graduate	Retired	Married and living together	42 years	\$80,000-\$100,000	3 months	25%
Betty	F	62	White	College graduate	Retired					
*Jack	M	52	African-American	College graduate	Full-time	Married and living together	29 years	>\$100,000	3 months	29%
Sarah	F	50	African-American	Graduate School	Full-time					
*Frank	M	52	White	College graduate	Full-time	Married and living together	22 years	>\$100,000	6 months	40%
Ginger	F	45	White	College graduate	Full-time					
*Helen	F	51	White	Some college	Full-time	Cohabiting	8 years	\$40,000-\$60,000	6 months	31%
Oscar	M	59	White	High School grad	Disabled					
*Sue	F	61	White	Graduate	Retired	Married and	10 years	\$80,000-	9	41.9%

George	M	73	White	School Some college	Retired	living together		\$100,000	months	
*Roger	M	61	African-American	Graduate School	Disabled	Married and living together	32 years	\$80,000-\$100,000	4 months	24.8%
Judy	F	63	White	Graduate School	Part-time					
*Wanda	F	52	White	Some college	Full-time	Married and living together	32 years	\$60,000-\$80,000	10 months	40.8%
David	M	57	White	Did not complete HS	Retired					
*Sampson	M	42	African-American	High School grad	Disabled	Married and living together	4 years	\$25,000-\$40,000	3 months	25.5%
Summer	F	55	African-American	Some college	Part-time					

*WLS participant

** Belle, et al. (2013).

CHAPTER FIVE: IMPLICATIONS FOR ADDRESSING THE IMPACT OF WEIGHT LOSS SURGERY ON THE COUPLE RELATIONSHIP

The worldwide prevalence of obesity has more than doubled since 1980 (World Health Organization [WHO], 2012). In the US, it is estimated that more than one-third of adults are obese (Center for Disease Control [CDC], 2012), and many suffer not only from obesity but associated co-morbid conditions. Diet, exercise, and medical therapies alone have not been enough to stem the tide of this epidemic. Bariatric surgery has been found not only to be the most effective intervention for morbid obesity (Buchwald et al., 2004; Buchwald et al., 2009; Chang et al., 2013; Garb, Welch, Zagarins, Kuhn, & Romanelli, 2009; Maggard et al., 2005; Ribaric, Buchwald, & McGlennon, 2013), but also results in substantial improvement in many of the associated co-morbid conditions (Ali, Maguire, & Wolfe, 2006; Buchwald et al., 2004; Buchwald et al., 2009; Peluso & Vanek, 2007). However, it is not clear what impact the surgery and subsequent life-style changes have on the patients' couple relationships. The purpose of this chapter is to review the findings of the articles presented in this dissertation regarding weight loss surgery (WLS) and the couple relationship and offer recommendations aimed to strengthen healthcare policy, research, clinical interventions, and the field of medical family therapy.

Research Implications

Chapters two and four include findings that make one point very clear - that there is a gaping hole in the literature regarding the impact of WLS on the couple relationship. The systematic literature review offered in chapter two reviewed studies specifically examining the impact of bariatric surgery on the patient's marital or couple relationship. The vast majority of the nine studies reviewed were conducted, between the years 1977 and 1991, and not one peer

reviewed research study has been published focusing on the couple relationship following WLS in the past 13 years.

Of the nine reported studies reviewed in chapter two, four suggested that bariatric surgery generally had a positive effect on the couple relationship (Goble, Rand, & Kuldau, 1986; Rand, Kowalske, & Kuldau, 1984; Rand, Kuldau, & Robbins, 1982; Rand, Macgregor, & Hankins, 1986). Several research teams noted that after surgery, many patients found they enjoyed sexual relations more (Goble et al., 1986; Hafner & Rogers, 1990; Rand et al., 1984; Rand et al., 1982; Rand et al., 1986), felt more self-assured (Neill, Marshall, & Yale, 1978; Porter & Wampler, 2000; Rand et al., 1984), experienced greater self-image (Hafner, 1991), and felt more autonomous from their spouse than prior to the surgery (Marshall & Neill, 1977; Neill et al., 1978). Of the remaining studies, several researchers reported negative outcomes in the couple relationship post-operatively. One study (Hafner & Rogers, 1990) found an overall negative effect on the marriage and two studies reported deleterious effects, including major disruptions to the couple relationship post-operatively (Marshall & Neill, 1977; Neill et al., 1978). Hafner and Rogers (1990) found that the WLS patients' assertiveness increased after WLS, while the significant others' assertiveness decreased, and noted this correlated with decreased marital satisfaction after WLS. Marshall and Neill (1977) and Neill Marshall, and Yale (1978) reported that several spouses disclosed being homosexual, a fact which came to light after the surgery when dynamics in the relationship shifted. While no other studies reviewed in article one reported these findings, it is unclear if this is because the phenomenon did not repeat or if couples that might have reported an experience like this were not included in later studies. The more recent studies found that many couple relationships improved or remained stable after an

initial adjustment period post-surgically (Goble et al., 1986; Rand et al., 1984; Rand et al., 1982; Rand et al., 1986).

The effects on the couple relationship may be viewed as a binary, i.e., a positive effect or a negative effect; however, the included studies do not enlighten the reader much beyond that. The reported studies did not provide much insight into which populations experienced these positive effects and to what extent they were experienced by both partners. We do not know if differences exist in effects among racially and ethnically diverse population groups, vulnerable populations, or older or younger dyads. Additionally, the studies primarily reported the effects on the couple relationship when the WLS was performed on the woman, and the studies that did include male WLS patients did not present results differentiated by gender. Furthermore, it is unclear if the findings might have yielded a more accurate description of the couple relationship if both members of the couple were included. In most studies, only one member of the couple was interviewed or surveyed (Goble et al., 1986; Rand et al., 1984; Rand et al., 1982; Rand et al., 1986; Porter & Wampler, 2000). While several studies utilized interviews as the data collection method (Goble et al., 1986; Hafner & Rogers, 1990; Marshall & Neill, 1977; Neill et al., 1978; Rand et al., 1984; Rand et al., 1982; Rand et al., 1986), several only administered surveys (Hafner, 1991; Porter & Wampler, 2000). Unfortunately, even the studies that involved semi-structured interviews only reported positive or negative effects, with minimal additional information on other variables that might play a role in the effect. Applying a qualitative methodology (e.g., phenomenology, focus groups) would allow researchers to gather richer details regarding the impact of WLS on the couple relationship. Indeed, McWilliams (2010) noted “greater understanding of the complex, multidimensional nature of humanity, human consciousness, subjectivity, intentionality and actions is essential if we are to optimize the

quality of health care, health services delivery and, ultimately, the health of individuals, communities and society at large. Phenomenology offers a way for researcher to address these human aims” (p. 229).

As reported in chapter four, five themes emerged from the phenomenological study of the impact of WLS on the couple relationship: (a) changes in physical health; (b) changes in emotional health; (c) changes in eating habits; (d) greater intimacy in the relationship and; (e) the joint journey. The use of a phenomenological method in this study allowed the investigators to understand and describe the lived experience the couple participants in an effort to reduce their individual descriptions of the impact of the WLS on their couple relationship into a "universal essence" (Creswell, 2007). Part of that universal essence, the theme that permeated this study, was that of the joint journey - that this was a team effort. The unique finding of the current study is that of the joint journey - couples describing the WLS and subsequent life-style changes as a team effort. Couples described various ways in which the SO participants supported and helped the WLS participants care for themselves during the process. Some of these efforts included the SO participants helping the WLS participants cope with or manage their new eating regime by reminding them what and when to eat, assisting with portion control, and even changing some of their own eating habits (such as not going out to eat as much or changing their diets to be more in line with the new regime) in an effort to support the WLS participants. Some even started exercising together to encourage and support the WLS participants' new exercise program. The SO participants also supplied encouragement and often expressed their pride in the WLS participants' weight loss, improved health and overall success after surgery. All of the couples described working together toward the WLS participants' success. Most importantly, all of the participants in this study felt that this "joint journey" of WLS and the subsequent life-style

changes brought them closer together as a couple. This finding of the shared support and team effort of the couple's joint journey has not been documented in any of these other studies.

Building on this information in future studies provides an opportunity not only to expand the body of knowledge related to the impact of WLS on the couple relationship, but also to further inform decisions made by researchers, policy makers and clinicians.

In addition, studies utilizing a grounded theory design may help to understand the steps and stages that couples pass through pre and postoperatively. A further exploration of these themes might lead to a better understanding of the impact of the surgery on the couple relationship across other cultural groups, geographic locations, and along a greater socioeconomic status distribution. This understanding could lead to possible changes in the evaluation of bariatric surgery patients to include a more complete biopsychosocial evaluation, as well as inform behavioral health providers of the areas in which assistance may be needed.

As themes are distilled (such as in the findings in chapter four), and more data are available, inclusion of questions and/or instruments to measure identified relationship variables that are impacted by the surgery could be applied to a larger, more representative sample of patients. One example would be a multi-site study focusing on similarities and differences between couples from diverse geographical locations with varying racial and ethnic backgrounds. Another option could be to insert appropriate scales and measurements about couple dynamics in larger, ongoing studies, such as the Longitudinal Assessment of Bariatric Surgery (LABS, 2013) to gather data from a larger and more diverse WLS population. Future researchers will need to focus not only on better understanding the impact of WLS on the couple relationship, as well as any cultural distinctions, but also study how to translate their findings into clinical contexts effectively.

Clinical Implications

As evidenced by the findings in chapter four, the couple relationship is impacted in many ways after WLS. Unfortunately, as noted above, this is not an area in which experts in pre-operative WLS assessments are required to have training or expertise. It is imperative that behavioral health specialists working with WLS patients and their significant others take a more relational view of these patients and have training in relational work. While all the participants in the study outlined in chapter four had mostly positive experiences after surgery, the literature notes that is not always the case (Hafner, 1991, Marshall & Neill, 1977; Neill et al., 1978).

Another area in which behavioral health specialists may be able to work with WLS patients and their significant others is during post-operative support groups. One of the recommendations set forth by the American College of Surgeons (ACS, 2014b) as a standard of care for WLS patients is quarterly support groups offered by a licensed healthcare provider. Indeed, as noted by Livhits et al. (2010) "support groups are an ideal platform to provide consistent and standardized psychological, nutrition and other counseling for bariatric patients" (p. 143). While the content of these support groups is not dictated by ACS (2014b), it is logical to suggest that behavioral health specialists could provide information and support to WLS patients and their significant others through this mechanism. The findings of article two might guide behavioral health specialists in selecting topics. For example, sessions on how to deal with the changes in emotional health (mood swings, irritability, alleviation of depression), changes in eating habits, changes in sexual functioning and intimacy, and how couples can support each other and modify and/or adapt to the changes brought about by WLS might benefit WLS patients and their significant others. Working with couples in support groups would also provide

behavioral health specialists an opportunity to observe behaviors and hear about issues couples are facing, and offer appropriate referrals for relational and/or other psychosocial issues.

A behavioral health intervention may be indicated to assist the couple in reaching maximum health and balance in their family system as they adjust to post-operative changes. As noted in chapter four, couples faced various challenges together, such as changes in the WLS participants' physical and emotional health, eating habits, energy level, and support needs. While most of the changes were considered positive, the changes themselves required each member of the couple to adapt and adjust accordingly. These adjustments might be challenging for some couples, and if that is the case, behavioral health specialists must be trained to provide family-centered relational support and/or therapy to these couples to assist them in these transitional times. To date, family interventions regarding weight have focused mainly on childhood obesity (e.g., Nowicka & Flodmark, 2011; Skelton, Buehler, Irby, & Grzywacz, 2012), not adult obesity. Therefore, as clinical practice is shaped by research, clinicians and researchers must continue to explore together the variables that impact adults and their relationships in order to develop interventions that are clinically effective and financially sustainable.

Policy Implications

The status of a patient's close relationships may be the subject of inquiry, but is not currently included as part of the standardized psychological assessment for WLS. When a person who is morbidly obese decides to pursue bariatric surgery, a pre-surgical evaluation is required (Pull, 2010). In fact, such evaluations are required by approximately 80% of insurance companies (Greenberg, Sogg, & Perna, 2009), before they will approve coverage of WLS surgery. Pull (2010) noted that the psychological assessment obtained prior to surgery is used to

evaluate for current or a history of patient psychopathology (e.g., depression), and post-surgical assessment is to evaluate for changes in psychopathology, and to identify relevant factors for predicting weight loss outcomes.

Most pre-surgical evaluations contain a clinical interview, in which information is gathered regarding: (a) a patient's previous attempts at weight loss, (b) current eating and dietary styles, (c) physical activity (or inactivity), (d) history of substance use, (e) health related risk-taking behavior, (f) legal history, (g) level of cognitive functioning, (h) reason for seeking surgery and knowledge of the proposed surgical intervention as well as the associated lifestyle changes, (i) coping skills, (j) emotional modulation, (k) psychopathology/psychiatric symptoms, (l) developmental history, (m) current life situation, and (n) utilization of social support (Heinberg, 2013; LeMont, Moorehead, Parish, Reto, & Ritz, 2004; Snyder, 2009). Additionally, objective psychological tests such as the Minnesota Multiphasic Personality Inventory-2 and the Millon Behavioral Medicine Diagnostic (with bariatric norms) are utilized to inform the evaluation (Heinberg, 2013; Snyder, 2009). It is important to note that these are individual assessments, and while these mental health and social factors are considered, they are done so only in the context of the effect of these factors on potential compliance with the biomedical regime requirements (Sarwer et al., 2004; Sogg & Mori, 2004, 2008, 2009; Song & Fernstrom, 2008; Thonney, Pataka, Badel, Bobbioni-Harsch, & Golay, 2010), not on the ability of the system (e.g., couple) to change and adapt biopsychosocially before and after the surgery. This type of policy on patients' pre-surgical psychological evaluation requirement is issued by the ACS (2014a) and put forth as the standard of practice for WLS in the United States.

Further research and a greater understanding of the impact of WLS on the couple relationship might demonstrate a need to broaden current policies and evaluate not only the

potential WLS patient, but include the SO in the pre-and-post operative evaluation period. A change in current policy might not only allow significant others to gain an understanding of the overall physical, emotional and life-style changes that a WLS patient may experience, but also allow the mental health professional to distill a clearer picture of the potential WLS patient's support system and needs.

To enact this change in WLS policies, behavioral health specialists must work to modify the actual guidelines put forth by ACS and other international governing bodies. For example, in a recent revision of the European guidelines on surgery of severe obesity, Fried et al. (2014) noted that the "purpose of the psychosocial evaluation for weight loss surgery is not merely diagnostic, but to enhance the safety and efficacy of surgical treatment by identifying areas of potential vulnerability, challenges and strengths, to create an individually tailored treatment plan" (p. 45). The authors continued, stating that the goal of the pre-surgical evaluation is to identify interventions that can assist the WLS patient with long-term compliance and "enhance patients motivation and ability to comply with nutritional, behavioural and psychosocial changes before and after bariatric surgery" (p. 46), and yet nowhere in these revised guidelines is the WLS candidate's couple relationship even mentioned.

As we know that the couple relationship is most often the primary source of support (Bodenmann, Pihet, & Kayser, 2006), it would logically follow that having a clearer understanding of and working with the patient and their significant others to prepare for and deal with the WLS and subsequent life-style changes may well enhance the patients' outcomes. Indeed, behavioral health specialists working with the WLS population should be trained not only in assessment, but also in relational work, if behavioral health specialists truly want to assist WLS patients with pre-and-post operative adjustment. Inclusion of this in the guidelines that

drive clinical policies for WLS practices would help ensure that WLS patients and their significant others are better informed and perhaps better prepared for the post-operative changes. Additionally, a better understanding of the nature of the changes that occur following WLS and the subsequent weight loss would be useful in guiding choices of therapeutic intervention.

Furthermore, these services should be provided by behavioral health specialists who are trained in working with couples and health related issues, such as medical family therapists.

Medical Family Therapy Implications

"Medical family therapy is fundamentally a systemic, holistic approach that asserts that mind, body, relationships, and community all interact and affect one's health" (McDaniel, Doherty, & Hepworth, 2014). Medical family therapists (MedFTs) are trained behavioral health specialists who utilize a relational and systemic perspective (Doherty, McDaniel, & Hepworth, 1994) and a biopsychosocial (Engel, 1977, 1980) and spiritual approach (Wright, Watson, & Bell, 1996) to work with individuals, couples and/or families experiencing healthcare related issues such as trauma, illness and/or disability. As such, MedFTs are in a unique position to work with WLS patients and their significant others to address adjustment or other issues post-operatively.

MedFTs prepared at the doctoral level are trained to conduct healthcare research that examines the relational and systemic impact of illness, trauma, disease and health (Mendenhall, Pratt, Phelps, & Baird, 2012) and then translate research findings into clinical interventions. Examining the partnered WLS patient's experience relationally and systemically would suggest that the couple's relational well-being would be a basic requirement to predicting subsequent success in life-style changes. The focus on systemic and relational perspectives gives MedFTs a

unique perspective when utilizing training and experience to design and implement research working with the WLS population.

There are several barriers MedFTs and marriage and family therapists (MFTs) face when striving to provide clinical interventions with patients. While Crane and Christenson (2012) noted that not only are the clinical interventions provided by marriage and family therapists cost effective, there is an “overall consensus that family therapy interventions are effective for a wide range of presenting problems” (p. 212). Studies of the effectiveness of medical family therapy is in its infancy, however several studies have documented the effectiveness of MedFTs in areas such as oncology (Harrington, Kimball, & Bean, 2009; Sellers, 2000), primary care (Bischof, Lieser, Tartua, & Fox, 2003), and inpatient psychiatry (Anderson, Huff, & Hodgson, 2008). As such, it is important for MFTs and MedFTs not only to continue to emphasize the clinical outcomes and cost-effectiveness of their work, but also to advocate for inclusion as preferred providers with health insurance providers so that patients can afford to avail themselves of these practitioners (Crane & Christenson, 2012).

Lastly, in order to be successful researchers and clinicians, MedFTs must also stay abreast of medical and social policies as related to our practice. MedFTs must not only be aware of the clinical, operational and financial aspects (Peek, 2008) of healthcare but also the policies of governing bodies in order to maximize our clinical and research work. For example, the American Society for Metabolic & Bariatric Surgery (ASMBS) collaborates with ACS in creating and updating the standards for bariatric surgery patient care (ACS, 2014a). ASMBS accepts members from integrated health professions (e.g., psychology, social work, nursing, medical family therapy) and it is important for MedFTs working with adult obesity to participate in the professional organizations working toward changes in the policies guiding practice with

our patients. Furthermore, it would behoove MedFTs to become acquainted with and possibly work with organizations geared toward bariatric patients, such as the American Bariatrics Support Group (n.d.) or the Obesity Action Coalition (n.d.). By doing so, MedFTs can gain and awareness of not only what patients may be experiencing but also what patients' groups are lobbying for in order to possibly work with these advocacy groups toward needed changes. In order to lobby for needed changes for our patients, MedFTs must inform and be informed to work toward these goals.

Conclusions

The articles presented in this dissertation suggest a great need for continued research regarding the impact of WLS on the couple relationship. The research presented in chapter four offers insight into the lived experience of these WLS patients and their significant others, as well as providing guidance in the direction of ongoing research. Indeed, several recommendations were made in this chapter for researchers, clinicians and MedFTs to further research, clinical interventions, and policy making decisions regarding WLS patients. Researchers, MedFTs and other clinicians, along with the medical specialists and the WLS patients themselves must all work together identify, lobby for, and implement needed changes in the understanding and treatment of WLS patients moving forward, to ensure not only positive health outcomes, but also positive systemic and relational outcomes after WLS.

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APPENDIX A: IRB approval letter



EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building · Mail Stop 682
600 Moyer Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** · www.ecu.edu/irb

Notification of Initial Approval: Expedited

From: Social/Behavioral IRB
To: [Mary Lisa Pories](#)
CC: [Jennifer Hodgson](#)
Date: 11/22/2013
Re: [UMCIRB 13-002241](#)
Pories Dissertation

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) is for the period of 11/22/2013 to 11/21/2014. The research study is eligible for review under expedited category #6, 7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Name	Description
App for alt	HIPAA Authorization
Demographic survey	Surveys and Questionnaires
Flyer	Recruitment Documents/Scripts

HIPAA authorization form
Informed consent
Interview questions
recruitment script
Research protocol

HIPAA Authorization
Consent Forms
Interview/Focus Group Scripts/Questions
Recruitment Documents/Scripts
Study Protocol or Grant Application

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418

APPENDIX B: IRB consent form

Study ID:UMCIRB 13-002241 Date Approved: 11/22/2013 Expiration Date: 11/21/2014



Informed Consent to Participate in Research Information to consider before taking part in research that has no more than minimal risk.

Title of Research Study: **The lived experience of couples after bariatric surgery: A qualitative description**
Principal Investigator: Mary Lisa Pories, MSW, LCSW, Doctoral Candidate, East Carolina University
Research Supervisor: Jennifer Hodgson, PhD, LMFT, East Carolina University
Institution/Department or Division: Department of Child and Family Relations, College of Human Ecology
Address: Rivers RW237
Telephone #: 252-328-5547

Study Sponsor/Funding Source: n/a

Researchers at East Carolina University (ECU) study problems in society, health problems, environmental problems, behavior problems and the human condition. Our goal is to try to find ways to improve the lives of you and others. To do this, we need the help of volunteers who are willing to take part in research.

Why is this research being done?

The purpose of this research is to explore what happens in the couple relationship after one member of the couple undergoes weight loss surgery. The decision to take part in this research is yours to make. By doing this research, we hope to learn what couples go through after weight loss surgery so that in the future, we can better prepare couples for possible relationship changes after weight loss surgery. I believe that by interviewing both of you together, you will not only each provide information from your own opinion but also be able to hear and respond to the opinions of your significant other about the same events and issues related to the weight loss surgery. This will provide a greater understanding of your experiences as a couple.

Why am I being invited to take part in this research?

You are being invited to take part in this research because you or your significant other has undergone weight loss surgery in the past 3-10 months. If you volunteer to take part in this research, you will be one of about 40 people (20 couples) to do so. Your decision to participate in this research is voluntary.

Are there reasons I should not take part in this research?

You understand that you should not volunteer for this study if you are not currently involved in the same couple relationship as you were prior to your surgery. You should not volunteer for this study if your significant other or you are less than 18 years of age. You should not volunteer for this study if the couple relationship you are involved in has been going on for less than a year prior to the weight loss surgery. You should not volunteer for this study if either your significant other or you are not English-speaking and able to communicate verbally.

What other choices do I have if I do not take part in this research?

Participation in this research project is voluntary and you can choose not to participate at any time.

Where is the research going to take place and how long will it last?

The research procedures will be conducted at a place of your choosing, such as the conference room of the bariatric surgery clinic, your home, or somewhere in your community that you feel comfortable that we can conduct a

Page 1 of 4

Consent Version # or Date: v1 mlp

Participant's Initials

Title of Study: The lived experience of couples after bariatric surgery: A qualitative description

confidential interview. You will only need to come to the interview site that you choose one time during the study. The total amount of time you will be asked to volunteer for this study is approximately 5 minutes to complete a brief demographic survey, 60 minutes for the interview, and approximately 20 minutes to review the typed interview, all of which will occur in the next 6 months.

What will I be asked to do?

You are being asked to do the following: If you and your significant other agree to be in this study, you will be asked to take part in an interview conducted by Ms. Mary Lisa Pories and recorded by Dr. Mary Ann Rose. You may choose the place where we meet for the interview. This place needs to be quiet and private. The interview will last approximately 60 minutes. You and your significant other will be interviewed together. You or your significant other can pause or stop the interview at any time if you become upset or uncomfortable.

The interview will be audio recorded using two recorders, so that your words can be typed out exactly as you said them. The interviews will be typed by a research assistant, Ms. Kay Evans, and your names will be removed during the typing process, and you will be given a false name. Once the interview is completed and typed, you will be offered an opportunity to review the typed interview and change or add anything to your statements on the transcript. This can be done through the mail or over the telephone, depending on what you prefer. This process should only take about 20 minutes. After both you and your significant other have had the opportunity to review and change and/or add anything to your statements on the transcripts, the recordings will be erased. The electronic version of the typed interviews will be stored electronically on a secure server at East Carolina University, accessed only by my password protected computer, which is in a locked, private office. The typed interview documents will be kept in a locked filing cabinet in my locked, private office (Rivers RW237). The documents will be shredded six years after the project is completed.

You will also be asked to complete a brief demographic questionnaire, which will take approximately five minutes to complete. This information will be stored in a different locked filing cabinet in my office (Rivers RW237). The documents will not have your real names on them, and will be shredded six years after the project is completed.

What possible harms or discomforts might I experience if I take part in the research?

It has been determined that the risks associated with this research are no more than what you would experience in everyday life. However, you may become emotional during the interview. If this happens, you may pause or stop the interview at any time. If you become emotional or upset during the interview and feel that you need mental health support, I can also provide you with a list of telephone numbers for the East Carolina University Psychiatric Outpatient Clinic as well as local help lines.

What are the possible benefits I may experience from taking part in this research?

We do not know if you will get any benefits by taking part in this study. This research might help us learn more about the strengths and challenges couples may face in their relationship after one member undergoes weight loss surgery. There may be no personal benefit from your participation but the information gained by doing this research may help others in the future.

Will I be paid for taking part in this research?

We will not be able to pay you for the time you volunteer while being in this study. However, at the completion of the interview, each couple will be given a \$25 gift card.

What will it cost me to take part in this research?

It will not cost you any money to be part of the research. You will, however, be responsible for your own transportation to the interview site.

Page 2 of 4

Consent Version # or Date: v1 mlp

Participant's Initials

Title of Study: The lived experience of couples after bariatric surgery: A qualitative description

Who will know that I took part in this research and learn personal information about me?

To do this research, ECU and the people and organizations listed below may know that you took part in this research and may see information about you that is normally kept private. With your permission, these people may use your private information to do this research:

- Any agency of the federal, state, or local government that regulates human research. This includes the Office for Human Research Protections.
- The University & Medical Center Institutional Review Board (UMCIRB) and its staff, who have responsibility for overseeing your welfare during this research, and other ECU staff who oversee this research.

How will you keep the information you collect about me secure? How long will you keep it?

The tape recorded interviews will be erased after they have been typed and you have had the opportunity to review them. The tape recorders will be stored in a locked filing cabinet in my locked, private office when they are not being used for this study. The typed interviews will not have your name or identifying information on them, and will be stored electronically in a password protected file on a secure server at East Carolina University. The typed interview documents and completed demographic surveys will be kept in a locked filing cabinet in my locked, private office (Rivers RW237). The informed consent documents with a code sheet that matches your real name to your false name will be filed in a different locked filing cabinet in my office (Rivers RW237). The documents will be shredded six years after the project is completed.

What if I decide I do not want to continue in this research?

If you decide you no longer want to be in this research after it has already started, you may stop at any time. You will not be penalized or criticized for stopping. You will not lose any benefits that you should normally receive.

Who should I contact if I have questions?

The people conducting this study will be available to answer any questions concerning this research, now or in the future. You may contact the Principal Investigator at 252-328-5547 Monday thru Friday from 9 am - 5 pm. You may also contact the Research Supervisor at 252-328-1349 Monday thru Friday from 9 am – 5 pm.

If you have questions about your rights as someone taking part in research, you may call the Office for Human Research Integrity (OHRI) at phone number 252-744-2914 (days, 8:00 am-5:00 pm). If you would like to report a complaint or concern about this research study, you may call the Director of the OHRI, at 252-744-1971.

Is there anything else I should know?

No.

I have decided I want to take part in this research. What should I do now?

The person obtaining informed consent will ask you to read the following and if you agree, you should sign this form:

- I have read (or had read to me) all of the above information.
- I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers.
- I know that I can stop taking part in this study at any time.
- By signing this informed consent form, I am not giving up any of my rights.
- I have been given a copy of this consent document, and it is mine to keep.

Participant's Name (PRINT)	Signature	Date
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Consent Version # or Date: v1 mlp

Participant's Initials

Title of Study: The lived experience of couples after bariatric surgery: A qualitative description

Person Obtaining Informed Consent: I have conducted the initial informed consent process. I have orally reviewed the contents of the consent document with the person who has signed above, and answered all of the person's questions about the research.

Person Obtaining Consent (PRINT)	Signature	Date
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Principal Investigator (PRINT) (If other than person obtaining informed consent)	Signature	Date
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Consent Version # or Date: v1 mlp

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Participant's Initials

APPENDIX C: HIPAA form

Study ID:UMCIRB 13-002241 Date Approved: 11/22/2013 Does Not Expire.

UMCIRB HIPAA Privacy Authorization

East Carolina University (ECU)/Vidant Medical Center (VMC): Research Participant Authorization to Use and Disclose Protected Health Information for Research

For use only with the research consent form for UMCIRB#: 13-002241

Principal Investigator: Mary Lisa Pories

Title: The Lived Experience of Couples After Bariatric Surgery: A Qualitative Description

Location where research will be conducted

The members of the research team will conduct the research study at:

East Carolina University (ECU) VMC ECU & VMC Other

When taking part in research, protected health information (PHI) is collected, used, and shared with others who are involved in the research. Federal laws require that researchers and health care providers protect your PHI. Also, federal laws require that we get your permission to use collected PHI for the research. This permission is called authorization.

In order to complete the research project in which you have decided to take part, the research team needs to collect and use some of your PHI as described below.

What types of protected health information (PHI) about me will be used or disclosed?

(Select all that apply.)

ECU Health Care Component:

- ECU Physicians
- School of Dental Medicine
- Speech, Language, and Hearing Clinic
- Human Performance Lab
- Physical Therapy
- Student Health
- Other ECU Health Entity
(please list):

Vidant Health Entity:

- Entire Vidant Health system
- Vidant Medical Center
- Other Vidant Health Entity
(please list):

Type of ECU Records:

- Medical/clinic records
- Billing records
- Lab, Pathology and/or Radiology results
- Mental Health records
- PHI previously collected for research
- Records generated during this study
- Other:

Type of Vidant Records:

- Medical/clinic records
- Billing records
- Lab, Pathology and/or Radiology results
- Mental Health records
- PHI previously collected for research
- Records generated during this study
- Other:

Who will use or disclose my PHI?

- Principal Investigator
- Other members of the research team
- Other providers involved in your case during the research procedures, outpatient/inpatient stays during which research is being performed, or physician office visits in which research is being performed

Who will receive my PHI?

- Sponsor or other funding source to provide oversight for entire research project
- Research investigators to conduct and oversee the research project
- Principle Investigator and research team members to participate in the various research activities
- FDA or other regulatory agencies to provide regulatory oversight
- UMCIRB to provide continuing review of the research project
- Institutional officials in connection with duties for monitoring research activity
- Other providers involved in your care during research procedures, outpatient/inpatient stays during which research is being performed, or physician office visits during which research is being performed.
- Researchers at other sites—List sites:
- Data and Safety Monitoring Board and its staff
- Contract Research Organization and its staff
- Other

We will share only the PHI listed above with the individuals/agencies listed above. If we need to share other PHI or if we need to send PHI to other individuals/agencies not listed above, we will ask for your permission in writing again

How my PHI may be released to others:

ECU is required under law to protect your PHI. However, those individuals or agencies who receive your PHI may not be required by the Federal privacy laws to protect it and may share your PHI with others without your permission, if permitted by the laws governing them.

What if I do not sign this form?

You will not be eligible to participate in this study if you do not sign this Authorization form.

How may I revoke (take back) my authorization?

You have the right to stop sharing your PHI. To revoke (or take back) your authorization, you must give the Principal Investigator your request to revoke (or take back) your authorization in writing. If you request that we stop collecting your PHI for the study, you may be removed from the study. If you are removed from the study, it will not affect your ability to receive standard medical care or affect payment, health plan enrollment or benefit eligibility. PHI collected for the research study prior to revoking (or taking back) your Authorization will continue to be used for the purposes of the research study. Also, the FDA (if involved with your study) can look at your PHI related to the study even if you withdraw this authorization.

Restrictions on access to my PHI:

You will not be able to see your PHI in your medical record related to this study until the study is complete. If it is necessary for your care, your PHI will be provided to you or your physician.

How long may the PHI about me be used or disclosed for this study?

Research information continues to be looked at after the study is finished so it is difficult to say when use of your PHI will stop. There is not an expiration date for this authorization to use and disclose your PHI for this study.

If you have questions about the sharing of PHI related to this research study, call the principal investigator Mary Lisa Pories at 252-328-5547 . Also, you may telephone the University and Medical Center Institutional Review Board at 252-744-2914. In addition, if you have concerns about confidentiality and privacy rights, you may phone the Privacy Officer at East Carolina University at 252-744-5200.

Authorization

To authorize the use and disclosure of your PHI for this study in the way that has been described in this form, please sign below and date when you signed this form. A signed copy of this Authorization will be given to you for your records.

Name of Participant or Authorized Representative (print)	Signature	Date
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If an Authorized Representative has signed on behalf of a Participant please print on the line above the authority of the Legal Representative to do so (*such as parent, court-appointed guardian, or power of attorney*).

Person Obtaining Authorization	Signature	Date
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APPENDIX D: Standard introduction script

Hi, <patient's name>, my name is Mary Lisa Pories and I am a doctoral student enrolled at East Carolina University. I wanted to see if you would be interested in participating in a research project I am conducting. I am trying to find out more information on the impact of weight loss surgery on the couple relationship. Would you be interested in hearing more about this project?

- If yes, invite patient into the conference room to discuss.
- If no, thank the patient for their time.

I would like to interview you and your significant other about what your experience in the couple relationship has been like since your weight loss surgery. It is hoped that this information will assist us to better understand what happens in couple relationships after one member of the couple undergoes weight loss surgery. Your participation in the research is **voluntary** and you may choose not to answer any or all questions, and you may stop at any time. There is **no penalty for not taking part** in this research study. The interview should take about an hour and we can do it here in this conference room or at another place of your choosing that works better for you. I would want to interview you and your significant other together. Do you think that would be possible?

- If yes, proceed.
- If no, thank the patient for their time and escort them back to the waiting room.

I may ask you to provide identifying information, however, your responses to questions will be kept confidential and no data will be released or used with your identification attached. After the interview is completed, I will have it typed up verbatim. At that time, I will have your names and identifying information removed and then you and your significant other will have the opportunity to review the transcript to ensure I captured what you said accurately. Neither of you will be pressured to answer any questions. If there is something either of you would prefer not to answer, you can tell me that you do not want to reply and I will move to the next question. Do you think you and your significant other might be interested in being a part of this project?

- If yes, proceed.
- If no, thank the patient for their time and escort them back to the waiting room.

Here is some more information about the project. This flyer outlines the basics of the project as I have explained it to you, and you can take this home with you to share it with your significant other. Do you have any questions about the project?

- If yes, answer the questions.
- If no, proceed.

Please take a few minutes to read this (informed consent), and if you are in agreement, please sign this. I will make a copy for you to take home with you. Do you have any questions about this project?

- If yes, answer the questions.
- If no, proceed.

What number would you like me to call, and what would be the best time for me to call you and/or your significant other to schedule a time for us to meet for the interview? At that time, we can finalize a location to meet.

Thank you for your time.

APPENDIX E: Flyer

Have you or your significant other undergone bariatric surgery?

Were you and your significant other together before the surgery?

If so, are you willing to talk with us about your weight loss surgery experience? All that you will have to do is complete a brief 5 minute survey with some basic information and then participate in an interview together. The interview should only last about 60 minutes. At the completion of this interview, participant couples will receive a \$25 gift card.

If you are interested in being a part of this research, please contact Mary Lisa Pories, MSW, LCSW, principal investigator.

Principal Investigator:

Mary Lisa Pories, MSW, LCSW, Doctoral Candidate

East Carolina University

252-328-5547

poriesm@ecu.edu

Research Supervisor:

Jennifer Hodgson, PhD, LMFT

East Carolina University

252-328-1349

hodgsonj@ecu.edu

APPENDIX F: Demographic survey

Demographic Questionnaire

Participant #: _____

Date: ____ / ____ / _____

What is your date of birth? ____ / ____ / _____

What is your age? _____

What is your gender?

- Male
- Female
- Transgender

Which of the following best describes your education level?

- Did not complete High School
- GED/High School graduate
- Some college
- College graduate
- Graduate school

How would you classify yourself?

- African-American/Black
- Asian/Pacific Islander
- White/Non-Hispanic
- Hispanic
- Latino
- Multi-racial
- Would rather not say
- Other (please explain)

What best describes your current employment status?

- Full-time (>32 hrs/week)
- Part-time (<32 hrs/week)
- Student
- Homemaker
- Unemployed
- Retired
- Disabled

Approximately what is your annual household income?

- >\$25,000/year
- \$25,000-\$39,333/year
- \$40,001-\$59,999/year
- \$60,001-\$79,999/year
- \$80,001-\$99,999/year
- > \$100,000/year

What is your current relationship status?

- Dating
- Married
- Separated

How long have you been involved in your current relationship?

- 1 year
- 2-5 years
- 5-10 years
- 10-15 years
- 15-20 years
- > 20 years

What is your current living arrangement?

- Married/Civil union and living together
- Married/Civil union and living separately
- Cohabiting
- Live separately

If living together/cohabitating, how long have you lived together (months/years) _____

Approximately how much did you weigh when you underwent weight loss surgery?

Approximately how much do you weigh currently? _____

Approximately how much did you weigh when you and your significant other became involved? _____

APPENDIX G: Interview outline

In the next few minutes, I will be inquiring about what your couple relationship has been like since your weight loss surgery (WLS) and what changes you may have experienced in your couple relationship around the surgery. I will ask each of you the same questions so that you can respond to each question and what the other person has answered as well. I hope that you will feel comfortable in sharing your thoughts with me. If I ask a question that you are not comfortable answering, just tell me you do not want to answer that question and I will move onto the next question. Please do not feel any pressure to answer a question you do not wish to. Do you have any questions before we begin?

Overarching question:

Please describe what your weight loss surgery experience has been like as a couple.

Possible sub-questions:

1. What changes have you observed in your relationship, if any, as a result of the surgery?
2. What changes would your partner say have been most beneficial to your couple relationship? Please explain your response. [Partners will be asked to comment on one another's responses.]
3. What changes would your partner say have been the most difficult on your couple relationship? Please explain your response. [Partners will be asked to comment on one another's responses.]

Possible probing questions (circular)

1. Have there been any changes in the roles each of you have in the relationship since the surgery?

- a. [follow up asked of each partner] What changes do you think your partner had the most difficulty adjusting to and what changes were easiest? Please explain. [Partners will be asked to comment on one another's responses.]
2. Have there been any changes in the way you communicate with your partner since the surgery? If changes occurred...
 - a. [follow up to be asked of each partner] What changes in communication do you think your partner had the most difficulty adjusting to and what changes were easiest? [Partners will be asked to comment on one another's responses.]
3. Have there been any changes in your sexual relationship with each other since the surgery? If changes occurred...
 - a. [follow up asked of each partner] What changes do you think your partner had the most difficulty adjusting to and what changes were easiest? [Partners will be asked to comment on one another's responses.]
4. Have there been any changes in your household responsibilities since the surgery? If changes occurred...
 - a. [follow up asked of each partner] What changes do you think your partner had the most difficulty adjusting to and what changes were easiest? [Partners will be asked to comment on one another's responses.]
5. Have there been any changes in your caregiving responsibilities for one another since the surgery? If changes occurred...
 - a. [follow up asked of each partner] What changes do you think your partner had the most difficulty adjusting to and what changes were easiest? [Partners will be asked to comment on one another's responses.]

6. Have there been any changes in your eating habits as a couple since the surgery? If changes occurred...
 - a. [follow up asked of each partner] What changes do you think your partner had the most difficulty adjusting to and what changes were easiest? [Partners will be asked to comment on one another's responses.]
7. Have there been any changes in your social activities as a couple since the surgery? If changes occurred....
 - a. [follow up asked of each partner] What changes do you think your partner had the most difficulty adjusting to and what changes were easiest? [Partners will be asked to comment on one another's responses.]
8. Is there anything I did not ask you related to your relationship after WLS that you think is relevant to this study?