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Psychological Profiles in a Female Bariatric Surgery Sample

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Psychological Profiles in a Female Bariatric Surgery Sample

By

Aimee L. Donato, M.A.

A Doctoral Project submitted in partial satisfaction
of the requirements for the degree of
Doctor of Psychology

September 2010

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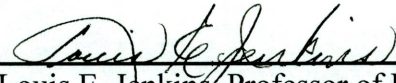


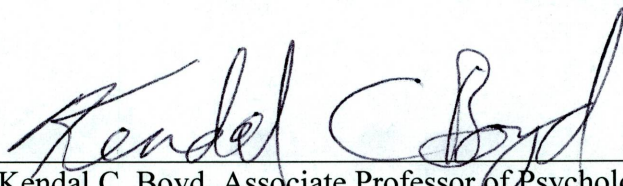
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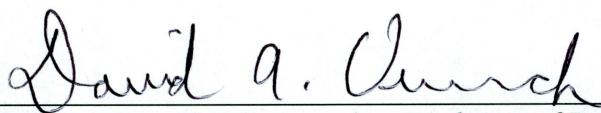
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Each person whose signature appears below certifies that this doctoral project in his opinion is adequate, in scope and quality, as a doctoral project for the degree of Doctor of Psychology.


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ABSTRACT OF THE DOCTORAL PROJECT

Psychological Profiles in a Female Bariatric Surgery Sample

By

Aimee L. Donato

Doctor of Psychology, Graduate Program in Psychology

Loma Linda University, September 2010

Dr. Louis Jenkins, Chairperson

Morbid obesity is an epidemic. Current literature suggests that people with morbid obesity tend to show increased levels of psychological dysfunction. This is especially pertinent to the clinicians who work with morbidly obese patients who seek bariatric surgery as the method for weight control. Surgery should be performed on patients who are psychologically ready to adjust to the stringent post-operative lifestyle.

The purpose of the present study was (1) to compare two groups of bariatric patients (a White group and a non-White group) on pre-surgery measures: specific scales on the Millon Behavioral Medicine Diagnostic (MBMD), the Beck Depression Inventory -- II (BDI-II), and the Outcome Questionnaire version 45.2 (OQ 45.2), (2) determine if there are any significant differences both within and between groups on post-surgery body mass index (BMI) and weight loss, and (3) generate recommendations for continued post-surgery weight loss maintenance.

Statement Of The Problem

Introduction

There is substantial evidence in the literature of a higher prevalence of psychological dysfunction within the obese population compared to the general population (e.g., Black, Goldstein, & Mason, 1992). Many studies have demonstrated that not only do the obese tend to show higher rates of mental disorders than the norm, but that the bariatric population may also have higher rates of mental disorders than both the norm and the non-obese medical population (Friedman & Brownell, 1995). The current study seeks to examine the clinical characteristics of a bariatric population to determine if any of these clinical characteristics were present and related to bariatric surgery outcomes.

The potential of higher psychological concerns within the bariatric population would imply the obligation of bariatric surgeons to conduct thorough pre-operative assessments of a candidate's psychosocial, behavioral, and cognitive factors in order to prepare the patient for the necessary post-operative lifestyle changes conducive to successful weight loss and maintenance (Bauchowitz et al., 2005; Macias & Vaz Leal, 2002). To date, there is no universal method of psychosocial evaluation of bariatric candidates across bariatric clinics (Bauchowitz et al., 2005). Bauchowitz and colleagues (2005) accurately state, "Presently, professionals are asked to make decisions about bariatric candidates without empirical support. The impact of potentially important variables, such as knowledge and expectations about bariatric surgery, is simply unknown" (pg. 831).

Thus, bariatric surgeons may be naïve to the psychological aspects that will affect their patients undergoing surgery. This is an area that needs empirical research that may assist in successful practice and outcomes.

Background of the Problem

Obesity is a currently an epidemic in the United States that has steadily gained momentum within the past two decades. In the year 2005, approximately 64.5 % of American adults, age 20 and over, were overweight, about 30 % obese, and 4.7 % morbidly obese (Centers for Disease Control and Prevention, 2005). Not exclusive to the U.S., obesity rates for both men and women are increasing in both developed and developing countries. The prevalence has increased by about 10 – 40 % in the majority of the European countries over the past ten years (American Obesity Association, 2005).

Prior to 1998, the term ‘obesity’ had been inconsistently defined. For example, some studies defined it with varying percentages (i.e. 20 – 100%) over the “ideal weight” of normal population samples, while others used amount of pounds (i.e. 100 lbs) over “ideal weight” (Grana, Coolidge, & Merwin, 1989; Black et al., 1992; Friedman & Brownell, 1995). These varying definitions of obesity before the World Health Organization (1998) and the National Institutes of Health/National Heart, Lung, and Blood Institute (1998) universally defined it made it difficult to accurately research the issues related to obesity.

Obesity is a currently defined as having a body mass index (BMI) of $\geq 30 \text{ kg/m}^2$, being overweight defined as a BMI of $25.0 - 29.9 \text{ kg/m}^2$, and morbid obesity is defined by a BMI of 40 kg/m^2 or higher (WHO, 1998; NIH/NHLBI, 1998). In addition to BMI,

obesity is also physically assessed by a person's waist circumference, which provides a good estimate of body fat distribution. Upper body fat is associated with hypertension, type 2 diabetes, dyslipidemia, and other complications (Lapidus et al., 1984; Sjostrom, 1993). Thus, a larger waist circumference coupled with being overweight or obese may cause a person to be at a greater risk for disease. In women, a waist circumference ≥ 35 in. is indicative of upper body obesity, while a waist circumference ≥ 40 in. is the equivalent indication in men (NIH/NHLBI, 1998). With increased 'agreement' of measurement and definition of obesity, a more focused understanding contributes to knowledge about etiology, prevention and treatment effectiveness.

Purpose and Importance of the Study

There is need for more substantial evidence of the type and degree of psychological characteristics, of morbidly obese patients, relative to outcomes following bariatric surgery. Knowing this information would benefit bariatric surgeons in assessing the psychosocial nature of bariatric candidates in order to determine if they possess the psychological makeup necessary to make post-surgery changes required for positive outcomes. This study was exploratory for the purpose of highlighting psychological characteristics of a bariatric sample using the Millon Behavioral Medicine Diagnostic (MBMD), the Beck Depression Inventory – II (BDI-II), and the Outcome Questionnaire (OQ - 45.2), in order to examine psychosocial factors that may be related to bariatric outcomes, as measured by change in post-surgery weight and BMI.

Research Context

While bariatric surgery involves serious risk, it is associated with improved mental health and quality of life. Overall, improvement may be seen in the resolution of diabetes, high blood pressure, lowered cholesterol, and sleep apnea which is a frequent complaint of morbidly obese patients. A consistent finding among the participants in this study was that a primary reason for wanting to have the surgery was “I want to get my life back,” i.e., “want to be able to play with my kids,” want to be able to go to the movies and fit in the seat,” “go to a restaurant and be able to sit in the booth without people staring at me,” “I want to live long enough to see my children get married.” These statements address the concerns about health and the quality of life. Nonetheless, issues of post surgical psychological and behavioral changes are less predictable than physical changes (Harvard Mental Health Letter p.2, 2008). An understanding of pre-surgical psychological factors may provide insight into post-surgical patient psychosocial and physical outcomes.

Problems of mood, anxiety, personal and interpersonal factors, coping styles, stress moderators, and continuing treatment outcomes become very important elements to be given attention. Should these things not be attended to, it is likely that the desired psychological, social, and surgical outcomes could be less than optimal.

Research Questions and Hypotheses

The perspectives mentioned above give rise to questions to be answered and hypotheses to be tested:

1. Were there significant differences between groups on pre-surgery measures of psychological characteristics?
2. Were there significant within group differences in pre-post BMI and weight?
3. Were there significant between group differences in pre-post BMI and weight?
4. Were there significant differences due to ethnicity?
5. Given the findings of the study, what post-surgery treatment recommendations seem appropriate?

Summary

There are many studies that evidence that morbidly obese individuals seeking bariatric surgery tend to have higher rates of psychological dysfunction than the non-obese population. The present study examines the pre-surgery clinical characteristics of a bariatric sample to determine if these characteristics are related to surgical outcomes. This information could highly benefit bariatric surgeons in helping them to assess which candidates are psychologically ready in order to adjust to the post-surgery lifestyle. By examining the MBMD, BDI-II, and OQ - 45.2 profile results of a bariatric surgery sample, it is expected to determine whether psychosocial factors are related to bariatric outcomes and whether there are significant within or between group differences of BMI and weight loss after surgery in order to generate pertinent recommendations for weight loss maintenance. In the next chapter, the literature on obesity and bariatric surgery as a treatment for morbid obesity is reviewed.

Review Of The Literature

Introduction

A review of the literature on obesity follows. The etiological factors of obesity, including genetics and biology, environment, and behavioral factors are first discussed. Second, the numerous complications associated with this condition (physical, economic, psychological, and social) are examined. The psychological characteristics associated with individuals with obesity are then described in more detail. Finally, bariatric surgery, as a treatment for morbid obesity, is discussed.

The Etiology of Obesity

Genetics and biology. Genetics is believed to account for 25 – 40% of the variance of BMI (Bouchard et al., 2004). To understand the role genetics play into the etiology of obesity, one must consider the *thrifty gene hypothesis*, proposed by James Neel (1962), in relation to diabetes. This hypothesis asserts that obesity in modern society may be attributed to ancient genes that aided our ancestors in metabolic efficiency and energy storage which enabled them to adapt to rigorous conditions that required large amounts of energy expenditure than what is required today (Neel, 1962). Egger & Swinburn (1997) accurately articulate this concept by describing today's obesity as a "normal response to an abnormal environment" (p. 2).

Influenced by genetics, a person's inherent metabolic efficiency affects his or her body weight and ability to efficiently burn excess calories. Thus, an individual with a low metabolic efficiency may predispose him or her to weight gain. This is described via the

Uncoupling Protein (UCP) which may play a role in metabolism efficiency because it converts glucose to heat rather than ATP (P. Haerich, personal communication, 2005).

Dysfunction of the melanocortin-4 receptor in the brain may also play a role in obesity. This is normally expressed in the arcuate nucleus and activation of this area inhibits feeding (part of the satiety signal). Therefore, a dysregulation of this receptor would cause a person to always feel hungry (P. Haerich, personal communication, 2005).

Some investigators have proposed the notion that some obese individuals may be insensitive to the hormone *leptin*, much in the same way people with diabetes are insensitive to insulin (Campfield, Smith, Guisez, Devos, & Burn, 1995). Leptin is secreted from the adipose tissue and has been shown to act on the hypothalamus to regulate eating and energy expenditure (Campfield et al., 1995). Thus, a dysregulation of the leptin pathway may cause inefficiency in fat storage.

Environment. While there are genetic factors that may predispose some individuals to obesity, an environment that encourages high-fat, high calorie foods and a sedentary lifestyle can significantly increase the likelihood one will develop obesity even in an individual that does not have a genetic propensity for obesity. The Institute of Medicine states “there has been no real change in the gene pool in this period of increasing obesity. The root of the problem, therefore, must lie in the powerful social and cultural forces that promote an energy-rich diet and a sedentary lifestyle” (In Wadden et al., 2002).

Toxic environment. Horgen and Brownell (2004) refer to our society of ever growing availability and promotion of fatty and sugary foods and a de-emphasis on physical exercise as the *toxic environment*. The availability and accessibility of unhealthy

foods in America has grown at a high rate as exemplified in the increasing numbers of fast food restaurants, junk foods sold in schools, buffets, growing portion sizes, and vending machines (Wadden, Brownell, & Foster, 2002; AOA, 2005).

Socioeconomic status. SES is a factor in the development of obesity as well. For instance, low income families are likely to purchase inexpensive, unhealthy foods, sacrificing health for low cost. In addition, low income families are unable to afford gym memberships or exercise equipment. On top of this, a higher prevalence of crime in these disadvantaged neighborhoods deters these families from outdoor physical activity.

Behavioral Factors

Binge eating. About 10-30% of obese individuals who wish to lose weight suffer from Binge Eating Disorder (BED) (Spitzer et al., 1993; Stunkard, 2004). According to the Diagnostic Statistical Manual of Mental Disorders – Fourth Edition – Text Revision (DSM-IV-TR; American Psychiatric Association, 2000), an episode of binge eating is characterized by eating a quantity of food that is larger than the amount most people would eat in a discrete period of time (e.g. 2 hours), and during this period of time, the individual experiences a lack control over his or her eating during the episode. This disorder is differentiated from Bulimia Nervosa by the absence of compensatory behaviors after the binge episode (i.e. purging, excessive exercise, or laxatives; APA, 2000). People with BED report higher rates of self-loathing, negative body image, depression, anxiety, somatic concern, and interpersonal sensitivity; thus, a higher prevalence of Major Depressive Disorder, Substance-Related Disorders, and Personality Disorders is associated with BED (APA, 2000).

Sedentary lifestyle. With technological advances and new conveniences, modern society has impacted our physical health in negative ways. People who have moved from developing to more developed countries have shown increased rates of obesity (Bhatnagar et al. 1995 In Wadden et al., 2002). The increased usage of modern electronic appliances and convenient forms of transportation has resulted in a decrease of physically demanding labor and activity. Moreover, the consumption of convenience foods and engaging in sedentary activities such as watching TV, using the computer, and playing video games have also contributed to the obesity epidemic in America.

Complications Associated with Obesity

Physical. The risks associated with obesity are serious and include a 10 times greater risk for developing type 2 diabetes (Carey et al., 1997), a 3 times greater risk for coronary heart disease (Manson et al., 1990 In Solomon & Dluhy 2004), and a doubled mortality rate for people with *morbid* obesity compared with individuals who are not overweight (Calle, 1999 In Solomon & Dluhy, 2004; VanItallie & Lew, 1992 In Wadden et al., 2002). Obesity is also associated with hypertension, several cancers, sleep apnea, gallbladder disease, and osteoarthritis (Pi-Sunyer, 2002; Wadden, et al., 2002).

Economic. In addition to physical complications, obesity is also associated with economic difficulties. Complications related to this condition cost our nation an estimated \$99 billion in 1995 (Wolf & Colditz, 1998 In Wadden et al., 2002). Obesity accounts for about 7% of all national health expenditures (Field, Barnoya, & Colditz, 2004). Bariatric surgery, as a surgical treatment for morbid obesity, costs an average of \$25,000, excluding any additional costs from postoperative complications (Bauchowitz et al.,

2005). Because more than 100,000 of these surgeries are performed in the U.S. per year, this cost can become a burden to the health care industry and society (Bauchowitz et al., 2005).

Psychological. Numerous studies have correlated obesity with various mental and personality disorders (Friedman & Brownell, 1995; Macias & Vaz Leal, 2002; Sansone, Wiederman, & Sansone, 1999; Black et al., 1992). The link between psychopathology and obesity is significant in some research, but the question still remains for some which causes which or whether there is an actual link (i.e. Friedman & Brownell, 1995). Certain authors contend that those who are obese or morbidly obese show a higher prevalence of anxiety, depression, and low self-esteem compared with people who are of average weight (Black et al., 1992; Wadden et al., 2001). In the past, morbid obesity has been linked to dependent and passive-aggressive personality disorders while other studies have associated it with the eccentric and/or dramatic personality disorders (Black et al., 1992; Macias & Vaz Leal, 2002; Sansone et al., 1999).

Social. Despite the findings of Friedman & Brownell's (1995) meta analysis which yielded inconsistent results on the association between psychopathology and obesity, Wadden et al.'s (2001) review of the literature revealed that the morbidly obese who seek bariatric surgery are more likely than the normal population to experience some form of psychopathology throughout their lifetime that may be caused by the social stigma that these individuals suffer from. This stigmatization begins in childhood that lasts all through adulthood. For instance, in a study done by Staferi (1967 as cited in Wadden et al. 2001), children rated overweight silhouettes as "lazy," "dirty", and "stupid." Neumark-Sztainer (1998 In Wadden et al., 2001) evidenced that many

adolescent females were teased because of their weight. Physicians also appear to be prejudiced against the obese (Wadden et al., 2001).

This prejudice and discrimination toward weight affects many areas of an obese person's life. Studies have shown that overweight individuals are less likely to be married, to have less years of education, and lower income than their nonoverweight peers (Wadden et al., 2001), which may be due, in part, to lower college acceptance rates of obese individuals (Canning, 1966, as cited in Wadden et al., 2001). Weight discrimination may also occur in the workplace, but the bias appears to be stronger against overweight women than overweight men (Wadden et al., 2001). Further, these social discriminations then lead to concerns related to onset of psychopathology.

Psychological Characteristics and Obesity

Prevalence of axis I disorders among the obese. Studies comparing the prevalence of mood disorders among the obese with the non-obese appear to be inconsistent. Some studies evidenced a fairly high prevalence rate (current and historical) of depression among morbidly obese patients seeking bariatric surgery (Wadden et al., 2001, Roberts et al., 2000, Hsu et al., 1998 In Bauchowitz et al., 2005). One study revealed that morbidly obese patients had a higher lifetime incidence of mood disorders than a comparison group (Black et al., 1992) while another revealed no significant differences in depression between the obese and the general population despite similar prevalence rates (Halmi et al. In Wadden et al., 2001). Similar to Friedman & Brownell (1995), Wadden and colleagues (2001) concluded that among the obese, those falling into

the sub-categories of the morbidly obese, obese women, and people with binge eating disorder, are at greatest risk for experiencing a mood disorder.

Similar studies show that the obese population presenting for treatment tend report higher levels of neuroticism and a higher prevalence of anxiety disorders than the non-obese (Larsen et al., 2004, Black et al., 1992). The higher prevalence of anxiety disorders in the obese population may be linked to higher reports of trauma or abuse among the obese compared to the general population. High rates of trauma and abuse have been reported by obese individuals throughout several studies (Wadden et al., 2001).

Degree of obesity may play a part in the amount of trauma experienced. Brewerton and colleagues stated that the extremely obese are more likely to report adult rape, childhood rape, molestation, crime victimization, and posttraumatic stress disorder than the moderately obese or average weight women (In Wadden et al., 2001). Thus, degree of obesity may be related to a history of traumatic experiences, which in turn, may influence the onset of an anxiety disorder in an individual.

Substance dependence. Some studies have examined substance use within the obese population. Black et al. (1992) evidenced that morbidly obese patients were more likely than the control sample to have a lifetime history of tobacco dependence. Macias & Vaz Leal (2002) performed an exploratory factor analysis using items of the Millon Clinical Multiaxial Inventory-II to analyze the personality traits and psychological discomfort of 100 morbidly obese bariatric patients 18 months after surgery. Of the six factors isolated, they identified the fifth factor as dependence on alcohol and the schizoid personality pattern (alcohol dependence). The authors concluded this finding as

interesting because patients with substance use disorders appeared to have greater difficulty in losing weight after surgery than patients who did not have a substance use disorder (Marcus, 1988 as cited in Macias & Vaz Leal).

Prevalence of axis II traits and disorders among the obese. Many studies show that the morbidly obese population seeking bariatric treatment tend to display a higher prevalence of personality traits and/or disorders than a comparison group (Black et al., 1992; Sansone et al., 1999; Friedman & Brownell,). Grana and colleagues (1989) found that half of their bariatric sample had one or more MMPI clinical scales at least two standard deviations above the mean. Another study revealed personality disturbances and psychological discomfort among a sample of morbidly obese patients eighteen months following bariatric surgery (Macias & Vaz Leal, 2002). Thus, according to the literature, this population appears to have a higher prevalence of personality traits and/or disorders than the non-obese population both pre- and post-surgery.

Bariatric Surgery

Although there are many non-invasive approaches to treating obesity, the frequently recommended treatment for morbid obesity is bariatric surgery (Wadden et al., 2002). This option is only recommended for patients with a BMI of 40 kg/m² or higher, or with a BMI of 35 kg/m² in the presence of significant health complications (Kral, 1998 In Wadden et al., 2002). The average loss of excess weight from bariatric surgery is 61 % (Buchwald et al., 2004 In Solomon & Dluhy, 2004) compared with a 5-10% weight loss over a 6-month period with moderate caloric reduction combined with exercise (Yanovski & Yanovski, 2002 In Solomon & Dluhy, 2004). Given these attractive results,

many morbidly obese patients are deciding surgery as a viable option over a behavioral weight reduction program. Many of these patients have had no success with other treatments and look to surgery as a last resort (Wysoker, 2005). However, patients need to undergo a comprehensive evaluation to identify any contraindications and to give patients realistic expectations regarding the procedure and the outcome (Wadden et al., 2002).

Methodological problems of studies. One of the major methodological problems with the various studies on psychopathology among the obese is the use of inconsistent definitions of both “psychopathology” and “obesity.” This problem has been acknowledged within other literature reviews examining this link. In Friedman & Brownell’s (1995) study, for example, they commented that “studies varied so widely in constructs labeled psychopathology that only depression and anxiety levels were consistently measured across studies” (p. 8). Rowe, Downey, Faust, and Horn (2000) also attribute the discrepancies of the presence of psychopathology to “the problem of operationally defining ‘abnormality’ and the lack of consistency in assessment techniques and measures” (p. 1029).

As mentioned earlier, inconsistent definitions of “obesity” across studies prior to 1998 was another methodological problem and contributed to the lack of consistency in measures. Some studies defined obesity as being 100 lbs. over “ideal” weight; others defined it with varying percentages (20-100%) over the “ideal” weight of the normal population (Grana et al., 1989; Black et al., 1992; Friedman & Brownell, 1995).

Another major methodological problem was the lack of studies that used appropriate comparison groups. When examining psychopathological differences

between the obese with the non-obese, most past studies have compared morbidly obese patients seeking treatment with non-obese people who were not seeking surgical or medical treatment of any kind; few studies have appropriately compared bariatric patients with normal weight patients who were also being treated for some kind of medical condition (Friedman & Brownell, 1995). Therefore, more studies are needed that compare obese individuals in treatment with a variety of control groups, particularly surgical and medical controls, and obese and normal weight controls matched on other factors such as age and sex (Friedman & Brownell, 1995). Future researchers should also consider the profile differences between obese persons presenting for surgical versus obese persons presenting for psychological treatment (Friedman & Brownell, 1995).

Predictors of post-surgery weight loss. The personality profiles of the morbidly obese who seek bariatric surgery have been studied by researchers to assess which traits may be predictors of weight loss following surgery. So far, the results have been mixed. Dubovsky et al. (1985, 1986, as cited in Rowe et al., 2000) used a multiple regression equation and found that pre-op depression accounted for 23% of the variance in weight loss assessed at 18-24 months after surgery. In Larsen et al.'s (2004) study, none of the personality variables of the Dutch Personality Questionnaire (DPQ) influenced weight loss at the short term assessment; however, one variable, egoism, was associated with less weight loss in the long term. In Larsen et al.'s (2004) literature review, many studies concluded that personality is not a predictor of post-op weight loss, congruent with their results. However, they cited other studies that have shown that traits such as having a self-defensive attitude, rigidity, psychopathic deviancy, somatization, hostility, and hypochondriasis predict less weight loss after surgery (Larsen et al., 2004). They also

concluded that other demographic factors (i.e., having a higher baseline BMI, being a woman, and being less educated) were significantly associated with more weight loss post-surgery. However, these effects were small, so these findings had no clinical implications (Larsen et al., 2004).

Rowe et al. (2000) found that age of onset of obesity and the Schizoid scale of the MCMI-III were the only significant predictors of and were inversely related to weight loss in their study. Grana and colleagues (1989) found that no personality variables of the MMPI predicted weight loss following VGB. To sum, there has been no substantial evidence, other than Dubovsky et al. (1985, 1986), of personality traits predicting significant post-op weight loss.

Ethnic differences in post-surgery weight loss. Previous studies have found ethnic differences in post-bariatric surgery weight loss. Most of the studies reviewed found differences in the percentage of excess weight loss (% EWL) between Caucasians and African Americans, with Caucasians losing significantly more weight than African Americans after bariatric surgery (Anderson, Greene, Armour Forse, Apovian, & Istfan, 2007, Buffington & Marema, 2006; Madan et al., 2007). Researchers attribute the greater weight loss to ethnic metabolic differences (Anderson et al., 2007; Buffington & Marema, 2006). One study compared post-surgery weight loss between Caucasians and Hispanics but found no significant difference between the two groups (Guajardo-Salinas, Hilmy, & Martinez-Ugarte, 2008).

Ethnic differences in presurgical measures. Buffington & Marema (2006) found no difference in presurgical BDI-II scores between African Americans and Caucasians. However, Mazzeo, Saunders, and Mitchell (2005) found that in comparing

African-American women bariatric candidates to Caucasian women candidates in severity of depression, the African-American women reported less depressive symptomatology than Caucasian women, as measured at the Beck Depression Inventory.

Summary

The broad topic of obesity was discussed in this chapter. First, etiological factors of obesity, such as genetics/biology, environmental, and behavioral, were described in depth. Then, the various complications associated with obesity, including physical, economic, psychological, and social, were elaborated on. Next, the psychological characteristics related to this condition were discussed. Lastly, bariatric surgery, as it relates to the current study, was reviewed. The research methodology for the current study is described in the next chapter.

Research Methodology

Introduction

This chapter is organized according to the research approach, subject selection, research procedures, instruments used, data collection and analysis, limitations, and summary of the chapter. The rationale for the methodology used is that it provided an opportunity to consider repeated measures and to examine data from both a within and between group perspective.

Research Approach

The purpose of the study was to compare two groups of subjects relative to pre-surgery measures and post-surgery outcome measures. The pre-surgery measures offered a description of the psychological aspects of the patients prior to surgery and a description of how these patients, based on specific post-surgery outcome measures. This approach was also intended to provide increased clarity regarding the psychological aspects of patients, which are less understood. A probable reason for this is that there are no official assessment guidelines available. In the absence of guidelines, areas such as behavioral status, cognitive and emotional status, and current life situations of patients are generally used (Harvard Mental Health Letter, 2008, p.3).

Subjects

The data used was archival. The data was provided by patients who were required to have a bariatric pre-surgery evaluation. Subjects came from the Inland Empire of San

Bernardino or Riverside Counties by referral or self-referral. Ninety-one psychological evaluations were reviewed. Inclusionary criteria included only those evaluations in which post-surgery body mass index and weight were available. The N size was 25. There were 10 White patient protocols and 15 non-White protocols. The non-White protocols included 9 Hispanic/Latinos, 4 African-Americans, 1 Native American, and 1 Other. There were only two males, and they were excluded from the study. The ages of the patients ranged from 28 to 57.

Research Procedures

Consent procedures included consent for the evaluation to be performed and a statement indicating that the material may be used for research purposes with a de-identification process implemented, i.e., once the data was organized, all identification information would be removed so as not to be traceable back to individual patients. The purpose of the evaluation was discussed with patients prior to the implementation of and administration of the assessment instruments. The evaluation included an extensive interview and the administration of the OQ 45.2, Beck Depression Inventory – II, and the Millon Behavioral Medicine Diagnostic Inventory. Data was collected from the protocols that had the post-surgery measures available. The data has been locked in a secure file cabinet of the psychologist who did the evaluations and will remain secured until 2014 before being shredded.

Instrumentation

Millon behavioral medicine diagnostic. The Millon Behavioral Medicine Diagnostic is a 165-item, self-report, objective inventory that is comprised of 29 clinical scales, three Response Pattern scales, one validity indicator, and six Negative Health Habits indicators. It is used to assess psychological factors that can affect the course of disease and treatment of medically ill patients, and it is an upgrading of the Millon Behavioral Health Inventory (MBHI; Millon, Antoni, Millon, Meagher, & Grossman, 2001). Scores are presented in the form of prevalence scores, on a continuum of 0 to 100+. Scores of 75 – 84 represent a “presence” of a particular factor, and scores of 85+ represent a “prevalence” of a certain factor. It has been an instrument for the psychosocial evaluation of bariatric surgery candidates by some bariatric surgeons (Bauchowitz et al., 2005). The median value of the alpha estimates of the MBMD scales is .79, and the test-retest estimates approached a median value of .83 (Millon et al., 2001).

Beck depression inventory-ii. The Beck Depression Inventory – II is a 21-item, self-report inventory designed to assess for symptoms and severity of depression in individuals age 13 years and older. It is a revision of the original BDI. Items are scored on a 0 to 3 scale. Scores of 0-13 indicate minimal depression, 14-19 indicate mild depression, 20-28 is moderate, and 29-63 severe depression (Beck, Steer, & Brown, 1996). Psychometric properties were determined using an outpatient sample and a college student sample. Coefficient alpha for the outpatient sample was .92 and .93 for the college sample, and the test-retest reliability was .93 (Beck et al., 1996).

Outcome questionnaire 45.2. The Outcome Questionnaire 45.2 is a 45-item, self-report, brief measure of psychological dysfunction. It is administered to patients weekly and it is used to track patient outcome. Sample items include “I feel stressed at work/school” and “I feel unhappy in my marriage/significant relationship.” The test-retest reliability is .84, and Cronbach’s alpha (internal consistency) is .93 (Lampert et al., in press). It assesses four domains of functioning: symptoms of psychological disturbance, interpersonal problems, social role functioning, and quality of life, and it is divided into three subscales. The clinical significance cutoff point is 64, in which clients who score at or below 63 present as more similar to the functional population whereas clients with scores of 64 and above present as similar to a dysfunctional population (Lampert et al., in press).

Data Analysis

The data analysis used in this study included the paired t-test, which was appropriate for examining the within group data, the independent-samples t test and the One-way Analysis of Variance (ANOVA) to determine the existence of differences between the White and non-White group. The paired t-test was used for repeated measures data, and the independent-samples t test and ANOVA for between groups, for the purpose of examining whether ethnicity was an important factor in the post-surgery BMI and weight outcome results. Specifically, the statistical techniques were used to provide answers to the following research hypotheses:

1. Were there significant differences between groups on pre-surgery measures of psychological characteristics?

2. Were there significant within group differences in pre-post BMI and weight?
3. Were there significant between group differences in pre-post BMI and weight?
4. Were there significant differences due to ethnicity?
5. Given the findings of the study, what post-surgery treatment recommendations seem appropriate?

Given that this was a pilot study, p-values were set at .20. This is not an uncommon practice in exploratory studies (Levitt et al., 2004; Hladiuk, Huchcroft, Temple, & Schnurr, 1992). By setting the p-value at this level, it provided an opportunity to determine if there were significant differences that would not have been indicated at an alpha level of .05. These variables showing significant differences suggest areas of investigation for future research.

Limitations

A limitation of the study was the unavailability of a larger data set relative to the post-surgery measures. A larger sample size may have provided more meaningful understanding of the psychological aspects of patients preparing for bariatric surgery. More clarity might have been forthcoming if the between groups would have been larger as well.

Summary

This chapter detailed the methodology used, the rationale for the use, and the procedures for data collection and analysis. The next chapter will present the results of the statistical analyses.

Results

Twenty-five women subjects with morbid obesity who were seeking bariatric surgery were included in the study. Their mean age was 41.52 years (SD = 9.60). Ten of the subjects were White, while fifteen identified themselves as non-White. The non-White individuals included nine Hispanic/Latinos, four African-Americans, one Native American, and one Other. The mean pre-surgery BMI for all subjects was 49.72 (SD = 6.67), and the mean pre-surgery weight in pounds was 311.84 (SD = 52.98). Table 1 below summarizes the demographic characteristics of the sample.

Table 1

Demographic Characteristics of Sample

Characteristic	Value
Age	
<i>M</i>	41.52
<i>SD</i>	9.60
Ethnicity	
White	10 (40%)
Non-White	15 (60%)
Hispanic/Latino	9 (36%)
African-American	4 (16%)
Native American	1 (4%)
Other	1 (4%)
Pre-Surgery BMI	
<i>M</i>	49.72
<i>SD</i>	6.67
Pre-Surgery Weight in Pounds	
<i>M</i>	311.84
<i>SD</i>	52.98
Marital Status	
Never Married	6 (24%)
Married	6 (24%)
Separated	4 (16%)
Divorced	6 (24%)
Widowed	3 (12%)
Degree Earned	
Did not graduate from high school	6 (24%)
High School	8 (32%)
AA	1 (4%)
Technical	1 (4%)
Some College	9 (36%)
Religion	
Christian	12 (48%)
Catholic	4 (16%)
Protestant	2 (8%)
Other	5 (25%)
No Response	2 (8%)
Employment Status	
Full-Time	5 (25%)
Part-Time	2 (8%)
Unemployed	18 (72%)

Note. *N* = 25.

In examining the prevalence scores of specific subscales of the MBMD among the entire sample, only the Functional Deficits scale was elevated ($M = 75.36$, $SD = 15.47$). When the means of the White and Non-White scores of each scale were examined separately, only the Non-Whites scored elevations on the Functional Deficits ($M = 76.4$, $SD = 13.8$) and Pain Sensitivity ($M = 78.4$, $SD = 20.3$) scales. No other scales were elevated among the Non-Whites.

Independent-samples t tests were conducted to compare the means of the White and the Non-White groups' pre-surgery scores on the MBMD, BDI-II, and OQ 45.2. Tables 2, 3, and 4 below display the mean prevalence scores of the Psychiatric Indications, Coping Styles, and Stress Moderators subscales of the MBMD divided by groups.

Table 2

Mean Prevalence Scores of the Psychiatric Indications Subscales of the Millon Behavioral Medicine Diagnostic (MBMD) Divided by Groups

Clinical Scales	White (n=10) M(SD)	Non-White (n=15) M(SD)	t	p	d
Anxiety-tension	32.7 (29.2)	40.9 (22.6)	.79	.44	.34
Depression*	32.7 (31.4)	52.2 (28.5)	1.61	.12	.69
Cognitive dysfunction	30.2(27.9)	31.7(16.7)	.15	.88	.07
Emotional lability	44.9(17.2)	42.1(19.1)	-.38	.71	.16
Guardedness	41.6(22.7)	42.5(21.0)	.11	.92	.04

Note. * $p < .2$

Table 3

Mean Prevalence Scores of the Coping Styles Subscales of the Millon Behavioral Medicine Diagnostic (MBMD) Divided by Groups

Clinical Scales	White (n=10) M(SD)	Non-White (n=15) M(SD)	t	p	d
Introversive*	26.0(24.9)	52.8(28.7)	2.42	.02	1
Inhibited	52.7(26.5)	44.5(28.1)	-.73	.47	.31
Dejected	25.6(31.1)	32.1(35.8)	.47	.65	.2
Cooperative	52.4(28.0)	46.3(21.3)	-.62	.54	.26
Sociable	56.0(18.0)	59.3(14.4)	.51	.61	.22
Confident*	41.5(20.3)	56.9(16.6)	2.07	.05	.88
Nonconforming	34.7(17.0)	30.0(16.1)	-.70	.49	.3
Forceful	25.0(14.7)	32.9(17.3)	1.18	.25	.5
Respectful*	52.5(21.6)	67.9(17.2)	1.97	.06	.67
Denigrated	62.7(22.0)	51.0(25.2)	-1.19	.25	.51

Note. * $p < .2$

Table 4

Mean Prevalence Scores of the Stress Moderators Subscales of the Millon Behavioral Medicine Diagnostic (MBMD) Divided by Groups

Clinical scales	White (n=10) M(SD)	Non-White (n=15) M(SD)	t	p	d
Illness apprehension	67.8(19.8)	74.1(13.8)	.87	.40	.40
Functional deficits	73.8(18.4)	76.4(13.8)	.41	.69	.17
Pain sensitivity*	64.6(26.2)	78.4(20.3)	1.48	.15	.63
Social isolation	54.2(23.4)	48.7(27.6)	-.52	.61	.54
Future pessimism	58.2(16.4)	62.8(18.1)	.65	.53	.27
Spiritual absence	39.0(36.3)	29.5(22.5)	-.74	.47	.35

Note. * $p < .2$

First, among the Psychiatric Indications subscales of the MBMD, non-Whites scored significantly higher on Depression than Whites, $t(23) = 1.61$, $p < .2$, $d = .69$. Under the Coping Styles subscales, non-Whites scored significantly higher than Whites on the Introversive, $t(23) = 2.42$, $p < .2$, $d = 1$, Confident, $t(23) = 2.07$, $p < .2$, $d = .88$, and Respectful, $t(23) = 1.97$, $p < .2$, $d = .67$, subscales. Finally, under Stress Moderators, non-

Whites scored significantly higher than Whites on Pain Sensitivity, $t(23) = 1.48, p < .2, d = .63$.

There was no difference in BDI-II scores ($M_{\text{Whites}} = 13.00, SD_{\text{Whites}} = 10.45; M_{\text{Non-Whites}} = 12.07, SD_{\text{Non-Whites}} = 6.53$) between the groups and both groups scored within the range of minimal depression. The effect size was small, $d = .12$. There was no difference in OQ 45.2 scores ($M_{\text{Whites}} = 47.60, SD_{\text{Whites}} = 22.20; M_{\text{Non-Whites}} = 41.93, SD_{\text{Non-Whites}} = 19.72$) between the groups, and both groups scored within the “functional” range of the instrument. The effect size was small, $d = .29$.

Paired- samples t-tests were used to test for significant within-group differences of pre- and post-surgery BMI and weight for both groups. Table 5 summarizes change in BMI and weight divided by groups.

Table 5

Mean BMI Scores and Weight Divided By Groups

	White ($n = 10$) M (SD)	Non-White ($n = 15$) M (SD)
Pre-surgery BMI	49.30 (7.57)	50.00 (6.27)
Post-surgery BMI	36.37 (6.84)*	37.15 (6.33)*
Pre-surgery weight in pounds	308.00 (47.57)	314.40 (57.80)
Post-surgery weight in pounds	224.75 (46.58)*	229.47 (56.55)*

Note. * $p < .05$ within groups. No significant differences in BMI and weight between groups.

Both Whites and Non-Whites decreased a significant amount of BMI points and lost a significant amount of weight after bariatric surgery. Whites’ baseline BMI ($M = 49.30, SD = 7.57$) significantly dropped by 12.93 BMI points post-surgery ($M = 36.37, SD = 6.84$), $t_{(9)} = 6.69, p < .05$. Non-Whites’ baseline BMI ($M = 50.00, SD = 6.27$)

decreased by 12.85 BMI points after surgery ($M = 37.15$, $SD = 6.33$), which was also a significant within-group difference, $t_{(14)} = 8.23$, $p < .05$. Whites' baseline weight in pounds ($M = 308.00$, $SD = 47.57$) significantly dropped by 83.25 pounds after surgery ($M = 224.75$, $SD = 46.58$), $t(9) = 8.57$, $p < .05$. Non-Whites' baseline weight in pounds ($M = 314.40$, $SD = 57.80$) decreased by 84.93 pounds post-surgery ($M = 229.47$, $SD = 56.55$), $t(14) = 8.79$, $p < .05$.

There was no difference in post-surgery BMI and weight between the two groups.

Discussion

There is need in the literature for substantial evidence pertaining to the psychological makeup of the morbidly obese seeking bariatric treatment. Knowing this would aid bariatric surgeons in assessing the psychosocial and behavioral patterns of a bariatric candidate. The purpose of the present study was to examine whether there were differences in pre surgical measures of psychological characteristics between Whites and Non-Whites, whether there were within group differences in pre surgery BMI and weight among Whites and Non Whites, and whether there were differences in post-surgical BMI and weight between Whites and Non Whites.

In examining the clinical scales of the MBMD, there were “presences” of the Functional Deficits and Pain Sensitivity factors within the Non-White group only. Non-Whites scored significantly higher than Whites on five of the MBMD subscales: Depression, Introversive, Confident, Respectful, and Pain Sensitivity. The pain sensitivity subscale was the only subscale that was elevated. Effect sizes ranged from medium to large for the five subscales (Cohen, 1988).

It is interesting to note that non-Whites scored higher than Whites on the Depression subscale of the MBMD, but not on the BDI-II. Perhaps this was reflective of the use of the specific instruments in the study, as they are not usually administered to the bariatric population. On the other hand, many of the ethnic minority candidates appeared to be *situationally* depressed during the clinical interviews, rather than *clinically* depressed, which is consistent with their scores on the objective assessments.

Non-Whites scored higher on the Introversive subscale of the MBMD than Whites. According to Millon et al. (2001), high scorers on this scale are characterized by being “rather colorless, emotionally subdued, quiet, and untalkative. Typically, they lack energy, are communicatively vague, are difficult to pin down concerning their symptoms, and may be passive with regard to taking care of their physical needs” (p. 13). This is inconsistent with informal observations taken during the interviews. They presented as energetic and articulate in describing their experiences over being morbidly obese. However, because of their obesity, they preferred to stay out of public sight to avoid the discomfort of ridicule and not being able to manage public settings comfortably.

Non-Whites also exhibited more of a confident coping style than Whites, according to the MBMD. This was reflected in the clinical interviews in that these individuals appeared highly motivated in undergoing the necessary treatment for their morbid obesity. They stated that they had a high desire of “getting their life back” by engaging in pleasurable activities again, such as going to the movies or restaurants and being able to play with their children and/or grandchildren.

The contrast between non-Whites displaying more Introversive *and* Confident coping styles than Whites may be explained in the possibility of cognitive dissonance within the non-Whites. For example, their perception of themselves may be inconsistent with their actual behavior in interacting with others, particularly authority figures. They may perceive themselves to be quiet, subdued, and/or passive in taking care of their health, but in order to appear respectful, cooperative, and compliant with a healthcare professional, they may make an increased effort to appear confident in their treatment than they actually feel.

Another coping style that non-Whites tended to exhibit more than Whites involved being respectful. Individuals who score high on this scale are described as being very compliant, responsible, and serious-minded in their treatment regimen, but may underreport their symptoms and problems in an effort to cover up weakness and inefficiency (Millon et al., 2001). Ethnic minorities have historically valued showing respect to authority figures, which include healthcare professionals. Thus, this respect would likely transfer into the healthcare setting, in that minorities may want to adhere to a doctor's recommendations more readily than Whites in order to show responsibility and cooperativeness towards the professional.

Of the Stress Moderators, non-Whites endorsed more sensitivity to pain than Whites. Ethnic minorities have been shown to report higher levels of pain than Whites (Meghani & Cho, 2009). However, a number of factors related to the patient, provider, and access to adequate healthcare services have been identified as barriers to effective pain treatment and management for minorities (Cintron & Morrison, 2006). As a result, non-Whites may experience increased levels of pain compared to Whites.

There were no significant differences between the two groups on the pre-surgical scores of both the BDI-II and the OQ 45.2. Our finding of no ethnic differences in pre-surgical BDI-II scores was consistent with previous literature (e.g., Buffington & Marema, 2006).

There were significant differences between the pre and post surgery BMI and weight within each group. Both Whites and Non-Whites decreased a significant amount of BMI points and lost a significant amount of weight after bariatric surgery at a one-year

follow up. However, there was no difference in post-surgery BMI and weight between the groups.

This contrasts with previous findings that support ethnic differences on weight loss following bariatric surgery (e.g., Anderson et al., 2007), but supported other studies that purported to no ethnic differences (e.g., Guajardo-Salinas et al., 2008). This discrepancy from the literature may have been due to the current study's small sample sizes. Also, the current study compared Whites with various non-White ethnic groups, unlike the previous studies reviewed, which compared Whites with one other ethnic minority group (e.g., African-Americans or Hispanics, etc.). Had we compared Caucasians to only African-Americans, our findings might have replicated the previous studies.

Clinical Implications

Bariatric surgery appears to be an effective treatment for morbid obesity across ethnic groups. According to the present study, Whites and Non-White bariatric candidates do not differ on pre-surgical measures of psychological dysfunction, nor do they differ on their post surgical BMI and weight.

The current findings contrast with previous literature that found an increased prevalence of psychological dysfunction in the obese population compared to the norm. The sample did not score elevations on any of the scales that measure psychological dysfunction. Our findings were consistent with past literature that indicated no differences in psychological dysfunction between the obese population and the norm (e.g., Halmi et al. In Wadden et al., 2001). Therefore, unlike previously thought,

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morbidly obese individuals seeking bariatric treatment may not be more psychologically disturbed than the normal population and may be likely to possess the psychological makeup necessary to appropriately adjust to various post-surgery lifestyle changes. This is by no means implying that thorough, comprehensive psychosocial evaluations may not be necessary as a prelude to bariatric surgery. It is simply saying that bariatric surgery candidates may be much more psychologically ready to make the post-surgical adjustments than previously thought.

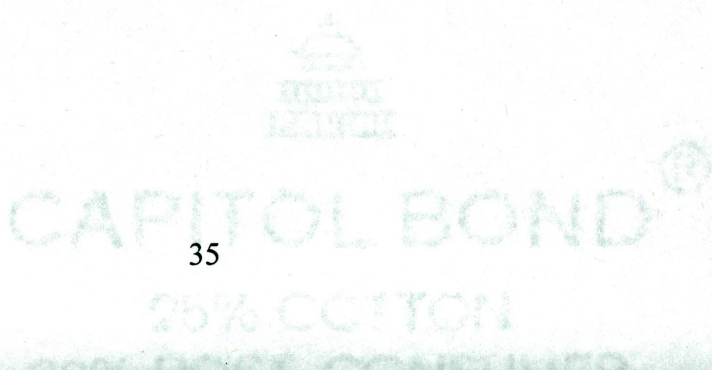
Study Limitations and Future Directions

As mentioned, a limitation of the study was the small sample size due to lack of post-surgery data. A larger sample size may have decreased the possibility of making a Type II error (accepting the null hypothesis when it is false). Because this study compared Whites with various ethnic individuals combined into one category, we may have missed possible ethnic differences among the different minority groups that may have influenced post-bariatric surgery outcomes.

Another disadvantage was the lack of male subjects. Because of this, the influence of gender on psychological profiles of bariatric candidates as well as post-surgery outcomes may have been overlooked. Future studies should include more male bariatric candidates to increase generalizability of the findings to male subjects and to examine any gender differences in presurgical measurements of psychological dysfunction and/or post surgery weight loss.

In conclusion, the results of the current study showed that there are little differences between Whites and non-Whites in the pre-surgical psychological

characteristics of bariatric candidates as well as post-surgery outcomes. Both groups lost a significant amount of weight as measured by BMI and weight in pounds after bariatric surgery. In contrast to previous research, morbidly obese individuals seeking bariatric surgery may be more psychologically healthy and ready to adjust to the necessary post-surgery changes than previously thought.



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