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An Examination of the Changes in Depression, Anxiety and Quality of Life Among Patients Who Undergo Gastric Bypass Surgery

Thomas Petrone

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AN EXAMINATION OF THE CHANGES IN DEPRESSION,
ANXIETY AND QUALITY OF LIFE AMONG PATIENTS WHO UNDERGO
GASTRIC BY-PASS SURGERY

by

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Submitted in partial fulfillment of the requirements for the Degree

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(Signature Page)

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Abstract

This study explores the changes in depression, anxiety and quality of life of patients who underwent gastric by-pass surgery. The purpose of this study was to assess the mental health status of 30 patients by comparing the pre and post-operative mental health evaluative data that had been collected at the pre-surgery evaluation and again at the two, four and six-month follow-up appointments. The data included scores from Beck Depression Inventories (BDI), Beck Anxiety Inventories (BAI) and Rand 36-Item Quality of Life Health Surveys (SF-36). Surgical intervention treatments of obesity are increasing. Evaluation of the pre-operative and post-operative psychological status of patients undergoing this treatment is lacking. The goal of the study was to provide research that determined whether there was any significant change in preoperative and postoperative mental health status of the patients and to support better pre-operative and post-operative assessment and mental health treatment. The study provided an overview of obesity and how it is linked to depression, anxiety and quality of life. It also provided a review of the literature about past and current research related to the variables that were examined. The results provide counselors, psychologists and other mental health practitioners, who are evaluating and treating bariatric bypass patients with extended knowledge about patient's preoperative and postoperative mental health status. The results provide information that supports more accurate and consistent standards for preoperative assessment and postoperative treatment planning and research in the area of mental health aspects of bariatric bypass surgery. The study influences mental health research professionals to review and revise mental health research instruments in

consideration of the special needs and experience of bariatric bypass patients.

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CHAPTER ONE

INTRODUCTION

The prevalence of obesity among all age and ethnic groups in the United States has increased rapidly in recent decades. Data from the 1999-2000 National Health and Nutrition Examination Survey (NHANES) estimated that 65% of adults in the United States are either overweight or obese (National Center for Health Statistics, 2000). Approximately two million Americans reach the level of morbid obesity, which is currently defined by the Center for Disease Control and Prevention (2005) as having a Body Mass Index of 40 or more, (approximately 100 lbs. over ideal body weight). Two million Americans, “ represents a prevalence that is 16% higher than the age adjusted overweight estimates obtained from the NHANES III that was conducted just five years earlier.” (1994. p. 1) The magnitude of this increase has raised significant concerns for various government, health and civic organizations because obesity has been linked to a variety of medical and psychological conditions.

The World Health Report (WHO) (2002) stated, “Overweight and obesity are important determinants of health and lead to adverse metabolic changes, including increases in blood pressure, unfavorable cholesterol levels and increased resistance to insulin...They (overweight and obesity) raise the risks of coronary heart disease, stroke, diabetes mellitus, and many forms of cancer. (p. 1) The report further stated that each year, “obesity is killing about 320,000 men and women in 20 countries of Western Europe and...obesity and overweight are in the list of the top ten health risks, globally and regionally, in terms of the burden of disease they cause.” (p. 1)

Although the World Health Organization Report (2002) discussed the need for non-surgical solutions for the problem of obesity and its co-morbid health conditions, Sogg and Mori (2004) reported that, “For many obese and morbidly obese patients non-surgical treatments have proven ineffective over the long term.” (p. 370)

The National Institutes of Health Consensus Development Conference Draft Statement of 1991 supported this concern stating, “Treatment modalities such as behavioral modification therapy, restrictive diet regimens, and pharmacological strategies, alone and in combination, may allow temporary weight loss, but often lead to disappointing long-term results.” (p. 1) As a result, surgical interventions that result in longer lasting and often dramatic results are recommended with greater frequency for morbidly obese patients.

Shikora (2001) supported the recommendation of surgical intervention for the morbidly obese stating, “Severe obesity remains an incurable disease. The consequences and cost to society are significant. Although the etiologies of obesity are becoming more clear, for the extremely obese, non-surgical treatments are still inadequate for achieving significant or sustained weight loss.” (p. 1) Relatively recent surgical approaches have provided safe and effective options. New technologies such as laparoscopy are advancing the field. For patients who are appropriately selected, this surgery achieves the weight loss necessary to improve or prevent the development of significant medical conditions and improve quality of life. (Shikora, 2001).

Shikora’s (2001) research also addressed vital concerns regarding possible psychological and physiological failure by surgery patients and the need for

preoperative psychological evaluations. He stated, “Unfortunately, dietary indiscretion and maladaptive eating behavior can result in weight loss failure despite an excellent surgical result. Therefore, preoperative evaluation process which includes comprehensive evaluation and education is a cornerstone to long-lasting success.” (p. 1)

The preoperative evaluation process and the desire for, “long-lasting success” described by Shikora (2001) includes medical, and of importance to this study, behavioral and psychological components. His reference to, “improved quality of life” and avoidance of, “maladaptive eating behavior” are only two of the many possible criteria that can be assessed in determining the overall psychological status of the bariatric patient. Shikora (2001) further stated:

Obesity is a complex condition that may be caused or influenced by numerous factors such as genetics, environment, social issues, behavioral factors, etc. In addition, many obese patients develop dysfunctional behavior as a consequence of their obesity. Certain eating and lifestyle issues may not be conducive to a good outcome after surgery. Therefore, a comprehensive psychological evaluation is essential. (p. 1)

In emphasizing the need to address the psychological aspects of bariatric surgery, McGuire, Jeffery and Simone (2002) reported, “The psychological factors of obesity are often overlooked by medical professionals...compared with normal-weight individuals, obese patients are at greater risk of suffering negative psychological comorbidities.” (p. 319) Although this area has drawn the attention of researchers, the results are inconsistent and suggest that some obese individuals have an increased

risk of experiencing negative psychological conditions (Whitman, 2002).

In their research, Buddeberg-Fischer, Klaghofer, Sigrist and Buddeberg (2004) noted:

Morbidly obese patients show a high prevalence of psychiatric co-morbidity such as eating disorders, especially, binge-eating, and depressive, anxiety and personality disorders...To date, no studies have focused on the question of whether patients under great psychological stress and/or with psychiatric co-morbidity were rejected for surgery or if these patients were treated surgically, whether they had a poorer outcome than those without co-morbid psychosocial and psychiatric conditions. (p. 361)

Consideration of the preoperative and postoperative psychological status of patients is vital to determining appropriate patient care and will be examined in this study.

In their research, Sogg and Mori (2004) supported the need for consideration of preoperative psychological aspects of the surgery reporting that, "Because this surgery is a high-risk invasive treatment option, medical, psychological and behavioral factors must be considered in pre-surgical evaluations. Although psychological evaluations are requested by surgical teams, there is no commonly used, standardized protocol for this type of assessment." (p. 370)

In discussing the importance of a psychological evaluation for bariatric patients, Maxwell (2004) reported, There are no National Institute of Health mental health requirements for these patients. "Like patients seeking an organ transplant, the existence of their obesity and any associated medical conditions does not automatically qualify the obese person as a good candidate for a bariatric

procedure.” (p. 43) Maxwell (2004) further stated, “Hopefully, some information, (from the evaluation) will also be provided regarding any preoperative action that should be taken by the patient in order to achieve their health goals, as well as suggestions regarding what to expect in the perioperative period.” (p. 44)

Stressing the importance of the evaluation Maxwell (2004) reported:

A preoperative psychological evaluation, when conducted in a thorough manner, is a useful tool for both the surgeon and the patient, precisely because it can identify potential psychological issues or problematic behaviors. The psychologist can recommend preoperative treatments designed to enhance the patient’s suitability as a candidate for bariatric surgery, (and address potential postoperative mental health conditions. (p. 44)

Cerulli and Malone (1998) described the importance of research in regard to both the preoperative evaluation and the postoperative psychological and behavioral aspects of bariatric surgery patients reporting that only limited amounts of data are available regarding mortality reduction, quality of life status and employment status. Few studies have incorporated any economic assessments of the impact of medical or surgical intervention as well. They stated, “Future studies should incorporate (postoperative) assessment of patient perceived satisfaction with the weight loss, (mental) health status and quality of life evaluations and pharmacoeconomic data to aid clinicians in the decision-making process in terms of weight management in their obese patients.” (p. 1)

The purpose of this study was to investigate any changes in preoperative and postoperative morbidly obese gastric bypass surgery patients. Specifically, the

purpose was to determine whether any changes in depression, anxiety and quality of life were evident at the two-month, four-month and six-month periods of recovery.

The Beck Depression Inventory, the Beck Anxiety Inventory, the RAND 36-Item (Quality of Life) Health Survey and a structured clinical interview were employed by the bariatric treatment team in assessing preoperative patients for presentation of mental health conditions. Although there was no formal postoperative mental health assessment, patients did return for postoperative medical appointments every two months the first year and yearly thereafter. The purpose of those appointments was to provide surgeons, physicians assistants and the staff nutritionist an opportunity to monitor the physical, nutritional, dietary and overall health status of their patients. Those appointments also included postoperative assessment of the mental health status of patients by a bariatric staff member who administered the same three instruments that were administered prior to surgery.

This study provided an opportunity to assess the mental health status of patients by comparing the pre and post-operative mental health evaluative data that had been collected at the pre-surgery, two, four and 6-month appointments. That data included the completed Beck Depression Inventories, the Beck Anxiety Inventories and the RAND 36-Item (Quality of Life) Health Surveys. The goal was to determine whether there was any significant change in preoperative and postoperative mental health status.

Statement of the Problem

Information presented by researchers including, Sogg and Mori (2004) and Shikora (2001) as well as the National Institutes of Health Consensus Development

Conference Draft Statement of 1991, have determined that non-surgical interventions for obesity are ineffective. As a result, surgical intervention treatments of obesity are increasing. Evaluation of the pre-operative and post-operative psychological status of patients undergoing this treatment is lacking. Determining if there is a therapeutic value derived from this surgery will support better pre-operative and post-operative assessment and mental health treatment. This investigator proposes to determine if there are changes in levels of depression, anxiety and self-reported quality of life at the two, four and six month postoperative periods for patients who undergo bariatric surgery.

Research Questions

The primary questions addressed in this study were:

1. Does undergoing bariatric surgery result in improving the level of depression among morbidly obese patients?
2. Does undergoing bariatric surgery result in improving the level of anxiety among morbidly obese patients?
3. Does undergoing bariatric surgery result in improving the level of self-reported quality of life among morbidly obese patients?

Rationale for this Study

This study was designed to assess whether there were any changes in the levels of depression, anxiety and quality of life among patients who underwent gastric bypass surgery. Although the impact on mental health status of gastric bypass surgery and the role of psychological evaluation has been discussed throughout the literature, research that could determine if changes in these variables occurs is

lacking. This was a quantitative study of the archival data collected by a bariatric team and included pre and postoperative data on the identified variables for 30 patients. The rationale for the study was based on the indications from the literature that described the importance of the pre and post- operative mental health assessments and the role they serve in determining pre and postoperative treatment planning and support for successful post-surgery mental health status. That aspect of the rationale for the study was addressed in the following statement by G.C.M. van Hout, Irina van Oudheusden and G.L. van Heck (2004) in which they stated:

Most importantly, psychological characteristics, personality and eating behavior can affect treatment outcomes, even in bariatric surgery. Psychological assessment allows identification of factors that may affect prognosis, select appropriate surgical candidates, and develop an appropriate individualized treatment plan. In this way, the patient's ability to achieve the necessary behavioral changes can be improved and a poor prognosis can be minimized...Furthermore, preoperative psychological assessment and, when indicated, a preparatory treatment program increase the personal attention given to each patient. Most patients are very positive about this attention. Both the treatment program and the personal attention can result in a reduction of stress and physical and mental symptoms. (p. 580)

This focus on the preoperative evaluation when coupled with the information available from the post-surgery assessment of mental health status constituted the rationale for this study.

Significance of the Study

The results of this study will provide counselors, psychologists and other mental health practitioners, who are evaluating and treating bariatric bypass patients with extended knowledge about patient's preoperative and postoperative mental health status through the first six months of recovery. This study will also provide information that supports more accurate and consistent standards for preoperative assessment and postoperative treatment planning. It supports further research in the area of mental health status of bariatric surgery patients and provides information that will influence mental health research professionals to review and revise mental health research instruments in consideration of the special needs and experience of bariatric bypass patients. Finally, this study will provide information that will influence medical and mental health professionals to adopt preoperative and postoperative programming that addresses the mental health needs of bariatric bypass patients.

Hypotheses

The hypotheses examined in this study are stated in null form. Multiple Analyses of Variance (ANOVAS) were used to determine if there was a significant difference between the various assessments.

Hypotheses 1.

There is no significant difference between pre-surgery bariatric patient's levels of depression when compared to post-surgery levels of depression at the two-month, four-month and six-month follow-up visits.

Hypotheses 2.

There is no significant difference between pre-surgery bariatric patient's

levels of anxiety when compared to post-surgery levels of anxiety at the two-month, four-month and six-month follow-up visits.

Hypotheses 3.

There is no significant difference between pre-surgery bariatric patient's Quality of Life mental health levels when compared to post-surgery Quality of Life mental health levels at the two-month, four-month and six-month follow-up visits.

Definitions

For study the following definitions were used:

Anxiety

The American Psychological Association website, APA Online (2005), described anxiety as a constant and unrealistic worry about everyday occurrences and activities. It may involve endless checking and rechecking one's actions. For the purpose of this study it was defined as a score on the Beck Anxiety Inventory.

Depression

The National Institute of Mental Health (NIMH) Health Information Website (2005) described depression as a serious medical illness that is manifested by persistent sadness and anxious mood, feelings of hopelessness, guilt worthlessness and lack of interest or pleasure in activities that were formerly enjoyed. For the purposes of this study it was defined as a score on the Beck Depression Inventory.

Quality of Life (QOL)

The Quality of Life Research Unit of the University of Toronto (2006), defined Quality of Life as:

The degree to which a person enjoys the important possibilities of his or her life in the following domains: Being who one is physically, psychologically and spiritually. Belonging as one is physically, socially and in community. Becoming who one may be practically, in leisure and in growth. (p. 2)

For this study it was defined as a mental health score on the RAND 36-Item Quality of Life Health Survey.

Body Mass Index (BMI)

The United States Center for Disease Control and Prevention, defined BMI as a calculation of body weight in kilograms divided by height in meters squared (kg/m^2). Individuals with a BMI of 25 to 29.9 are considered overweight, while individuals with a BMI of 30 or more are considered obese.

Obesity

The American Obesity Association Fact Sheet website (2006) defined obesity as, “a disease of excess body fat; (BMI of 30 or more) that is a chronic metabolic disease with a multi-factorial causation including: excessive food and calorie intake, decreased physical activity, genetic or inherited causes, medical conditions and environmental and social conditions.” (p. 1)

Morbid Obesity

The American Obesity Association Fact Sheet website (2006) defined morbid obesity as having a Body Mass Index (BMI) of 40 or more. This equates to approximately 100 pounds more than ideal weight. The American Heritage® Dictionary of the English Language website, Fourth Edition (2005) stated, “the word morbid means causing disease or injury.”(p. 1) Morbid obesity is a disease in which

excess fat causes serious and life-threatening health problems.

Gastric bypass surgery

The Web MD website (2006) defined gastric bypass surgery as the surgical treatment of morbid obesity that makes the stomach smaller and allows food to bypass part of the small intestine. Patients of this surgery feel full more quickly than when their stomach was its original size, which reduces the amount of food intake and thus the calories consumed. Bypassing part of the intestine also results in fewer calories being absorbed which leads to weight loss.

Follow-up visits

For the purposes of this study, follow-up visits were defined as two-month, four-month and six-month post-surgery medical status appointments during which the mental health assessments were also administered..

Postoperative

The American Heritage® Steadman's Medical Dictionary, (2002) defined postoperative as, "relating to, occurring in, or being the period following a surgical operation." (p. 1) For the purposes of this study it was defined as the period following gastric bypass surgery while remaining in the care of the bariatric staff.

Pre-operative Psychological Evaluation

For the purposes of this study the preoperative psychological evaluation was defined as a clinical interview, data collection and interpretation by a psychologist of an individual seeking candidacy for gastric bypass surgery.

Roux-en-Y gastric Bypass (RYGBP)

The University of Maryland Center for Weight Management & Wellness website

(2006) defined of Roux-en-Y gastric Bypass (RYGBP) as a surgery procedure in which the stomach is divided, and a small pouch, which limits calories that can be taken in on a daily basis to less than 1,000. The pouch is formed simultaneously as the majority of the stomach is sealed off. A portion of the small intestine is then divided and sewn to the newly created small stomach pouch. This process limits the body's ability to absorb calories. This procedure can be performed laparoscopically or by the more traditional open Roux-en-Y gastric bypass surgical method. It is the procedure that was performed on all of the patients in this study.

Summary

The surgical treatment of morbid obesity, gastric bariatric bypass surgery, is a multi-factorial treatment that includes psychological as well as physiological aspects of patient care. Currently there is no specific standard for determining the mental health status of the bariatric patient regarding preoperative and postoperative care. The purpose of this study was to investigate the changes in preoperative and postoperative morbidly obese gastric bypass surgery patients in an effort to determine whether any changes in depression, anxiety and reported quality of life were evident at the two-month, four-month and six-month periods of recovery.

Archival data available from the Beck Depression Inventory, the Beck Anxiety Inventory, the RAND 36-Item (Quality of Life) Health Survey that were administered by the staff psychologist and a designated member of the bariatric staff was employed in assessing preoperative and postoperative presentation of mental health conditions. The results of this study will increase understanding of the mental health needs of this patient population and support quality therapeutic care by

counselors, psychologists and other mental health practitioners.

CHAPTER TWO

LITERATURE REVIEW

The medical and psychological aspects of obesity and morbid obesity have become topics of increasing importance and attention for researchers throughout the world. The quest to understand the etiology of obesity and determine best treatment has led to the recommendation of surgical interventions for this condition (Shikora, 2001). The administration of mental health evaluations to determine each patient's preparedness for surgery and to support postoperative success has become standard practice. To date, there is no common or standardized protocol for mental health evaluations for bariatric surgery patients (Sogg and Mori, 2004). However, evaluating for the presence of Axis I disorders and self-reported quality of life are generally included in the psychological evaluation (Puzziferri, 2005). Bariatric surgery centers are increasing their focus on the psychological profiles of their patients and beginning to compare their pre-surgery and post-surgery mental health status (Fox, et al, 2000), (Puzziferri, 2005). Identifying the psychological impact of the surgery supports both preoperative planning and postoperative treatment. Psychologists, counselors and other mental health professions will gain information that will enable them to provide better services to this patient population

The purpose of this study was to investigate the changes in preoperative and postoperative morbidly obese gastric bypass surgery patients. Specifically, the purpose was to determine whether any changes in depression, anxiety and quality of life were evident at the two-month, four-month and six-month periods of recovery. This chapter provided a basis for the study by reviewing the existing literature on the

topics of obesity, depression, anxiety and quality of life as related to bariatric surgery patients. Emphasis was on the following: a general overview of the literature related to the etiology of obesity, the etiology of depression and anxiety as psychological issues in bariatric surgery and the literature related to quality of life as it applied to this patient population. The role of the pre-surgery mental health evaluation and implications for postoperative patient support were addressed as well.

Overview of Obesity

The prevalence of obesity among all age and ethnic groups in the United States has increased rapidly in recent decades. Approximately 65% of adults in the United States are either overweight or obese (National Center for Health Statistics, 1999-2000). Approximately two million Americans reach the level of morbid obesity. The United States Center for Disease Control and Prevention (2006), definition of morbid obesity is a Body Mass Index (BMI) of 40 or more, or approximately 100 lbs. over ideal body weight. The magnitude of this problem has raised significant concern for various government, health and civic organizations because obesity has been linked to a variety of medical and psychological conditions.

The World Health Organization (2002) stated, "Overweight and obesity are important determinants of health and lead to adverse metabolic changes, including increases in blood pressure, unfavorable cholesterol levels and increased resistance to insulin. They raise the risks of heart disease, stroke, diabetes mellitus and cancer" (p.1). The WHO (2002) report stated further that each year, "obesity is killing about 320,000 men and women in 20 countries of Western Europe...obesity is in the list of the top ten health risks, globally and regionally, in terms of the burden of disease they

cause.” (WHO, p. 1)

The United States Department of Health and Human Services, (2002) reported the following facts about overweight and obesity: “61% of adults in the United States were overweight or obese (BMI > 25) in 1999. 13% of children aged 6 to 11 years and 14% of adolescents aged 12 to 19 years were overweight in 1999.” (p. 1) The prevalence of obesity among youth has nearly tripled in the past two decades. The increases in obesity affected all ages, socio-economic status, racial and ethnic groups, and both genders. Overweight and obesity are associated with heart disease, certain types of cancer, type 2 diabetes, stroke, arthritis, breathing problems, and psychological disorders, such as depression. “The economic cost of obesity in the United States was about \$117 billion in 2000.” (U. S. Dept. of Health and Human Services Report, 2002 p. 1)

Mokdad (2001) addressed the rising concerns regarding obesity and its most common co-morbid condition of diabetes stating:

Obesity and diabetes are major causes of morbidity and mortality in the United States. Evidence from several studies indicates that obesity and weight gain are associated with an increased risk of diabetes. Each year, an estimated 300,000 U.S. adults die of causes related to obesity. Obesity also substantially increases morbidity and impairs quality of life. Overall, the direct costs of obesity and physical inactivity account for approximately 9.4% of US health care expenditures. (p. 1195)

In his 2004 editorial, Deitel stated, “The last 50 years have witnessed a rise in obesity, which has become almost universal. This initially occurred

insidiously, until obesity rather than famine, has become the most common form of malnutrition. The world has a problem and it is getting worse.” (p. 869) Deitel, like many of his contemporaries, promotes awareness of the “problem” of obesity and the co-morbid conditions that occur with it.

Deitel and Hacker (1991) believed obesity to be the most frequent form of malnutrition in contemporary Western society. They researched three of the most common co-morbid conditions associated with obesity; hypertension, diabetes and heart disease. They stated, “The prevalence of this disorder and the severity of its consequences account for immeasurable costs of life lost, health care spending and diminished quality of life. Indeed, the association of obesity with such a high degree of morbidity necessitates an understanding of its causes.” (p. 1)

Deitel and Hacker (1991) examined the etiology of obesity from biological, socio-cultural and psychological perspectives. By employing a multi-factorial perspective, they examine various theories of obesity including: intake (of calories) versus expenditure (of energy), genetic factors, basal metabolic rate as a determinant in body mass, Set-Point theory of obesity, endocrine factors, personality and psychiatric factors and population factors. They concluded that:

Many people, including physicians, (and mental health professionals) believe that obesity is a disorder which results from a lack of willpower, over-indulgence and laziness. Such notions, however, are clearly erroneous. It seems likely that human fatness results from a genetically predetermined body weight set-point that exerts its control over an individual’s body weight through alterations of that person’s basal metabolic rate. This set-point may be

further influenced by learned eating behavior, perception of body image, socioeconomic status and the availability of food. Regardless of the exact mechanism, however, the disorder is certainly complex in nature. (p. 869)

Treatment for this complex problem has taken a variety of forms, but no method is considered as effective as surgical intervention. For example, the National Institute of Health consensus Development Conference Draft Statement (2001) supported surgical intervention stating, “Treatment modalities such as behavioral modification therapy, restrictive diet regimens, and pharmacological strategies, alone and in combination, may allow temporary weight loss, but often lead to disappointing long-term results.” (pp. 1-2) As a result, surgical interventions that result in longer lasting and often dramatic results are recommended with greater frequency for morbidly obese patients.

Shikora (2001) supported recommendation of surgical intervention for the morbidly obese. His belief was that severe obesity remains an incurable disease with significant consequences and cost to society. He viewed non-surgical treatments as inadequate for achieving significant or sustained weight loss and referred to surgical approaches as safe and effective options. He stated, “Newer technologies such as laparoscopy should further advance the field. For appropriately selected patients, surgery can achieve the weight loss necessary to improve or prevent the development of significant medical conditions and improve quality of life.” (p. 1)

Buchwald and Stanley (2003) reported that bariatric surgery is expanding to meet the global epidemic of morbid obesity. Operative procedures in bariatric surgery are advancing and specific geographic trends and shifts in treatment options are

evident. However, they state that, “Of the patients qualifying for surgery, only about 1% are receiving this therapy – the only effective treatment currently available.”

(p. 1157)

With the increase in surgical interventions to combat obesity, the U.S. Department of Health and Human Services publication, “Overweight and Obesity: A Vision for the Future” (2001) was a call to action stating that we must:

Educate health care providers and health profession students in the prevention and treatment of overweight and obesity across the lifespan...The Nation must invest in research that improves our understanding of the causes, prevention, and treatment of overweight and obesity. A concerted effort should be made to: Increase research on behavioral and environmental causes of overweight and obesity. Increase research and evaluation on prevention and treatment interventions for overweight and obesity and develop and disseminate best practice guidelines. (pp.1-2)

Addressing this call for action, particularly as it demands increase in obesity research and evaluation as well as, prevention and treatment interventions, is the goal and intent of this study.

Overview of Depression, Anxiety and Quality of Life - Research on the Psychological Effects of Obesity

The literature revealed an interest by a number of researchers in assessing the quality of life for preoperative and postoperative patients. For some, the determining factors of quality of life included patient’s psychological status, specifically presentation of symptoms of the Axis I mental health disorders depression and

anxiety. In the attempt to understand the psychological impact of the surgery, examining emotional status and reported quality of life have been used as markers of successful surgery experiences. Some research focused on pre-surgery evaluation with short term follow-up while others assessed pre-surgery status and compared it with more long term results.

The link between obesity, anxiety and depression has been studied by a number of researchers including, Onyike, et al. (2003), Fabricatore, et al. (2005), Mamplekou, et al. (2005), Papageorgiou, et al., Villy Vage, et al. (2003), Kopec-Schrader, et al., Averbukh, et al. (2003), La Manna, et al (1992), Kopec-Schrader, et al., (1994), Guisado, et al, (2002) and Sarwer, et al. (2004). In these and various other studies researchers provided information that further identified the factors relating obesity, anxiety and depression and promoted the need for preoperative evaluation and postoperative follow-up.

The research study by Onyike (2003) focused on evaluation one month prior to surgery and one month following the surgery. His research attempted to determine whether obesity was associated with depression mainly among persons with severe levels of obesity. The research findings revealed a higher level of preoperative depression in women than in men, reporting, “The author compared risks of depression in obese and normal weight persons. Obesity was associated with past-month depression in women but was not significantly associated in men...Severe levels of obesity, (BMI >40) were (most significantly) associated with past-month depression” (p.1).

The study by Onyike (2003) provided informative data on preoperative and

postoperative psychological states. However, when compared to the present study, it examined a shorter length of time (one month vs. six months post-surgery) and focused only on the psychological variable of depression.

Vage (2003) examined depression, and health-related quality of life (in women) 25 years after bypass surgery. The Vage (2003) research examined the same variables that were the focus of this researcher. However, there were major differences from this study in that Vage (2003) did not evaluate preoperatively and he used data that reflected only long-term (25 years) postoperative results. His research described a high level of anxiety and depression symptoms and a low score for health-related quality of life as measured by the Short Form 36 (SF-36) for patients who were morbidly obese. Earlier studies on patients who underwent jejunoileal type of gastric bypass surgery consistently showed considerable improvement on both psychosocial and physical functioning after the surgery despite side effects of the operation. Vage (2003) stated, "Whether the improvement in mental health after the surgical weight loss is maintained has been debated. Some reports are showing return to preoperative values for mental health indices, whereas recent publications indicate that this is more so for anxiety than for depression." (p. 706) The American Society for Bariatric Surgery website (2006) has reported that jejunoileal surgery procedure that Vage based his research on has been replaced by a more effective surgery procedure, the Roux-en-Y gastric Bypass (RYGBP). The RYGBP was the procedure performed on the patients in this study and as a result it reflects more current information on mental health and emotional impact of bariatric surgery.

Mampleku, (2005) revealed findings that were similar to Onyike and

Vage. The measurement milestone for his research was two years following the operation. He reported, “Women had a greater degree of depression from obesity than their male counterparts before the (surgery) procedure while their postoperative emotional improvement was more marked (than it was in males).” (p. 1177) He believed that morbidly obese patients displayed anxiety and oversensitivity in their interpersonal relationships both pre and postoperatively. He employed two assessment instruments to arrive at his results. The first was the Symptom Checklist-90-R (SCL-90R) questionnaire which is an evaluation instrument that evaluates a broad range of psychological problems and symptoms of psychopathology. The second instrument was the Bariatric Analysis and Reporting Outcome System (BAROS). Mampleku (2005) reported that the psychological condition of the patients improved postoperatively, which was related to the weight loss, as revealed by the (SCL-90R), which shows a significant decrease (in symptoms) two years after VBG...and, as indicated by the (BAROS), quality of life improved considerably two years after the bariatric operation. Mampleku’s (2005) work constituted another research study that focused on variables similar to those employed in this study. Different instruments were used to assess those variables and the only postoperative measurement was done at two years. The acute recovery phase that occurs in the first six-months post-surgery were not assessed.

La Manna (1992) provided research that, like the present study, followed patients postoperatively and examined psychological variables. Like Mampleku’s 2005 study, La Manna (1992) assessed patients two years post-surgery. He reported:

The results of our study found that the psychological effects of Vertical

Banded Gastroplasty (VBG) are generally positive. The patients' psychological problems evolved and resulted in increased self-esteem and confidence in their own possibilities. This confidence is one of the decisive stimuli which lead these subjects to veritable lifestyle changes...The weight loss has an indispensable role in itself but is associated with a general improvement in every aspect of the patients' health...The normalization of all physical parameters obviously leads to an improvement of the psychic conditions, which starts an avalanche of positive events which breaks the vicious cycle: aesthetic inadequacy-anxiety/depression-food-excessive weight. (p. 242)

Guisado (2002) conducted an 18-month post-surgery evaluation of the psychopathological status and interpersonal functioning of 100 bariatric surgery patients. His study provided helpful information regarding the general psychological status and level of personal functioning of postoperative patients as well as information regarding their self-reported quality of life following surgery. In addition, his work supported this researchers study by providing information about the role of preoperative assessment in determining postoperative care. Guisado (2002) reported:

Our results show how greater weight loss after surgery for obesity is associated with better level of personal functioning in several areas: psychopathology, eating behavior, daily life, and personality features...With regards to quality of life, the most frequently reported changes after surgery were increased self-esteem, assertiveness and self-confidence, improved

social activity and interpersonal relationship, and decreased depression and anxiety...In conclusion, our group of patients who lost (the) most weight after surgical treatment had better quality of life, less preoccupation with their body, more regular eating habits, an improved psychological state and stability in personality traits. (pp. 837-838)

In his 2002 study, Guisado reflected on the genesis of the psychological impact of bariatric surgery with his belief that the psychological and emotional struggles found in morbidly obese patients are largely attributable to the distress that is caused by the illness (of obesity) itself and which disappears as the weight is lost. He recommended further studies on this point, with long-term follow-up research on patients. He also noted that given the parallelism that exists between the mental state of the patient and weight loss, "...it is important to collect more information regarding the psychosocial response to weight loss surgery and that patients should be studied before and after surgery to determine the response." (p. 837-838)

In conclusion, Guisado (2002) reported that a significant number of morbidly obese patients who undergo bariatric surgery suffer from psychiatric disorders (depression, binge-eating, trauma, etc.) and may require treatment before and after surgery. "Thus a structured behavioral assessment (conducted by a mental health professional and registered dietitian) can identify those who are most likely to require adjunctive counseling." (p. 838) This recognition of the need for a structured behavioral assessment supports the purpose of this study to identify possible psychiatric disorders and enable mental health practitioners to more adequately treat gastric bypass patients.

DiGregorio (1994) conducted a study that examined the psychological concerns of 401 patients who underwent bariatric surgery from 1986 to 1994. In his research he addressed a number of the concerns reported by Guisado (2002) regarding psychiatric disorders. DiGregorio (1994) reported:

Of the more than twelve million severely overweight people in the United States, approximately four million of this group are so overweight that their obesity harms their health and wellbeing, resulting in a disease process and a rash of comorbidities... The psychological factors associated with the chronic psychological histories of morbidly obese patients are profound. Depression, anxiety conditions, addictions, dysmorphobia, self-effacement, immature status, and inadequate social supports figure most prominently. Persons struggling with morbid obesity experience considerable pain, not only in the severe physical depictions of the disease itself and the related medical comorbidities, but also in psychological extremis. Therefore, we contend that the life of the morbidly obese patient is fraught with overt and insidious pain, physically and psychologically. (p. 363)

The questions regarding the importance of the preoperative mental health evaluation and the critical role that it plays in prescribing appropriate treatment of mental health conditions continued to surface in the review of the literature. Regarding this matter, the 1994 DiGregorio study revealed that the presence of insidious physical and psychological pain was a noteworthy concern at the point of referral of each bariatric surgery candidate. In order to enhance each patient's ability to achieve the behavioral changes necessary for successful surgical intervention,

DiGregorio (1994) stated, “We believe that it is essential that the psychological well-being of the patient be addressed from the initial referral through the conclusion of the major weight reduction period, that being 12-18 months following the surgical procedure.” (p. 362)

The present study addressed the acute phase of the major weight reduction period that DiGregorio (1994) described as so vital to the recovery process of gastric bypass patients. His research also supported the procedures that are followed at the bariatric surgery center that provided the data for this studies research. That procedure included preoperative assessment and a focus on the well-being of the patient from the initial referral through the acute and then long-term postoperative period.

Kopec-Schrader (1994) supported the significance of conducting a preoperative assessment as part of the bariatric surgery process. He focused his research on the psychosocial outcomes of both short and long term weight loss. In his ten-year follow up study he reported that he screened a group of patients prior to surgery for evidence of ongoing or potential psychopathology. Kopec-Schrader (1994) stated that, “Preoperative psychiatric assessment led to increased experience and rapport with patients, which facilitated post-operative follow-up and psychiatric intervention. It identified psychosocial factors which could confuse the long-term clinical picture.” (p. 339) The identification of those psychosocial factors led to more appropriate postoperative care recommendations and decreased the potential for long-term confusion about clinical needs. Interestingly, the follow-up evaluations from this study revealed that very few patients, five percent, had developed

postoperative emotional problems within the first 18 months after surgery. The emotional problems did not reach the level of diagnosable mental health disorders. Kopec-Schrader (1994) reported, “Significantly, even in the small subgroup, emotional problems did not affect patient satisfaction with the surgery.” (p. 339)

In contrast to the study by DiGregorio (1994), Kopec-Schrader’s (1994) research of the acute phase of recovery did not reveal significant psychopathology. The inconsistencies in their findings reflects the need for further research on the mental health aspects of this important acute post-surgery time period.

The study by Davidson (1991) described further inconsistencies in the existing research on mental aspects of bariatric surgery. His work focused on pre and postoperative psychological co-morbidity. The study assessed patients post-operatively at 33 months and reported a pattern of inconsistent findings stating:

The relationship between psychiatric illness and success following bariatric surgery is not clear. However, those patients who expressed less distress prior to surgery tended to lose less weight after surgery. Other authors have found that, on the contrary, psychological profiles indicative of the greatest disturbance predicted poor postoperative weight loss. Others still have found that prior psychiatric history correlated with the degree of satisfaction following surgery but not with outcome in terms of weight loss. The majority of our patients with pre-morbid psychiatric illness went on to have postoperative psychiatric problems. (p. 178)

Davidson’s (1991) research provided another example of the need for research that can determine the impact of gastric bypass surgery on mental health indicators such

as those examined in the present study.

In support of the need for preoperative and postoperative assessment of mental health concerns, Davidson (1991) argued that the need for postoperative psychiatric intervention should not be regarded as a failure of preoperative assessment in patients presenting for obesity surgery but as an expected and inevitable consequence. He concluded that a history of psychiatric illness was not associated with a poor outcome following bariatric surgery either in terms of postoperative weight loss or postoperative complications. He believed that preoperative psychiatric evaluation was a valuable tool in identifying patients likely to need follow-up psychiatric management. Finally, he stated, “We consider that patients with diagnosed psychiatric illness may be considered for operative treatment of morbid obesity if appropriate psychiatric support is available before and after surgery.” (pp. 178-179)

The research study by Maddi (2004) focused on psychopathology following bariatric surgery for morbidly obese patients and addressed some of the inconsistencies and concerns reported by Davidson (1991). In this initial report we find evidence of the need to assess for depression and anxiety; the same variables researched in the present study.

Maddi (2004) began by reporting, “Previously, there was controversy as to whether there is a significant level of psychopathology among the morbidly obese.” (p. 680) He questioned whether the psychopathology that exists in the morbidly obese, was more or less prevalent in them than in the population at large. He also questioned previous studies relevant to this theme that did not employ uniform

assessment procedures for psychopathology. However, he did reference studies that found evidence of unusual prevalence of psychopathology in the morbidly obese including, Atkinson (1967), Black (1992) and Maddi (1997).

Maddi (2004) stated:

The emerging picture is of psychopathology as a co-morbidity of morbid obesity. As to psychopathology content, the most frequent finding is depressive disorder, with a secondary emphasis on anxiety disorder... Of particular interest is whether psychopathology decreases among the morbidly obese after they receive bariatric surgery. There are surprisingly few studies relevant to this question, and there is some disagreement among them... There is a need for well-designed studies concerning the effects of bariatric surgery on psychopathology. (pp. 680-681)

One goal of the present study was to address the need for well-designed studies on the effects of bariatric surgery.

In further discussion of the results of his 2001 study, Maddi reported, "Using a national sample and a generally accepted, well-researched, normed test (the MMPI-2), this study finds considerable evidence that psychopathology decreases in the morbidly obese following bariatric surgery." (p. 683) He discussed how the number of patients who met the test criteria for a psychiatric disorder went from higher than the estimate of the population norm before surgery, to less than that norm after surgery. The greater prevalence of psychopathology preceding surgery was consistent with previous research by, Atkinson (1967), Black (1992) and Maddi (1997). He postulated that post-surgery patients felt that they had

received a new lease on physical and social life. Questions remained however, as to whether the increase in optimism was a factor in the decrease or termination of their psychopathology. Maddi (2001) described the difficulty in determining from his study's results, "...whether the pre-surgery psychopathology preceded, and spurred the morbid obesity, or the other way around. It is also possible that the same set of etiological conditions produced both the morbid obesity and the psychopathology." (p. 683)

In his summary discussion, Maddi (2001) speculated that future studies might reveal postoperative improvement in mental health that continued over several years. He believed that lasting improvement would support his contention that morbid obesity is one factor that may produce mental disorders and that those disorders may be substantially reduced by the substantial weight loss that follows bariatric surgery. In further speculation, Maddi (2001) stated:

However, studies may show that the initial improvement in mental health following bariatric surgery recedes with time. In that case, the etiological emphasis may shift toward developmental problems likely to influence both morbid obesity and mental disorders. The initial improvement in mental health following surgery may be no more than a flood of unrealistic optimism that all problems in life have somehow been solved with little or no mental effort. Such a pattern of results would signify that morbid obesity and mental disorders may both be rendered more likely by dysfunctionality in early family life, but that each may need different, targeted treatment. Whereas bariatric surgery may alleviate the morbid obesity, it may take psychotherapy

or psychotropic medications to alleviate the mental disorders on a long-term basis. (p. 684)

One goal of the present study was to assess the short-term impact on the mental health status of bariatric surgery patients, referred to in the above studies, by Davidson (1991) and Maddi (2004). Another study by Sarwer (2004) that addressed the psychiatric diagnoses and treatment for bariatric candidates provided information in support of that goal.

Sarwer (2004) researched the results of the preoperative evaluations of 90 bariatric candidates. His study indicated a high prevalence of psychological and emotional difficulties for bariatric patients. Sarwer described the ways in which his study, “Provided important information on the preoperative psychopathology and psychiatric treatment history of extremely obese individuals who presented for bariatric surgery.” (p. 1152) Sarwer (2004) reported:

The majority of individuals in this sample (64.4%) were found to have at least one psychiatric diagnosis. More than half of those individuals received multiple diagnoses. The prevalence of psychopathology in this sample is consistent with previous research suggesting that approximately 50% of bariatric surgery candidates suffer from psychiatric disorders. Black (1992), Powers (2004) Gertler (1985) Larson (1990) and Hsu (2002). The most common psychiatric diagnosis in this sample was a major depressive disorder, current, followed by binge eating disorder, and substance abuse/dependence in full, sustained remission. Almost two-fifths of participants reported psychopharmacologic or psychotherapeutic treatment at the time of the

evaluation. Of the 58 individuals diagnosed with psychopathology, half (53.4%) reported some form of psychiatric treatment. The majority of these individuals were taking antidepressant medication, typically prescribed by their primary care physician. Nine patients received both medication and psychotherapy, and only three patients reported psychotherapy alone. These data are similar to percentages found in prior studies of medication and psychotherapy usage in bariatric surgery candidates and suggest that the majority of candidates present with either a psychiatric diagnosis or were engaged in psychiatric treatment. Approximately two-thirds of the sample was unconditionally cleared for surgery. A sizeable minority (32.2%; n = 29) was referred for additional psychotherapeutic treatment or nutritional counseling prior to surgery. (p. 1154)

Sarwer (2004) believed that currently, no consensus exists within the bariatric surgery community as to whether psychiatric comorbidity should be considered a contraindication to surgery. Given the rates of psychopathology found in this population, he believed that further investigation of the impact of preoperative psychological status on postoperative outcome is needed.

Sarwer (2004) pointed out the need for research that expands the investigation of the psychological status of bariatric patients and the need to assess both pre and postoperatively. That type of investigation is the intent of the present study.

A number of researchers focused specifically on the variable of Health related Quality of Life (HRQoL) for bariatric surgery patients: Fabricatore (2005) Wadden (2002) Kolotkin (2002) Ware (1992) and Dymek (2001).

Fabricatore (2005) examined of quality of life and the symptoms of depression in obese persons seeking bariatric surgery. He reported:

Individuals with BMIs ≥ 40 kg/m² were nearly five times as likely as those of normal weight to have experienced a major depressive episode in the month prior (to surgery)...Increasing BMI also is associated with poorer health-related quality of life (i.e. the perception that daily functioning is limited by health conditions). The relationship between BMI and health-related quality of life (HRQoL) holds whether the latter is assessed using general or obesity-specific measures. Previous studies also have found that impairments in HRQoL are related to greater symptoms of depression but investigators have not examined the relative contributions of impaired HRQoL and BMI to depression. (p. 304)

Fabricatore (2005) noted further that other factors, particularly impairments in social and occupational functioning, as well as the experience of significant pain are stronger determinants of mood disturbance than the severity of obesity. Accordingly, he advised clinicians to assess HRQoL when evaluating persons with extreme obesity. Fabricatore (2005) stated, "Treatment recommendations may include interventions that target not only weight (i.e. bariatric surgery), but also functional abilities...We believe that interdisciplinary collaboration can significantly improve the quality of care provided to persons with extreme obesity." (pp. 308-309)

The reported a lack of research of the relationship between HRQoL and BMI and depression and Fabricatore's (2005) advice to assess (HRQoL) supports the rationale for this study, as those relationships were examined in this investigation.

Dymek (2001) conducted research on the Quality of Life (QoL) and psychosocial adjustment in 32 morbidly obese patients who were assessed preoperatively then again at one to three weeks and at 6 months post-surgery. He described significant postoperative improvement in most areas of Health-Related QoL. Dymek (2001) stated:

At the first post-surgical assessment, our sample showed improvements from their previous levels on the general health, vitality and mental health subscales...By the 6-month follow-up assessment, our sample showed significant improvement from their post-surgery levels on six of the eight SF-36 subscales: physical functioning, role-physical, bodily pain, vitality, social functioning and mental health...While these findings are somewhat consistent with recent studies that have documented the quality of life changes in a linear fashion as BMI changes, Hans, T.S., (1998) and Lean, M.A., (1999), they highlight important psychosocial changes that occur immediately following surgery, before dramatic changes in BMI occur. (p. 36)

Describing results that were similar to those of the present study, Dymek (2001) concluded:

Our results indicate a dramatic and continued reduction in depression over time and significant increase in self-esteem over time following the surgery. As with other outcome variables in the present study, depression and self-esteem show significant changes immediately following surgery, even though the patients remain severely obese. It is interesting that the presence of significant depression prior to surgery does not predict outcome on any

variables following surgery. Thus, regardless of their level of depression, as a group, patients show dramatic weight loss and improvement in psychosocial functioning and quality of life following Roux-en-Y Gastric Bypass surgery, (RYGBP). (p. 37)

Summary

This purpose of this chapter was to review the existing literature on the topics of obesity, depression, anxiety and quality of life as related to the preoperative and postoperative experience of bariatric surgery patients. The literature reviewed provided a rationale for this study. The chapter contained a general overview of the literature related to the etiology of obesity, depression and anxiety as well as literature related to quality of life as psychological issues in bariatric surgery patient populations. The role of the pre-surgery mental health evaluation and its implications for postoperative patient support was addressed as well.

The literature described various types of research that included both short and long-term follow-up studies. Some of the research focused on depression and anxiety and other research examined quality of life as the primary variable for preoperative and postoperative patients. None of the studies included in the literature review examined the acute phase (the initial 6 months) post-surgery period. None of the studies available compared the preoperative status and the 2-month, 4-month and 6-month status of the levels of depression, anxiety and quality of life for the bariatric patients. The research supported the need for preoperative and postoperative assessment of those variables as a means to determine appropriate mental health treatment for this patient population. All of the studies included described the

importance of the type of research provided in the present study.

CHAPTER THREE

METHODS

This chapter will present the methodology used in the study to investigate the three primary research questions:

1. Does bariatric surgery result in improving the level of depression among morbidly obese patients?
2. Does bariatric surgery result in improving the level of anxiety among morbidly obese patients?
3. Does bariatric surgery result in improving the level of self-reported quality of life among morbidly obese patients?

This chapter will include a description of the process for identifying the population, a description of the instruments employed, the methods for data collection and the method used to analyze the data that was collected as part of the patient follow-up care at the Bariatric Surgery Center at West Penn Hospital. This study examined that archival data to determine if there were significant changes and if the changes were consistent over a period of time. That period of time included data from the preoperative mental health evaluation conducted by the staff psychologist and postoperative data collected by the bariatric clinic staff at two-month, four-month and six-month intervals.

Participants

The data used in this study was derived from archival information that was available from the population of patients who underwent surgery at The Bariatric Surgery Center at West Penn Hospital, Pittsburgh, PA. Qualifying as a surgery

candidate was based on patient's meeting a number of criteria including a BMI score of 40 or above or a BMI score of 35 to 40 with co-morbid conditions. To earn candidacy as a bariatric surgery patient the following criteria, established by the National Institutes of Health (NIH 1991) had to be met:

1. Have a Body Mass Index (BMI) of 40 or more (approximately 100 lbs. or more over ideal body weight); or a BMI of 35 to 39.9 with serious medical conditions related to obesity that would improve with weight loss.
2. Have attempted (and failed) previous weight loss efforts with diet, exercise, lifestyle changes or medications.
3. Must be intelligent enough to understand the possible risks, benefits and side effects of the procedure.
4. Must be committed to lifestyle changes and long-term follow-up that is essential to have continued long-term successful weight loss.
5. Must not have any medical, psychiatric or emotional condition that would be prohibitive for the surgery.
6. Demonstrate motivation and realistic expectations of the surgery as a tool to be employed to achieve successful weight loss. (pp. 1-6)

The total number of patients who underwent surgery at the bariatric center at the time of the study was 720. That population had the following demographic profile: 574 males and 146 females. Six-hundred and twenty three were Caucasian and ninety-seven were African American. The youngest patient was 17 and the oldest was 70. The average age was 44.2 and the median age was 45. The weight range of

the patients was 167 to 505 pounds. The average weight was 241 and the median weight was 283. The BMI range of the patients was 35 to 78Kg/m². The average BMI was 46 and the median BMI was 47.

Since it opened in 1999, 720 patients met all requirements and underwent the surgery procedure. The use of the evaluations employed in this study was initiated in 2005. At the time this study began, thirty patients had completed the evaluation instruments that eventually comprised the archival data that was employed in this research.

The archival data available from the files of the study participants included the Beck Depression Inventory, Beck Anxiety Inventory and the Rand SF-36 Quality of Life Questionnaire that was administered as part of the screening process prior to the surgery. The data also included the surveys that the participants completed at 2-months, 4-months and 6-month following their surgery. This investigator used the data that was collected prior to surgery, as part of the mental health evaluation and the postoperative data that was collected by a bariatric staff member who had been trained in administering the surveys.

Data utilized in this study was derived from patients who met the following standard requirements of the Bariatric Center at West Penn Hospital:

1. Met all of the NIH criteria and be accepted as a candidate for surgery by the bariatric surgery team.
2. Completed a pre-surgery mental health evaluation.
3. Successfully underwent the surgery procedure.
4. Attended all scheduled post-surgery medical appointments.

5. Had voluntarily completed the post-surgery mental health follow-up surveys that were administered by the bariatric staff at the 2-month, 4-month and 6-month follow-up appointments

Instrumentation

The three evaluation instruments used in this study were the Beck Depression Inventory, the Beck Anxiety Inventory and the Rand 36-Item (Quality of Life) Health Survey. The following information regarding the Beck instruments was derived from the description of that instruments in the List of Test Instruments available via The Center for Psychological Studies at Nova Southeastern University in Florida (2005).

The Beck Depression Inventory (BDI), developed by Aaron T. Beck, was designed to measure the presence of depression in adolescent and adult populations. It provides a single score that indicates the intensity of an acute (past week including the day of administration) depressive episode. There are no time restrictions on the administration of the Inventory. It is published by the Center for Cognitive Therapy (2005).

The description of the Beck Depression Inventory provided in the List of Test Instruments (2005) described The Beck Depression Inventory (BDI) as a 21-item, multiple-choice format, testing instrument designed to measure the presence and degree of depression in adolescents and adults. Each of the 21-items attempts to assess a specific symptom or attitude that has been reported by depressed patients. The symptoms are consistent with descriptions of depression contained in the psychiatric literature, particularly in the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). The List of Test Instruments

(2005) reported that. “Although the author, Aaron T. Beck, is associated with the development of the cognitive theory of depression, the Beck Depression Inventory was designed to assess depression independent of any particular theoretical bias.”

(p. 1)

Scoring the inventory is accomplished in the following manner: Each of the 21 inventory items corresponds to a specific category of depressive symptom and/or attitude. Each category attempts to describe a specific behavioral manifestation of depression and consists of a graded series of four self-evaluative statements. The List of Test Instruments (2005) noted, “The statements are rank ordered and weighted to reflect the range of severity of the symptom from neutral to maximum severity. Numerical values of zero, one, two, or three are assigned each statement to indicate degree of severity.” (p. 1)

In discussing the reliability of the BDI, Beck (2005) discovered that the changes in BDI scores tended to parallel changes in the clinical reading of the level of depression, indicating a consistent relationship between BDI scores and the patient’s clinical state. He reported that, “The reliability figures were above .90. Internal consistency studies demonstrated a correlation coefficient of .86 for the test items, and the Spearman-Brown correlation for the reliability of the BDI yielded a coefficient of .93.” (p. 1) Beck (2005) also reported that:

In assessing the validity of the BDI, the readily apparent face validity of the BDI must be addressed. The BDI looks as though it is assessing depression. While this may be quite advantageous, it may make it easy for a subject to distort the results of the test. Content validity would seem to be quite high

since the BDI appears to evaluate well a wide variety of symptoms and attitudes associated with depression. One study addressing concurrent validity demonstrated a correlation of .77 between the inventory and psychiatric rating using university students as subjects. Beck reports similar studies in which coefficients of .65 and .67 were obtained in comparing results of the BDI with psychiatric ratings of patients. (p. 1)

The second instrument employed in this study was the Beck Anxiety Inventory (BAI). The BAI was designed to discriminate anxiety from depression in individuals and like the BDI provide a single total score that indicates a level of acute anxiety in adolescent and adult populations. Like the BDI, the BAI was authored by Aaron T. Beck and is published by The Psychological Corporation (2005)

The description of the Beck Anxiety Inventory (BAI) provided in the List of Test Instruments (2005) stated, “The (BAI) was developed to address the need for an instrument that would reliably discriminate anxiety from depression while displaying convergent validity... It offers advantages for clinical and research purposes over existing self-report measures, which have not differentiated anxiety from depression adequately.” (p. 1)

Like the BDI, the BAI is scored on a scale that consists of 21 items that describe common symptoms of anxiety. Each symptom is rated on level of severity (over the past week) on a 4-point scale ranging from 0 to 3. The items are added together to provide a total score that can range from 0 to 63. Information from the List of Tests (2005) regarding the reliability and validity of the BAI stated:

The scale obtained high internal consistency and item-total correlations

ranging from .30 to .71 (median=. 60)... Regarding validity, the correlations of the BAI with a set of self-report and clinician-rated scales were all significant. The correlation of the BAI with the BDI was .48. Convergent and discriminant validity to discriminate homogeneous and heterogeneous diagnostic groups were ascertained from three studies. The results confirm the presence of these validities. (p. 1)

The third instrument that was employed in this study was the Rand SF-36 Health Survey. That instrument was routinely administered to all bariatric patients by a designated member of the bariatric staff. It is an instrument with a wide range of applications. Ware (1992) provided the following in-depth descriptions of the SF-36:

The SF-36 Health Survey was developed for the Medical Outcomes Study, and has been tested and validated extensively. The SF-36 was originally designed in the United States to help understand how the health care system affects health. It now has a much more broad application, being used to measure the general health of various populations as well as to compare the health of patients with different medical conditions. It is a general measure that is intended to measure quality of life as well as whether an individual level of health. "The SF-36 is made up of 8 scales. These cover the ability to function and complete everyday activities, including physical activities and social activities. The scales also capture well-being, such as energy or fatigue and mental health" (p. 1)

Writing in the Medical Care Journal, Ware and Sherbourne (1992) described the SF-36 in the following manner. The SF-36 is:

A 36-item short-form that was constructed to survey health status in the Medical Outcomes Study. The SF-36 was designed for use in clinical practice and research, health policy evaluations, and general population surveys. The SF-36 includes one multi-item scale that assesses eight health concepts: 1) limitations in physical activities because of health problems; 2) limitations in social activities because of physical or emotional problems; 3) limitations in usual role activities because of physical health problems; 4) bodily pain; 5) general mental health psychological distress and well-being); 6) limitations in usual role activities because of emotional problems; 7) vitality (energy and fatigue); and 8) general health perceptions. The survey was constructed for self-administration by persons 14 years of age and older, and for administration by a trained interviewer in person or by telephone. The history of the development of the SF-36, the origin of specific items, and the logic underlying their selection are summarized. The content and features of the SF-36 are compared with the 20-item Medical Outcomes Study short-form.

(p. 473)

In the British Medical Journal, Brazier and Harper (1992), described the reliability and validity of the SF-36. Their objective was to test the acceptability, validity, and reliability of the short form 36 health survey questionnaire (SF-36). They distributed it to 1980 patients between the ages of 16 and 74. The authors further concluded that, “The SF-36 is a promising instrument for measuring health perception in a general population. It is easy to use and fulfills criteria of reliability and validity. Its use in other contexts and with different disease groups requires

further research.” (p. 160)

Another study reported in the British Medical Journal, by Garratt (1993) was also designed to assess the reliability, validity and acceptability of the SF-36 as a measure of participants outcomes in a broad sample of patients suffering from four common clinical conditions. Their population included over 1700 patients aged 16-86 with one of four conditions—low back pain, menorrhagia, suspected peptic ulcer, or varicose veins—and a comparison sample of 900 members of the general population. In describing his results Garratt (1993) stated:

The SF-36 satisfied rigorous psychometric criteria for validity and internal consistency. Clinical validity was shown by the distinctive profiles generated for each condition, each of which differed from that in the general population in a predictable manner. Furthermore, SF36 scores were lower in referred patients than in patients not referred and were closely related to general practitioners' perceptions of severity...(They then concluded), these results provide support for the SF36 as a potential measure of patient outcome within the NHS. The SF36 seems acceptable to patients, internally consistent, and a valid measure of the health status of a wide range of patients. (p. 1440)

Each of the above studies recognize the SF-36 as a valid and reliable instrument in the measurement of the quality of life of various medical and mental health populations.

Research Design

The research design for this study was a time series design as developed by Campbell and Stanley (1963). There was pre-testing with the Beck Depression

Inventory, the Beck Anxiety Inventory and the SF-36 Quality of Life Questionnaire followed by the surgery and three follow-up assessments, at bi-monthly intervals, using the same three instruments.

The diagram for the design was:

Od	X	Od	Od	Od
Oa	X	Oa	Oa	Oa
Oq	X	Oq	Oq	Oq

The symbols were:

X	= Treatment/surgery
Oa	= Beck Depression Inventory
Od	= Beck Anxiety Inventory
Oq	= Rand SF-36 QOL Questionnaire

Procedures

The investigator examined information from archival data and conducted statistical analyses to determine if there were significant differences at various postoperative stages. For this study, a review of data collected from 2- months, 4- months and 6-months after the surgical procedure had been selected.

Analysis

Multiple Analyses of Variance (ANOVAS) were used to determine if there was a significant difference between the various assessments. For each assessment instrument, there was a comparison made between:

Pre-test and two month posttest

Pre-test and four month posttest

Pre-test and six month posttest

Two-month posttest and four-month posttest

Two-month posttest and six-month posttest

Four-month posttest and six month post test.

Limitations

The research design for this study was a time series design as described by Campbell and Stanley (1963). There was pre-testing with the three instruments followed by the surgery and three follow-up assessments at bi-monthly intervals, using the same three instruments. There were inherent limitations in the research design employed in this study that were based on the constructs of internal and external validity.

Regarding internal validity, Campbell and Stanley (1963) stated that, "internal validity is the basic minimum without which any experiment is uninterpretable" (p. 5). Dawson (1997), described various threats to internal validity that were potential limitations of the present study. History, encompasses any environmental events that occur between the first and second observations in addition to the independent variable(s). Maturation, refers to the psychological and/or biological processes within the participants that takes place as a function of the passage of time that is not attributable to the independent variable(s). Testing, is sensitization to a posttest as a result of having completed the pretest. Instrumentation, refers to changes in the accuracy of instruments used to measure the dependent variable. The final threat to internal validity is Mortality, which refers to the loss of participants and their data due to various reasons including death and sickness.

External validity, is the research construct that questions the generalization of

research samples to a general population. Regarding the present study, possible limitations were: The interaction of treatments with treatments, which refers to the administration of multiple treatments administered to the same participants and the interaction of testing with treatment where the pretest may increase or decrease the participants responsiveness or sensitivity to the treatment. The Halo Effect was also a threat to external validity in that participants might present well to please the evaluating psychologist on the preoperative assessment.

Summary

This chapter presented the methodology used in the study to investigate three primary research questions:

1. Does bariatric surgery result in improving the level of depression among morbidly obese patients?
2. Does bariatric surgery result in improving the level of anxiety among morbidly obese patients?
3. Does bariatric surgery result in improving the level of self-reported quality of life among morbidly obese patients?

This chapter also included, demographic information describing the general population of patients that the study drew from. It included a description of the criteria employed for determining candidacy for surgery and a description of the criteria employed for determining participation in the study. Identification of the instruments that were employed in the study and reviews of those instruments were also provided. The research design including procedures for data collection and the methods used to analyze the data (ANOVA) was presented. Finally, a general

discussion of threats to internal and external validity of research procedures was provided.

CHAPTER FOUR

RESULTS

The purpose of this study was to investigate the changes in preoperative and postoperative morbidly obese gastric bypass surgery patients. The study provided an opportunity to assess patient's mental health status by comparing the pre and post-operative mental health evaluative data that had been collected at the pre-surgery evaluation and again at the two, four and six-month follow-up appointments. The data included scores from Beck Depression Inventories (BDI), Beck Anxiety Inventories (BAI) and Rand 36-Item Quality of Life Health Surveys (SF-36). The goal of the study was to determine whether there was any significant change in preoperative and postoperative mental health status of the patients.

The study employed a quantitative design that provided an opportunity to analyze archival data that generated descriptive information about patient's potential mental health changes over the period of time examined. This chapter also presented the results of the analyses of the data. Each hypotheses and the analyses of variance for each of the dependent variables are presented separately. Each analysis is followed by a summary of results.

Hypotheses

The hypotheses examined in this study were stated in null form. Each hypothesis was assessed using an Analysis of Variance (ANOVA).

Hypotheses 1.

There is no significant difference between pre-surgery bariatric patient's levels of depression when compared to post-surgery bariatric levels of depression at

the two-month, four-month and six-month follow-up visits.

Beck Depression Inventory (BDI)

The scores for thirty, (30) patients were examined. The means for the sample were 7.83 for the pretest; 5.13 at the two-month follow-up; 3.77 at the four-month follow-up; and 2.77 at the six-month follow-up. The F-ratio was calculated to be 24.20 for degrees of freedom (df) 4/26 (see Table 1); this was significant at the 0.05 level. In order to establish significance at the 0.05 alpha level for $df = 4/26$ an F-ratio of 2.74 or higher is required.

Table 1

Source Table for the Analysis of Variance on the BDI

Source	SS	df	MS	F	p
Between	1,549.95	4	387.48	24.20*	<.001
Within	416.35	26	16.01		
Total	1,965.95	30			

* Significant at the .05 alpha level

The post-hoc analyses were conducted using Bonferroni Multiple Comparisons. The alpha level was reduced by dividing the 0.05 alpha levels by the number of groups, ($0.05 / 4 = 0.015$) to determine significance at the 0.05 alpha level. In order to be significant at the .05 alpha level for 29 degrees of freedom, the t-ratio needed to be at least 2.77 or higher.

The following comparisons were determined to be significant for BDI (see Table 2): There was a significant difference between the pre-test to the two-month

follow-up ($t = 4.91$); there was a significant difference between the two-month follow up and the four-month follow up ($t = 4.53$); there was a significant difference between the four-month follow-up and the six-month follow-up; there was a major significant difference from the pretest to the six-month follow-up ($t = 7.51$).

Table 2

Significant Post Hoc Analyses for BDI

COMPARISON	t-ratio	p
Pretest with 2-month follow-up	4.91	< 0.001
2-month follow-up with 4-month follow-up	4.53	< 0.001
4-month follow-up with 6-month follow-up	2.93	< 0.01
Pretest with 6-month follow-up	7.51	< 0.0001

Hypotheses 2.

There is no significant difference between pre-surgery bariatric patients levels of anxiety when compared to post-surgery bariatric levels of anxiety at the two-month, four-month and six-month follow-up visits.

Beck Anxiety Inventory (BAI)

The scores for thirty, (30) patients were examined. The means for the sample were 5.29 for the pretest; 4.21 at the two-month follow-up; 4.11 at the four-month follow-up; and 2.64 at the six-month follow-up. The F-ratio was calculated to be 19.88 for degrees of freedom (df) 4/26 (see Table 3); this was significant at the 0.05 level. In order to establish significance at the 0.05 alpha level for $df = 4/26$ an F-ratio of 2.74 or higher is required.

Table 3

Source Table for the Analysis of Variance on the BAI

Source	SS	df	MS	F	p
Between	200.43	4	50.11	19.88*	<.001
Within	65.61	26	2.52		
Total	266.04	30			

* Significant at the .05 alpha level

The post-hoc analyses were conducted using Bonferroni Multiple Comparisons. The alpha level was reduced by dividing the 0.05 alpha level by the number of groups ($0.05 / 4 = 0.015$) to determine significance at the 0.05 alpha level. In order to be significant at the .05 alpha level for 29 degrees of freedom, the t-ratio needed to be at least 2.77 or higher.

The following comparisons were determined to be significant for BAI (see Table 4): There was a significant difference between the pre-test to the six-month follow-up ($t = 4.46$); there was a significant difference between the four-month follow up and the six-month follow up ($t = 4.30$). There were no significant differences between the pretest with the two-month or four-month follow-ups or between the two-month to the four-month follow-up.

Table 4

Significant Post Hoc Analyses for BAI

COMPARISON	t-ratio	p
Pretest with 6-month follow-up	4.46	< 0.001
4-month follow-up with 6-month follow-up	4.30	< 0.001

Hypotheses 3.

There is no significant difference between pre-surgery bariatric patients quality of life mental health levels when compared to post-surgery bariatric quality of life mental health levels at the two-month, four-month and six-month follow-up.

Rand Quality of Life Health Survey (SF-36).

The scores for thirty (30) patients were examined. The means for the sample were 38.10 for the pretest; 39.93 at the 2-month follow-up; 39.37 at the 4-month follow-up; and 40.50 at the 6-month follow-up. The F- ratio was calculated to be 3.25 for degrees of freedom (df) 4/26 (see Table 5); this was significant at the 0.05 level. In order to establish significance at the 0.05 alpha level for df = 4/26 an F ratio of 2.74 or higher is required.

Table 5

Source Table for the Analysis of Variance on the SF-36

Source	SS	df	MS	F	p
Between	1,747	4	436.75	3.25*	<.03
Within	3,491	26	134.27		
Total	4,738	30			

*Significant at the .05 alpha level

The post-hoc analyses were conducted using Bonferroni Multiple Comparisons. The alpha level was reduced by dividing the 0.05 alpha level by the number of groups ($0.05 / 4 = 0.015$) to determine significance at the 0.05 alpha level. In order to be significant at the .05 alpha level for 29 degrees of freedom, the t-ratio needed to be at least 2.77 or higher. Only the comparison between the pre-test and the six-month follow-up ($t = 2.81$; $p < 0.04$) was determined to be significant.

Summary

This chapter presented a summary of the analysis of the data derived from the three instruments employed in the study: The Beck Depression Inventory (BDI), the Beck Anxiety Inventory (BAI) and the Quality of Life survey (SF-36). For the BDI there was a significant F ratio among the means for the pre-test to the six-month follow-up. The post hoc analysis indicated that the difference was significant when compared to each follow-up administration, therefore the change in the BDI was progressively significant. There was also a significant difference among the means for BAI. The significant change does not manifest itself until comparing the four-month follow-up with the six-month follow-up. This change in the patients appears to take more time than for BDI. With regard to the SF-36 there was also a significant F ratio among the means. The only significant change that was calculated occurs from the pretest to the six-month follow-up. It appears that the significant change in the SF-36 took a longer amount of time to manifest than with the other instruments.

CHAPTER FIVE

DISCUSSION

This chapter will discuss the implications of the results of the study that were presented in Chapter Four. It will present conclusions derived from the analysis of data, a discussion of the results of the study, limitations of the research and recommendations for future research.

The purpose of this study was to investigate the changes in preoperative and postoperative morbidly obese gastric bypass surgery patients. The study provided an opportunity to assess the mental health status of 30 patients by comparing the pre and post-operative mental health evaluative data that had been collected at the pre-surgery evaluation and again at the two, four and six-month follow-up appointments. That archival data included scores from Beck Depression Inventories (BDI), Beck Anxiety Inventories (BAI) and RAND 36-Item (Quality of Life) Health Surveys (SF-36). A quantitative design was utilized to analyze archival data that would generate descriptive information about the patient's mental health changes over the period of time examined.

This study was designed to assess whether there were any changes in the levels of depression, anxiety and quality of life among patients who underwent gastric bypass surgery. Although the therapeutic value of gastric bypass surgery and the role of psychological evaluation was discussed throughout the literature, research on this study's variables over the time frame examined was lacking. Guisado (2002) stated, "Given the parallelism between the mental state of the patient and postoperative weight loss, we emphasize collection of more information regarding the

psychosocial response to surgery and that patients should be studied before and after surgery to determine the response” (p. 837).

The rationale for the study was based on the need to extend research as expressed by Guisado, (2002). It was also based on indications from the literature that described the importance of the pre and post-operative mental health assessments and the role those assessments served in determining pre and postoperative treatment planning and support for successful post-surgery mental health status. The results of the research that was analyzed were reported in the following manner:

Conclusions

Changes in depression

Hypothesis 1, presented in the null form, stated that there is no significant difference between pre-surgery bariatric patient’s levels of depression when compared to post-surgery levels of depression at the 2-month, 4-month and 6-month follow-up visits. This hypothesis was not supported by the results of the study. In fact, there were significant differences found between the level of depression reported at the pre-surgery evaluation and at the 6-month postoperative appointment.

Reduction in symptoms of depression, for the majority of patients, occurred in a linear fashion beginning with the preoperative evaluation and continuing through the 6-month post-operative appointment. The mean scores declined at each evaluation milestone suggesting that throughout the initial six months of recovery, patients experienced a definite decrease in their level of depression symptoms. This was a positive and hopeful finding. The literature on the relationship between morbid obesity and depression has been well established and is clear on the need to diagnose

depression symptoms for gastric bypass patients both pre and postoperatively.

An example of the way in which the relationship between morbid obesity and depression has been addressed in the literature is found in the study by Atkinson (1967) who stated:

The emerging picture is of psychopathology as a co-morbidity of morbid obesity. As to psychopathology content, the most frequent finding is depressive disorder, with a secondary emphasis on anxiety disorder... Of particular interest is whether psychopathology decreases among the morbidly obese after they receive bariatric surgery. There are surprisingly few studies relevant to this question, and there is some disagreement among them... There is a need for well-designed studies concerning the effects of bariatric surgery on psychopathology. (pp. 680-681)

One of the goals of the present study was to extend the existing literature by addressing the need for research that examined whether or not depression symptoms among the morbidly obese change after bariatric surgery. The conclusion regarding depression among bariatric bypass patients in this study revealed a pre-surgery presence of depression symptoms and a linear reduction in those symptoms that occurred throughout the initial 6-month recovery period. The reduction of symptoms of depression in this study was consistent with findings of past studies. However, unlike previous research, this study focused on the acute postoperative period and provided information that can be utilized by mental health professionals in designing preoperative assessments, postoperative support and treatment.

Changes in anxiety

Hypothesis 2, presented in the null form, stated that there is no significant difference between pre-surgery bariatric patients levels of anxiety when compared to post-surgery levels of anxiety at the 2-month, 4-month and 6-month follow-up visits. This hypothesis was not supported by the results of the study. In fact, there were significant differences found between the level of anxiety reported at the pre-surgery evaluation and at the 6-month postoperative appointment. This was also a positive and hopeful finding. However, unlike the linear change in the decrease in symptoms of depression, the change in symptoms of anxiety was not significant until the 6-month milestone of the recovery period. The presence of anxiety symptoms dropped slightly from the preoperative level to the 2-month assessment but remained relatively stable from the 2-month through the 4-month appointments. At the 6-month appointment the anxiety symptoms decreased again to a level that was significant when compared to the preoperative evaluation.

Speculation as to the reason for the varying decrease of symptoms is most likely related to the presence of post-surgery medical complications, as well as the general challenge of adjustment to rapid postoperative weight loss. Many complications occur during the first 4 months of surgery but are often resolved by the six-month appointment. These possibilities as well as other possible explanations will be presented in the discussion section of this chapter.

The examination of the variable of anxiety and the changes that were confirmed in the results of this study are also consistent with previous research regarding the link between pathology and morbid obesity.

Atkinson (1997) referred to anxiety as a concern for bariatric patients stating, “As to psychopathology content, the most frequent finding is depressive disorder, with a secondary emphasis on anxiety disorder” (p. 680). The results of the present study reflected Atkinson’s findings. Although anxiety symptoms were present for a number of patients, the level of depression symptoms manifested at a level greater than the anxiety symptoms. The conclusion is that although a greater number of bariatric patients presented with symptoms of depression, a significant but smaller number presented with symptoms of anxiety. The levels of anxiety decrease in the acute, 6-month postoperative period but at a slower rate than the symptoms of depression.

Changes in Quality of Life

Hypotheses 3, presented in the null form, stated that there is no significant difference between pre-surgery bariatric patient’ Quality of Life (QoL) mental health levels when compared to post-surgery quality of life mental health levels at the two-month, four-month and six-month follow-up visits. This hypothesis was not supported by the results of the study. There were significant differences found between the (QoL) mental health levels reported at the pre-surgery evaluation and at the six-month postoperative appointment. The mean scores for (QoL) increased from the pre-surgery evaluation to the two-month evaluation then decreased from the two-month to the four-month period. By the six-month appointment, the reported (QoL) mental health scores had increased to the highest reported level. The conclusion is that the reported (QoL) mental health symptoms for bariatric surgery patients increase from the pre-surgery level to the 6-month postoperative appointment.

In research that was closely related to the present study Dymek(2001) examined Quality of life (QoL) and psychosocial adjustment in 32 morbidly obese patients who were assessed preoperatively then again at one to three weeks and at six months post-surgery. Dymek (2001) reported:

Results indicated significant improvement in most areas of health-related QoL following surgery... At the first post-surgical assessment, our sample showed improvements from their previous levels on the general health, vitality and mental health subscales...By the 6-month follow-up assessment, our sample showed significant improvement from their post-surgery levels on six of the eight SF-36 subscales: physical functioning, role-physical, bodily pain, vitality, social functioning and mental health...While these findings are somewhat consistent with recent studies that have documented the quality of life changes in a linear fashion as BMI changes, Hans, T.S., (1998) and Lean, M.A., (1999), they highlight important psychosocial changes that occur immediately following the surgery, before dramatic changes in BMI occur. (p. 36)

When compared to the research by Dymek (2001) the results of this study differed in that it revealed a non-linear increase in QoL. The decrease in QoL at the four-month milestone, like depression and anxiety may have been related to emotional adjustment and possible complications from the surgery. Both studies however, reflected a significant increase in QoL by the six-month appointment.

For the morbidly obese, quality of life is often compromised. They often experience an inability to perform daily functions regarding mobility, personal

hygiene as well as social and occupational interactions. For many, that compromised lifestyle is linked to manifestation of depression and anxiety symptoms. For those individuals who choose to undergo bariatric surgery, quality of life is an essential indicator of success. Pre-surgery assessment of the variables examined in this study by the members of the bariatric surgery team provided an opportunity to better address patient's needs.

On this topic, Fabricatore (2005) described the ways in which morbid obesity impaired completion of day-to-day activities and created difficulties fulfilling social and occupational roles. He also believed that those difficulties and the experience of significant pain were stronger determinants of mood disturbance than the severity of obesity. He emphasized the necessity for clinicians to assess HRQoL when evaluating persons with extreme obesity. Fabricatore (2005) stated, "Treatment recommendations may include interventions that target not only weight (i.e. bariatric surgery), but also functional abilities... We believe that interdisciplinary collaboration can significantly improve the quality of care provided to persons with extreme obesity" (p. 308).

As indicated with depression and anxiety, quality of life measurements are a key to understanding and supporting the bariatric patient's journey through the continuum of care. From the initial evaluation through the post-surgery appointments tracking the variables that were examined in this study provides an opportunity to ensure quality care.

Discussion

When bariatric patients begin the journey to earn candidacy as a surgery

patient, they present no consistent level of preparation. They do their best to comply with the demands of their insurer and the requirements of their primary care physician. They routinely meet with the members of the bariatric team that includes, surgeons, medical support staff, a nutritionist and a mental health professional. The contact with a mental health professional and the information derived from that contact comprised a core component of this study. The importance of preoperative assessment in diagnosing possible psychopathology, assessing reported quality of life and preparedness for the surgery process are key elements to earning candidacy for surgery. This study focused on the results of information from that evaluative process that was gathered, analyzed and presented. It supported and extended the existing literature that recommended pre-surgery assessment. As Maxwell (2004) reported:

A preoperative psychological evaluation, when conducted in a thorough manner, is a useful tool for both the surgeon and the patient, precisely because it can identify potential psychological issues or problematic behaviors. The psychologist can recommend preoperative treatments designed to enhance the patient's suitability as a candidate for bariatric surgery, (and address potential post-operative mental health conditions). (p. 44)

This study provided an opportunity to assess the mental health status of a sample of bariatric surgery patients by comparing the pre and post-operative mental health evaluative data that had been collected at the pre-surgery evaluation and again at the two, four and six-month follow-up appointments. The data confirmed the presence of and changes in symptoms of depression and anxiety. There was a

significant change in the pre and postoperative levels of symptoms for both of these variables. There was also a change in the quality of life that was reported by patients at the follow-up measurement milestones. Assessing and tracking those changes was an important aspect of the present study that enhanced the existing research that supported preoperative evaluation.

The results of this study will provide counselors, psychologists and other mental health practitioners, who are evaluating and treating bariatric bypass patients with extended knowledge about their patient's preoperative and postoperative mental health status. That extended knowledge may guide mental health practitioners in the development of consistent and thorough preoperative assessment tools. This study's confirmation of the presence of pre-surgery psychiatric co-morbidities and the postoperative changes in those conditions may act as a guide to developing both preoperative and postoperative support and treatment. There is no reason that a patient should have to wait to experience a reduction in symptoms until after the surgery. With accurate diagnosis, pre-surgery treatment may reduce symptoms and serve to enhance the patient's preparation for the surgery process.

A critical implication that was reflected in this study and in the research by Davidson (1991) was that presence of preoperative psychiatric co-morbidities should not preclude a successful surgery experience. The patients in this study that demonstrated pre-surgery levels of depression were able to successfully prepare for and successfully undergo surgery. They were also, as evidenced by the findings of the study, able to experience a reduction in co-morbid psychiatric conditions. In the population sample of 30 subjects, 13 presented with moderate symptoms of

depression at the preoperative evaluation. Postoperative scores for 12 of those patients decreased at each post-surgery appointment. The remaining seventeen patients presented with either no symptoms or low symptoms of depression at the pre-surgery evaluation. Of those 17, six had elevated depression scores at the two-month postoperative appointment. Those elevated scores may have been a result of post-surgery complications or difficulty adjusting to the initial rapid rate of weight loss. By the six-month appointment, all but one subject reported a decrease in depression symptoms that lower than the preoperative level of symptoms. This supports the conclusion that bariatric patients experience a reduction in depression symptoms in the acute, six-month postoperative period.

During the pre-surgery evaluation twenty-seven of the patients reported no symptoms or low symptoms of anxiety. Three of the 30 patients reported moderate to severe symptoms of anxiety. The anxiety symptoms decreased for all three of those patients by the six-month appointment. Three different patients ended the study with an increase in symptoms from the preoperative evaluation to the six-month appointment. However, that increase was slight and the level of anxiety symptoms never presented above a low level of symptoms. As with depression, accurate pre-surgery diagnosis can lead to treatment and reduction of symptoms of anxiety prior to the surgery procedure.

In reviewing the results of this study, there were significant changes in the levels of pre and postoperative levels of depression, anxiety and quality of life mental health indicators. The depression symptoms declined in a linear fashion from preoperative levels through the two, four and six-month appointments. That data

reflects patient reports of feelings of hopefulness as they experience the initial rapid weight loss from the surgery (approximately one pound per day for the first 30 days). The weight loss reduction slows to approximately ½ pound per day sometime during the second month of recovery. That decrease in the rate of weight loss may also explain why the decrease in levels of anxiety symptoms slowed during the two and four-month measurement milestones. Requiring attendance at postoperative support groups, particularly during the first few months following surgery can provide additional support as patients adjust to the major physical and emotional changes they are experiencing.

Limitations

There were a number of threats to internal validity that applied to the present study. One threat was History, in that the patients in this study could have experienced external events in their lives in addition to the exposure to the treatment, (pre-surgery evaluation, surgery and post-surgery evaluations). A second threat was Maturation, because the psychological and biological changes that occur within the patients during the study were so profound. It is important to recognize that the acute post surgery phase that this study examined was a time of dramatic physiological change. Patients experienced rapid weight loss and were required to adhere to significant changes in their dietary intake. The physiological and psychological changes they experienced were factors that may have influenced the results of the study. Testing was another limitation as patients may have become more familiar with the surveys as a result of multiple administrations. Instrumentation was the final threat to internal validity because although instruments used were valid and reliable

when administered to this population, some test items were not adjusted for the specific needs of the morbidly obese. For example, questions regarding appetite and amount of weight loss on the BDI viewed weight loss as an indicator of depression when in fact for the post-surgery patient it was an indicator of success.

The primary threats to external validity for the present study included the following: There were population sample limitations. Although the archival data employed in the study was from the first 30 patients to complete the surveys, the study did not take into consideration patients who were non-compliant with post-surgery aftercare. It may be assumed, that for reasons of medical necessity, the overwhelming majority of patients participated in follow-up care. However, no comparison was made between patients who complied and were included in this study and those few who may not have complied with aftercare protocol. The Halo Effect was also a potential limit as patients may have presented themselves in a better fashion in an attempt to influence the researcher's impression, particularly in the pre-surgery evaluation.

There were also de-limitations of the study. It did not provide information on the rate of weight loss (using BMI). That comparison, which would provide information that could link possible therapeutic changes with rate of weight reduction over the six-month period of recovery, was not addressed. The study included information only on the acute (6-month) recovery period. Although research on this particular time frame was lacking, the study did not examine more long-term changes. Data on pre or postoperative utilization of mental health therapy was not included. All patients were required to attend preoperative information/support groups. No

information on attendance at the voluntary postoperative support groups was included in the study. References to gender and age were not included in the data analysis.

Recommendations for Further Research

The information gained in conducting this study formed the basis for a number of recommendations for further research. Foremost, there is a need to continue efforts to educate the general public and professionals who work with weight concerns about the etiology of obesity and morbid obesity. Further research on the multi-factorial causes as well as treatment for the disease of obesity is vital in combating the negative impact it has on the health of populations through out the world.

Further research is needed to develop preoperative mental health evaluations. Although a number of medical and mental health agencies provide this service, there is no best practice standard for evaluating patients for candidacy for this surgery. It is important to study depression, anxiety and weight loss for the morbidly obese by examining the preoperative and postoperative changes in these variables in both the acute and long- term post-surgery stages.

It is critical to provide research that examines the presence of preoperative psychopathology and history of treatment in order to support the preparation for surgery as well as the recovery process. The knowledge base provided by this study would be enhanced by including data that examined each patient's pre and post-surgery mental health status. That research would include information on the number of patients whose depression and anxiety symptoms reached the level of an AXIS I disorder pre-surgery and postoperatively. It would also examine the correlation

between improvement or deterioration of depression and anxiety symptoms and increase or reduction in antidepressant and anti-anxiety medication use.

A recommendation for further research would be to examine the level of coordination of services by the medical and mental health professionals who may be treating and evaluating bariatric surgery candidates. Primary care physicians and mental health professionals who are providing services to these patients must work cooperatively with the bariatric surgery team to ensure quality outcomes.

Finally, further research is needed to examine the impact of managed care and insurance company policies on the availability of bariatric surgery. Over the past year a number of insurance companies have opted to deny coverage for bariatric surgery completely. Other insurance companies are paying for the surgery procedure but denying some or all of the preoperative and postoperative medical visits. Other insurers have modified their policies to cover bariatric surgery only if an additional rider is purchased. Those decisions present major obstacles for many patients especially those in lower economic brackets and those who have various health related disabilities. The impact of managed care on the bariatric surgery process is also a vital area for further research. All of the above recommendation will provide clinical data that would serve as a practical guide for provision of services in bariatric practices.

Summary

The purpose of this study was to investigate the changes in depression, anxiety and quality of life for preoperative and postoperative morbidly obese gastric bypass surgery patients. The study included an overview of obesity and how it is

linked to depression, anxiety and quality of life. The results of this investigation yielded information that showed significant differences in the variables that were examined. A review of the literature provided information about past and current research that was related to the variables that were examined. The study met the following goals: To provide information that will support more accurate and consistent standards for preoperative assessment and postoperative treatment planning for bariatric surgery patients; to provide information that will support further research in the area of mental health status of bariatric surgery patients; to provide information that will influence mental health research professionals to review and revise mental health research instruments in consideration of the special needs and experience of individuals undergoing bariatric surgery; to provide information that might influence medical and mental health professionals working in bariatric bypass practices to adopt preoperative and postoperative programming that addresses the mental health needs of bariatric bypass patients.

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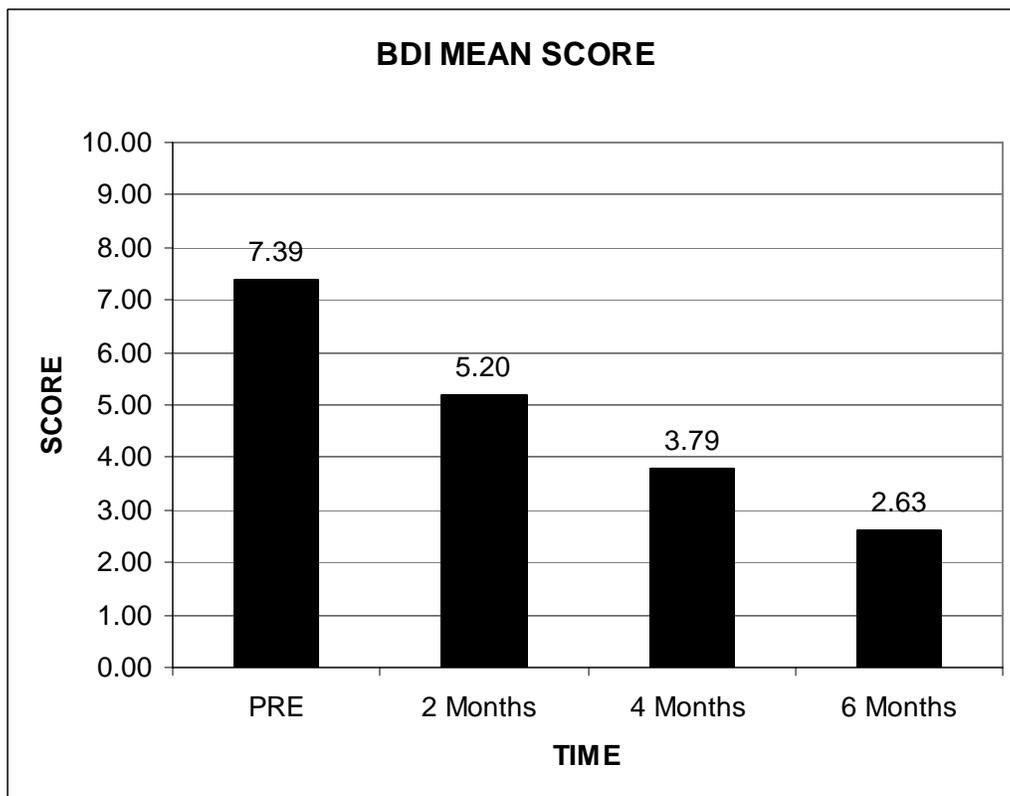
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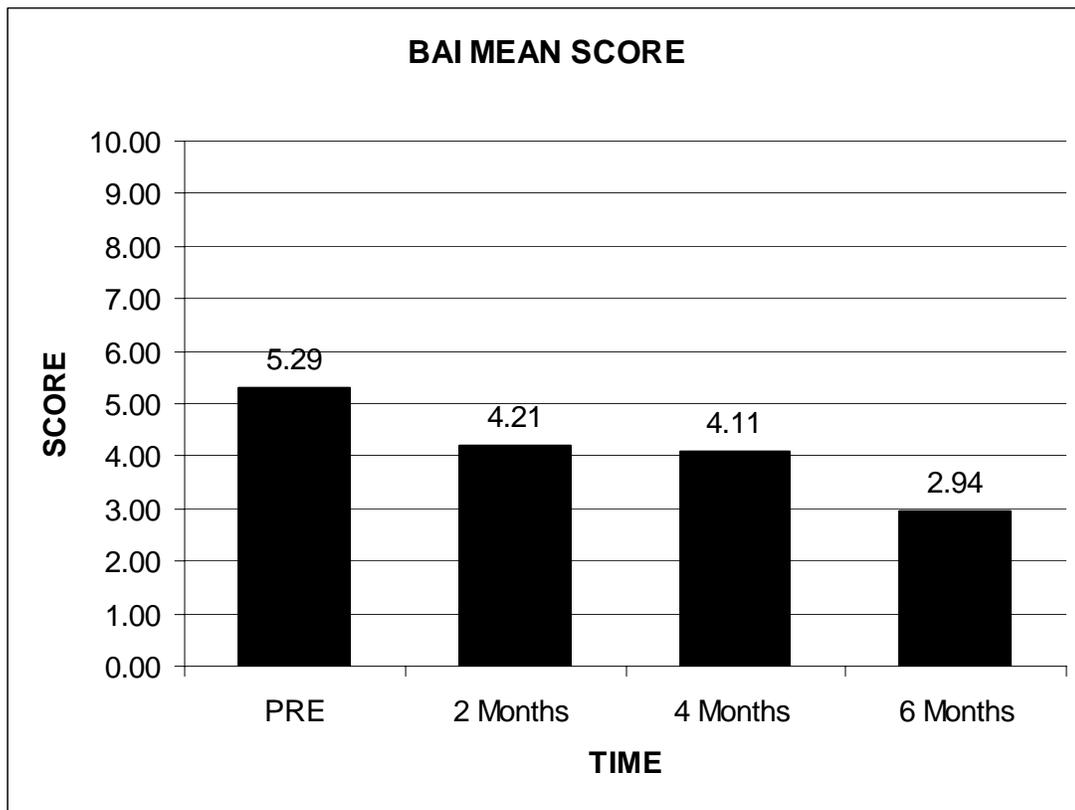
APPENDICES

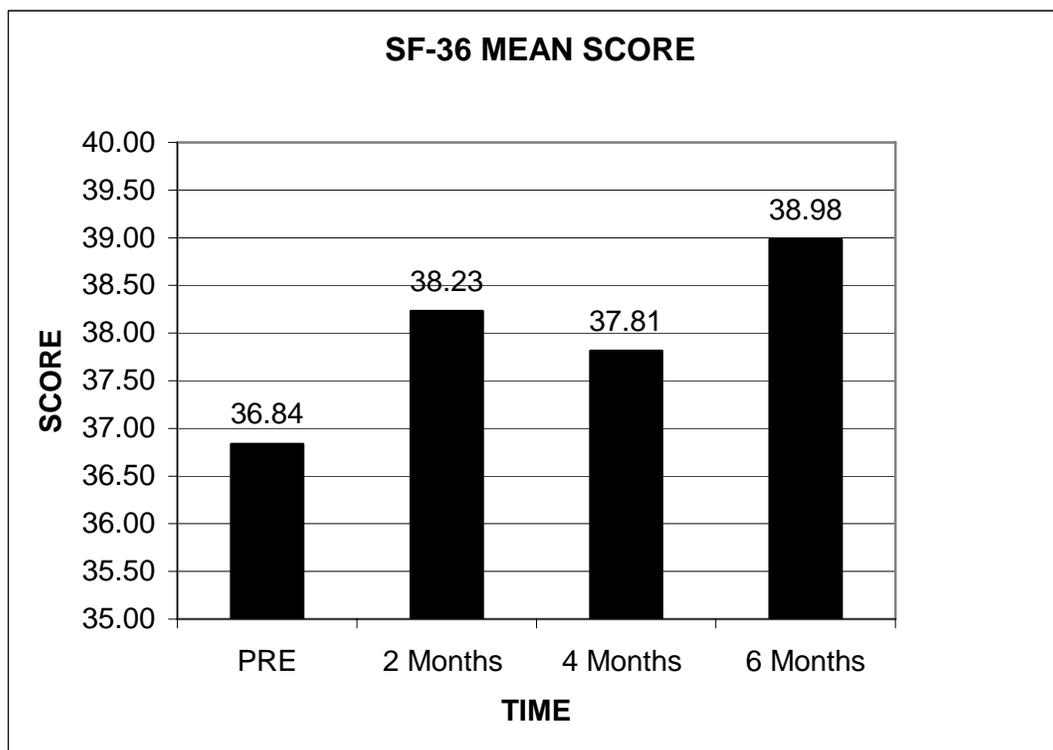
Appendix A

Information From Evaluation Instruments

Graphs of Mean Scores for.....Beck Depression Inventory
Beck Anxiety Inventory
Rand SF-36 Quality of Life Survey







Appendix B

Percentage Changes in Scores for Evaluation Instruments

Percentage Changes in Scores for All Evaluation Instruments

Percentage Change In BDI Scores

SCORE	Pre	2-month	4-month	6-month
0 to 9 (normal)	57%	80%	94%	90%
10 to 19 (low)	43%	14%	1%	10%
20 to 29 (moderate)	0	3%	0	0
30 to 63 (severe)	0	1%	3%	0

Percentage Change in BAI Scores

SCORE	Pre	2-month	4-month	6-month
0 to 9 (normal)	87%	94%	87%	97%
10 to 19 (low)	10%	0	10%	3%
20 to 29 (moderate)	3%	6%	3%	0%
30 to 63 (severe)	0	0	0%	0%

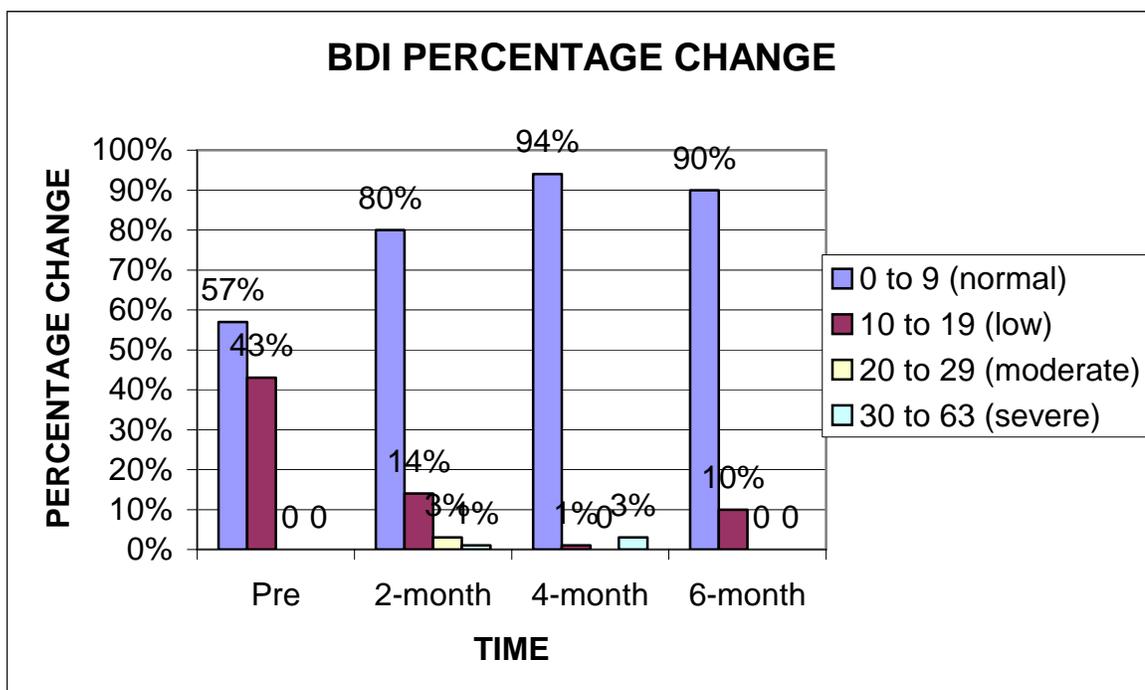
Percentage Change in SF-36 Scores

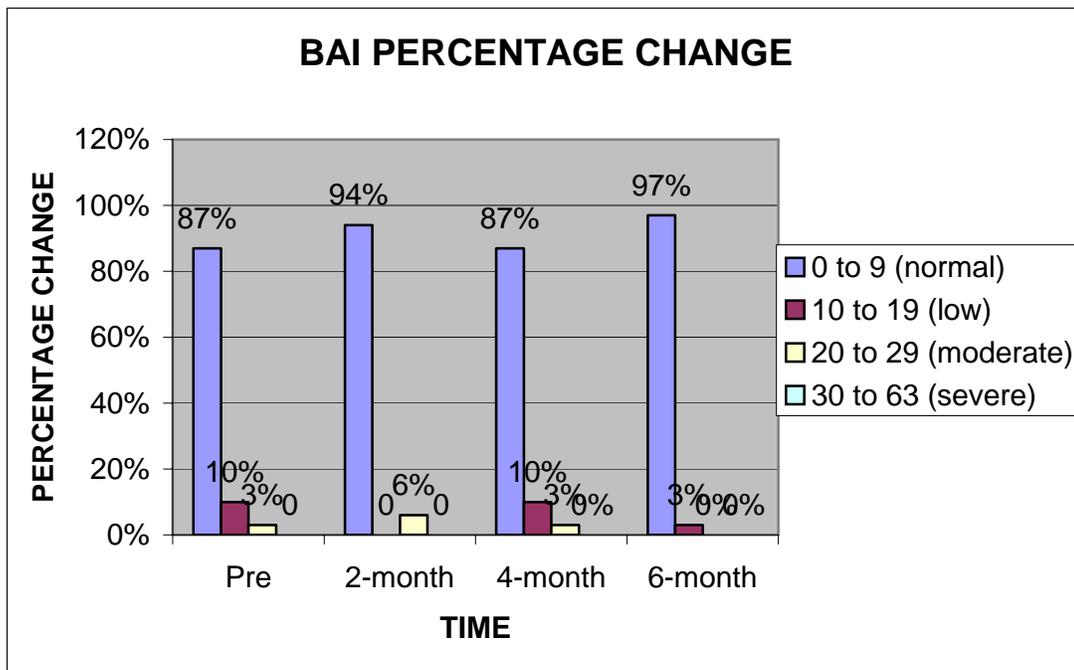
SCORE	Pre	2-month	4-month	6-month
50 to 99	0%	3%	0%	3%
40 to 49	26%	63%	50%	63%
30 to 39	74%	30%	47%	34%
20 to 29	0	3%	3%	0%
10 to 19	0%	0%	0%	0%

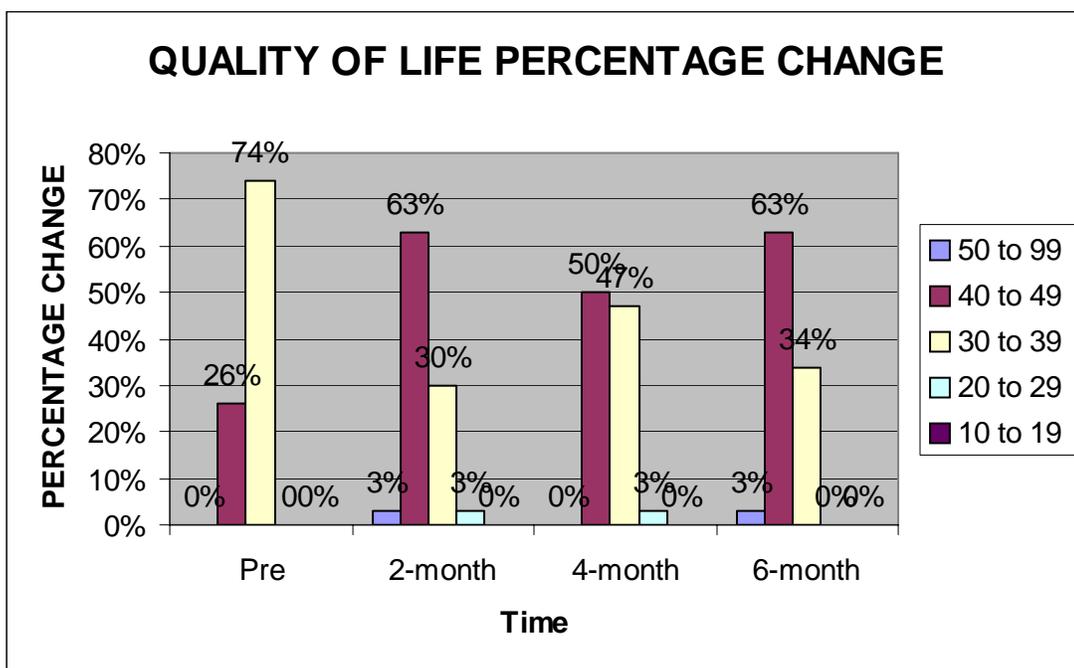
Appendix C

Graphs of Percentage Changes in Scores for Evaluation Instruments

Graphs of Percentage Changes in Scores for Evaluation Instruments







APPENDIX D

Confidential Psychological Evaluation For Bariatric Surgery Candidacy

Psychological and Counseling Center, Inc.

1900 Murray Avenue - Suite 205

Pittsburgh, PA 15217

(412) 421-2205 Fax (412) 421-2750

Email: tpetrone@pitt.edu

CONFIDENTIAL PSYCHOLOGICAL EVALUATION

For

West Penn Bariatric Surgery Center - Gastric Bypass Surgery

Date: _____

Surgery Date: _____

Name: _____ Age: _____

Address: _____ Zip: _____

Telephone Number - Home: _____ Work: _____

Birth Date: _____ SS#: _____

Marital Status: _____

History: _____

Children: _____

Emergency Contact: _____

Telephone Number – H: _____ Other _____

Relationship to Client: _____

Family of Origin – Father: Living - Y ___ N ___ Comment: _____

Mother: Living - Y ___ N ___ Comment: _____

Siblings: _____

Significant Other – Comment: _____

Employment Status: _____

Education History:

Medical Conditions, Surgery History, and Hospitalizations: morbid obesity _____

Heart Disease _____ Heart Attack _____ High BP _____ High Cholesterol _____

Hypertension _____ Sleep Apnea _____ Asthma _____ GERD _____ Arthritis _____

Diabetes Mellitus _____ High Triglycerides _____ Hypercholesterolemia _____

Hypothyroidism _____ Urinary Incontinence _____ Gallbladder Disease _____

Back Problems _____ Deg. joint disease _____ Leg swelling _____ Varicose veins _____

Other: _____

Surgeries-Hospitalizations:

Patient Name: _____

Sleep Patterns: Normal _____ Disturbed _____ Comments _____

Eating Patterns: Dieting in preparation for surgery – Yes ___ No ___ Type: Low cal.
< 1000 _____ < 1200 _____

Prescribed by: W. Penn Dietitian _____ PCP _____ Comment: _____

Previous Attempts at Weight Loss: Previous Bariatric Surgery: ___ Weight watchers: _____
Slim Fast: ___ Low Calorie: _____ Cabbage soup: ___ “OA” ___ Atkins: _____ Grapefruit: _____
L.A. Weight Loss: ___ Jenny Craig _____ Opti-fast _____ OTC Medications: _____ TOPS _____
Hypnosis _____ M.D. supervised diet _____ Other: _____

Current Weight and Height: _____

Change in Weight (last ___ months): Increase ___ Decrease ___ Amount _____

Exercise: Current _____

Planned: _____

Physician (PCP) _____ Most recent visit: _____

Mental Health Related Medications: yes ___ no ___ Pres. by: PCP ___ Psychiatrist ___

Psychological / Psychiatric Conditions– Current and History: _____

Records Available: Yes _____ No _____ Contact Person: _____

Major Life Events: (indicate resiliency) _____

Current Stressors: – (indicate coping skills) _____

Patient Name: _____

Substance Use/ Abuse: _____

Frequency, Intensity, Duration: _____

Family Members/ Significant Others: _____

Physical / Emotional / Sexual Abuse / Neglect / Trauma (History or Current): _____

Self Harm – (Current – History): yes___ no___ _____

Previous attempt: yes___ no___ Comments: _____

Current level of self harm risk assessment: not currently at risk __Low__ Mod__ High _____

Legal Issues: (that may interfere with surgery success) yes___ no___ Comment: _____

Current Safety Concerns: No concerns ___ Concerns re: Threats to safety ___ (Violence: yes___ no___ Weapons: yes___ no___ Anger: yes___ no___) Comments: _____

Special Talents / Hobbies / Interests: _____

Concerns Regarding Surgery: Expected concerns (anesthesia, complications, etc.) _____

Other reported concerns:

Surgery Goals/Expectations: Improved Health status____ Resolution of current medical conditions _____ To avoid future medical problems _____ Prolonged life____ Successful Weight loss_____

Other: _____

Patient Name: _____

Summary:**Critical Factors Assessment:** (use scale: 1 = (-) to 10 = (+):**Comments:**

Ability to give informed consent: 1- 2- 3- 4- 5- 6- 7- 8- 9- 10 _____

Level of Knowledge regarding the Surgery: 1- 2- 3- 4- 5- 6- 7- 8- 9- 10 _____

Level of Comfort with the Surgery Process: 1- 2- 3- 4- 5- 6- 7- 8-9- 10 _____

Level of Understanding - Surgery Benefits: 1- 2- 3- 4- 5- 6- 7- 8- 9- 10 _____

Level of Understanding - Surgery Risks: 1- 2- 3- 4- 5- 6- 7- 8- 9- 10 _____

Life Style Changes – Motivation/Determination Level: 1- 2- 3- 4- 5- 6- 7- 8- 9- 10 _____

Ability to comply with diet and tolerate body image changes: 1- 2- 3- 4- 5- 6- 7- 8- 9- 10 _____

Social Support: 1- 2- 3- 4- 5- 6- 7- 8- 9- 10 _____

Assessment Instruments: Whole Person Wheel Self Assessment: _____ Beck Depression Inventory: _____ Beck Anxiety Inventory: _____ Other Instrument(s): _____**Assessment Instruments Summary:****Whole Person Wheel:**

Understanding of strengths and areas for improvement: low- moderate – high Comment _____

BDI Score = _____ Indicates: no – low – moderate - high presentation of depression symptoms Comment: _____**BAI** Score = _____ Indicates: no – low – moderate - high presentation of anxiety symptoms Comment: _____**Multiaxial Diagnosis:***Axis I:* 307.50 NOS ___ 309.28 ___ 309.24 ___ Other _____*Axis II:* V71.09 No Diagnosis _____*Axis III:* morbid obesity, _____*Axis IV:* Problems in: social family occupational other (_____) environments _____*Axis V:* GAF Current = _____

Patient Name: _____

Summary:**From a Mental Health perspective patient presents as:**

Approved as a positive candidate for surgery (prepared in all critical areas): Yes ___ No _____

Comments: _____
_____**Patient demonstrates:**

Clear understanding of the surgery process as well as the risks and benefits: yes ___ no ___

Clear understanding of the demands of pre and postoperative life style/diet change requirements
yes ___ no ___

Compliance with preoperative diet and maintenance of a food diary: yes ___ no ___

Presence of Depression: yes ___ no ___ anxiety: yes ___ no ___ Substance Abuse: yes ___ no ___

Other mental health conditions yes ___ no ___ Comments _____

Sufficient social support from family and or friends: yes ___ no ___

Compliance with all medical staff recommendations: yes ___ no ___

Recommendations:

Attend additional evaluation sessions: yes ___ no _____

Referral for Psychiatric/Psychological Consultation and or Therapy services: yes ___ no _____

Attend pre-operative information/support group: yes ___ no ___

Attend post-operative information/support group: yes ___ no ___

Maintain diet and food diary: yes ___ no ___

Maintain exercise and activity level: yes ___ no ___

Maintain all medications as prescribed: yes ___ no ___ n/a _____

Follow all Medical staff instructions regarding preparation for surgery: yes ___ no _____

Additional Recommendations/Comments:

Date of Completion: _____ Psychologist Signature: _____