

DEPRESSION, BODY IMAGE, AND SELF-ESTEEM BEFORE AND AFTER  
GASTRIC BYPASS SURGERY

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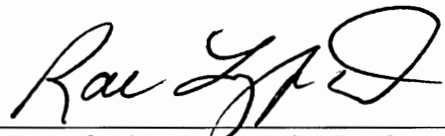
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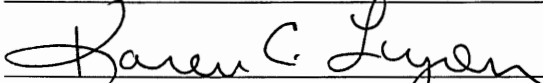
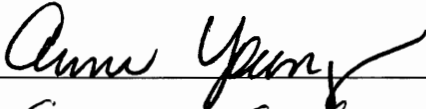
To the Dean of the Graduate School:

I am submitting herewith a dissertation written by Sandra Brannan entitled "Depression, Body Image, and Self-esteem Before and After Gastric Bypass Surgery." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a major in Nursing Science.



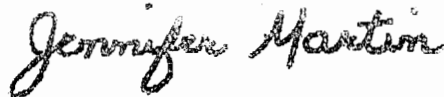
Rae Langford, Ed.D., Major Professor

We have read this dissertation and recommend its acceptance:



Associate Dean, College of Nursing

Accepted:



Dean of the Graduate School

## DEDICATION

To my supportive husband, Raymond and son, John. To those nights they spent having dinner on their own.

To my best friend, Lee St. Clair who always believed in me and pushed me just a little bit harder to be better than I am.

## ACKNOWLEDGMENTS

To those who have helped me through this process, Jamie Carr and Julius Balogh.  
To the medical practices of Adam Naaman, M.D., Garth Davis, M.D. and Robert Davis, M.D. who allowed their patients the opportunity to participate in this study.

To the chair of this committee, Rae Langford, Ed.D who has endured more than one person should have had to endure. To Anne Young, Ed.D and Ann Malecha, PhD who have mentored me for several years and helped prepare me for this process.

## ABSTRACT

SANDRA BRANNAN

### DEPRESSION, BODY IMAGE, AND SELF-ESTEEM BEFORE AND AFTER GASTRIC BYPASS SURGERY

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The questions for this study were: Are morbidly obese individuals less depressed after undergoing a gastric bypass procedure? Are morbidly obese individuals more satisfied with their body image after undergoing a gastric bypass procedure? Do morbidly obese individuals have increased levels of self-esteem after undergoing a gastric bypass procedure?

A pre-experimental, repeated measures longitudinal design examined depression, body image, and self-esteem before surgery and at 30 and 60 day intervals following a gastric bypass procedure using the Beck Depression Inventory (BDI), the Body Shape Questionnaire (BSQ), and the Rosenberg Self-Esteem Scale (RSES). Twenty-seven individuals completed all three surveys.

Three one-way repeated measures ANOVAs were computed and revealed significant differences in depression, body image, and self-esteem over time. Post hoc measures showed significant differences for all pairs tested. Levels of depression

dropped from severe levels of depression to moderate levels of depression, with steady indicators of improvement at 30 and 60 days post surgery. Body image improved to normal levels after surgery and self-esteem improved from marginal to solidly normal levels after surgery. These results were supported by the current literature and serve to emphasize that psychologic comorbidities are common with morbid obesity and need to be addressed in any plan of care for these individuals.

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## CHAPTER I

### INTRODUCTION

Obesity is a chronic disease which affects nearly one-third of the adult population and is the second leading cause of unnecessary deaths in the United States (Sheipe, 2006). The number of individuals who are overweight and obese has continued to climb for the past four decades and shows no evidence of declining. According to the American Obesity Association (2002), obesity is responsible for at least 400,000 deaths in the United States (U.S.) annually. Davis (2004), reports the cost of obesity in the U.S. was more than \$117 billion in 2001. It was estimated that the health and financial costs of morbid obesity equals the health and financial costs of cigarette smoking (Davis, 2004).

Obesity is a complex, multi-factorial disease which develops from an interaction of genetic, metabolic, social, behavioral, and cultural factors and is considered one of the most serious public health problems in the U.S. (Devlin, Yanocski, & Wilson, 2000; United States Health and Human Services, 2000). Obese individuals are susceptible to a number of psychosocial problems such as low self-esteem, depression, stigmatization and social marginalization which in turn contribute to cyclic patterns of chronic overeating and a sedentary lifestyle. Studies demonstrate that the obese suffer systematic discrimination in employment, and compensation (Frieze, Olson, & Good, 1990; Roehling, 1999). Gortmaker, Must, Perrin, Sobol, and Dietz, (1993) revealed that obese

individuals were less likely to be married, had less education, lower household incomes, higher rates of poverty, and lower levels of self-esteem than non-obese individuals. The use of extreme measures such as gastric bypass surgery has proven to have general success in weight reduction. However, a number of questions are raised concerning the effects of such measures on psychological factors typically associated with obesity. Does gastric bypass affect the psychological sequelae such as depression, low self-esteem, and altered body image? Gastric bypass may be one way to reduce depression, low self-esteem, and a negative body image while achieving a greater degree of health for individuals who are morbidly obese (National Heart, Lung, and Blood Institute & North American Association for the Study of Obesity, 2000). The purpose of this study is to explore whether changes occur in depression, body image, and self-esteem in the morbidly obese after gastric bypass surgery. The importance of the information obtained from this study will assist nurses to become better patient advocates, improve a nurse's ability to provide accurate information, and to help the patient make an informed decision concerning his or her health and quality of life.

#### Problem of Study

The research problem identified for this study is:

How is the emotional and psychological health of morbidly obese individuals affected by gastric bypass surgery?

#### Rationale for the Study

Little to no information is available on emotional and psychological health before and after gastric bypass. This research will focus on morbidly obese individuals self-

report of depression, body image, and self-esteem before and after gastric bypass surgery. Information from this study will assist in helping the obese patient to 1) have necessary knowledge to make the decision to undergo gastric bypass as a means of obtaining rapid and sustained weight loss; 2) understand that changes which will occur in depression, perceived body image and self-esteem after gastric bypass. Gastric bypass has been found to lead to more rapid and sustained weight reduction than other forms of bariatric surgery (Hsu, Betancourt, & Sullivan, 1996; Wolf, et al., 2001), thus providing a reduced amount of time for the individual to adapt to the rapid weight loss and changes in his or her body.

### Theoretical Framework

Roy's Adaptation Model served as the framework for this study. According to Roy and Andrews (1999) an individual is a holistic adaptive system who responds to different stimuli in the environment. The individual's response to a constantly changing environment is dependent upon his coping processes. Individuals respond to environmental stimuli which involve psychological, social, physical, and physiological modes (Fawcett, 1989). The basis of the Roy Adaptation Model (RAM) is to enhance the life processes through adaptation and to "promote adaptation in each of the four adaptive modes, thus contributing to a person's health and quality of life" (Roy & Andrews, 1999, p. 32). Roy defines adaptation "as the process and outcome whereby thinking and feeling persons, as individuals or groups, use conscious awareness and choice to create human and environmental integration. The individual's behavior is a function of input stimuli and how that individual reacts to the stimuli either by adaptive or ineffective responses"

(Roy & Andrews, 1999, p. 30). Human responses will then be used as the individual's feedback or additional input to assist or hinder in adaptation to the stimuli.

Roy and Andrews (1999) define stimuli as "that which provokes a response. The stimuli can be internal or external both of which depict the interaction of the human being with his environment" (p. 30). Roy describes three classes of stimuli: focal, contextual, and residual. The focal stimulus is the internal or external stimulus most immediately in the awareness of the human system (Roy & Andrews, 1999). In this study, obesity is the focal stimulus which demands attention (the surgery: gastric bypass). Focal stimuli are the most immediate to the person (e.g. being discriminated against due to size, hearing sarcastic remarks about one's size). Contextual stimuli are defined as all other stimuli present in the situation which contribute to the effect of the focal stimuli (Roy & Andrews, 1999). Contextual can be other stimuli which influence the person positively or negatively (e.g. wanting to perform an activity which cannot be done due to size). Contextual stimuli do not demand the attention and energy required by focal stimuli. However, they do influence how human beings handle the focal stimuli. Contextual stimuli such as the individual and significant others response to weight loss will affect the person's adjustment to depression, body image, and self-esteem.

Residual stimuli are defined as environmental factors within and without human systems (e.g. past experiences which influence a person's response to stress, i.e. binge eating). Roy & Andrews (1999) note that adaptation occurs when one responds positively to stimuli, thus promoting integrity, which leads to health. An awareness of the influence of these types of stimuli may not be realized by the individual or their effects may not be

clearly understood. An example of residual stimuli in the present study may be previous perceptions of one's body image and self-esteem.

Roy (Roy & Andrews, 1999) identifies four subsystems which may influence the obese individual's response after gastric bypass surgery. The four subsystems are as follow:

1. Cognator subsystem,
2. Regulator subsystem,
3. Stabilizer control process, and
4. Innovator control process.

The cognator subsystem utilizes the cognitive-emotive channels of information processing, learning, judgment, and emotion. These mechanisms assist an individual in seeking relief from anxiety and making affective appraisals, problem solve, and make decisions. The regulatory subsystem responds automatically through the neural, chemical, and endocrine systems. Stimuli from the internal and external environment act as input, thereby producing an automatic, unconscious response and thereby helping to produce perceptions (Roy & Andrews, 1999). As the individual learns to rely on newly learned behaviors, i.e. exercising or drinking water when he or she feels anxious, the dependency on high calorie foods becomes less important. This assists that individual in making decisions concerning the relief of anxiety.

The stabilizer control process assist in establishing structures, values, and daily activities to meet societal needs. It has been found among the obese that they are less likely to be married, have less education, have lower household incomes, suffer higher

rates of poverty and have lower levels of self-esteem than non-obese individuals (Gortmaker, et al., 1993).

The innovator control process pertains to persons functioning within a group and provides for processes of growth and change (Roy & Andrews, 1999). These subsystems assist individuals in developing new goals, and in person and environment transformation (Roy & Andrews, 1999). As the participants lose weight after gastric bypass surgery, some begin to rethink their old ways of thinking and self-esteem is expected to increase and preoccupation with body image to decrease.

This study focused on an examination of the morbidly obese individual's ability to adapt on three key variables of depression, perceived body image and self-esteem before and after gastric bypass during a period of rapid weight loss. The awareness of the influence of these factors may not be realized by the individual immediately and their effects may not be totally understood.

#### Assumptions

Assumptions for this study based on Roy's Theory (1999) are as follow:

1. Integration of human beings and their environment result in adaptation.
2. Awareness of self and environment is rooted in thinking and feeling.
3. Thinking and feeling mediate human behavior.
4. Obesity causes the individual to suffer from some degree of depression, altered body image, and lower self-esteem.



## Research Questions

The following research questions were formulated for this investigation:

1. Are morbidly obese individuals less depressed after undergoing a gastric bypass procedure?
2. Are morbidly obese individuals more satisfied with their body image after undergoing a gastric bypass procedure?
3. Do morbidly obese individuals have increased levels of self-esteem after undergoing a gastric bypass procedure?

## Definition of Terms

The following terms were conceptually and operationally defined for this investigation:

1. *Morbid obesity* refers to persons who are 50 to 100% or 100 pounds above their ideal body weight or individuals with a body mass index (BMI) greater than 40 kg/m<sup>2</sup>. BMI is a number which is calculated using the person's weight and height. BMI does not measure body fat, but rather indicates the fatness of an adult. BMI correlates to actual body fat and is an alternative for measurement of actual body fat. BMI is useful in screening for weight categories which can lead to health problems and co-morbid conditions (CDC, 2004).
2. *Bariatric Surgery* is surgery performed on the stomach and/or the intestines designed to assist the morbidly obese individuals to lose weight. In this study bariatric surgery is operationalized as the Roux-en-Y surgical procedure which

creates a small stomach pouch (1 to 2 ounces) with anastomosis to the jejunum (Latifi, Kellum, DeMaria, & Sugerman, 2000).

3. *Depression* consists of mood disturbance characterized by feelings of sadness, despair, and discouragement resulting from some personal loss or tragedy; an abnormal emotional state characterized by exaggerated feelings of sadness, melancholy, dejection, worthlessness and hopelessness which are inappropriate and out of proportion to reality. These symptoms must be present for at least fourteen consecutive days, nearly every day, and represent a change in one's previous functioning. At least one symptom must be either depressed mood or loss of interest or pleasure (American Psychiatric Association, 2000). In this study depression will be assessed using the Beck Depression Inventory (BDI) (Beck & Steer, 1987).
4. *Body Image* refers to perceptions with body shape, self-depreciation due to physical aspects and feelings about one's body (Cooper, Taylor, Cooper, and Fairburn, 1987). Body Image will be operationally defined using the Body Shape Questionnaire (Cooper et al., 1987).
5. *Self-Esteem* is pride in oneself, or a confidence and satisfaction with oneself (Rosenberg, 1965). In this study self-esteem will be assessed using the Rosenberg Self Esteem Scale which measures one's perception with body shape, and self-depreciation due to physical aspects and feelings of being fat (Rosenberg, 1965).

## Limitations

Limitations of this study are as follow:

1. The study was conducted in one physician's private medical practice. Therefore, the results may not be generalizable to a similar population.
2. The length of the study may not provide sufficient time to determine the full impact of reaching a "normal body weight" on depression, body image, and self-esteem.

## Summary

This chapter provided an overview of some of the psychosocial issues associated with obese individuals. Psychosocial responses to obesity can include disturbances concerning depression, body image, and self-esteem. Therefore, a need existed to explore obese individuals self-report of changes occurring in their depression, body image, and self-esteem before and after gastric bypass. This study investigated whether changes occurred in depression, body image, and self-esteem at 30 and 60 days post-operatively following gastric bypass.

## CHAPTER II

### REVIEW OF LITERATURE

This chapter presents a review of published literature concerning depression, body image, and self-esteem in morbidly obese individuals. Electronic bibliographic databases were examined using computerized keyword searches focused on the factors of importance in this issue including depression, body image, self-esteem, morbid obesity, stomach altering surgery, and gastric bypass and vertical banding surgery. Databases searched included Cumulative Index to Nursing and Allied Health (CINAHL), Index Medicus Online (Medline), Medline (Pubmed), PsychINFO, published dissertations, government documents, and Science Direct. Hand searches of all reference lists and review of print resources were completed to identify publications for inclusion in this review.

Van Hout, Oudheusden, and Van Heck (2004) stated that obese individuals have many reasons for choosing to have obesity surgery. Most realize that the surgery is a tool to assist them in being able to change their eating and exercise habits in order to reduce their weight and co-morbid medical conditions.

Morbidly obese individuals have been the targets of stigmatization and discrimination in their social and work situations for a lengthy period of time (Buchwald, 1999; Vallis, Butler, & Percy, 2001). Their psychosocial problems have been attributed to their character and lack of willpower rather than to the medical condition of obesity (Vallis et. al, 2001).

Literature reveals a controversy as to whether or not psychopathology exists more often in the obese population than in the non-overweight population (Segal, Libanori, & Azevedo, 2002; Maddi, Khoshaba, & Persico, 1997). The reason for this inconsistency seems to be a lack of standardized measurement for psychosocial functioning (Van Hout, Leibbrandt, & Jakimowicz, 2003). Morbid obesity is associated with severe psychosocial co-morbid conditions of depression, distorted body image, and low self-esteem (Hsu, Benotti, & Dwyer, 1998; Martin, 1999; Deitel, 2001). Some researchers have estimated depression which meets the DSM-criteria for psychiatric disorders to be present in 40% to 50% of obese patients (Glinski, Wetzler, & Goodman, 2001; Guisado & Vaz, 2003). Follow-up studies indicate that the co-morbid conditions reverse following gastric restrictive surgery (Maddi, Fox, & Khoshaba, 2001; Shai, Henkin, & Weitzman, 2003).

Research studies and scholarly publications chosen for this review include those from 1965, when bariatric surgery became a viable treatment option for morbid obesity, to the present. Much literature has been published concerning obesity, quality of life for the obese individual, and the need for surgical intervention for morbid obesity. However, the focus of this review was the individual's self-reported experience of obesity, in relation to depression, body image, and self-esteem when gastric bypass surgery has been chosen as an intervention to restore the individual to normal weight. This chapter provided a basis for this study by reviewing the existing literature on the topics of obesity, depression, body image, and self-esteem as related to the morbidly obese client.

## Obesity

Severe obesity is defined as a lifelong, progressive disease of fat storage manifested by medical, physical, psychological, social, and economic co-morbidities (Cowan, Cowan, Hiler, Smalley, & Schnert, 1992). Obesity and overweight are serious chronic conditions that affect nearly one-third of the adult American population (approximately 60 million individuals). Of these 60 million individuals, approximately 4.8 million are morbidly obese. Morbidly obese persons are at least 100 pounds above their ideal body weight and have a body mass index greater than 40 kg/m<sup>2</sup> (CDC, 2004). The number of overweight and obese individuals has continued to climb for the past four decades and despite some recognition of the problem, obesity shows no evidence of declining. Obesity is a complex, multi-factorial disease that develops from the interaction of genetic, metabolic, social, behavioral, and cultural factors. Obesity is a prevalent chronic disease (Flancbaum & Choban, 1998) and is considered one of the most serious public health problems in the United States (Devlin, Yanocski, & Wilson, 2000; United States Health and Human Services, 2000). According to the American Obesity Association (2002) and The World Health Organization (2002), obesity is the second leading cause of unnecessary deaths in the U.S.

Healthy People 2010 (USDHHS, 2000) has designated overweight and obesity as a topic worthy of research, since obesity affects the quality of life and longevity of people. Overweight and obesity have been associated with co-morbidities such as heart disease, depression, diabetes mellitus type II, stroke, arthritis, sleep apnea, and certain types of cancer. Each year millions of people try to alter their lifestyles to incorporate

healthier eating, exercise programs, and overall weight reduction. Most of these individuals are not successful over a long period of time. Most find themselves regaining lost weight and becoming frustrated with their lack of willpower. Obesity has been associated with medical, psychosocial, and social consequences. From 1991 to 1998 obesity increased in every state in the U.S., both genders, and across all races, ethnicities, age groups, and educational levels (Mokdad, Serdula, Dietz, Bowman, Marks, & Kaplan, 1999).

In 1991, Hacker and Deitel examined the etiology of obesity from biological, socio-cultural and psychological perspectives. They explored several theories concerning obesity including caloric intake versus caloric expenditure, genetics, basal metabolic rate as a determinant for body mass, set-point theory of obesity (predetermined body weight), endocrine levels, personality and psychiatric factors. Hacker and Deitel (1991) also found that many healthcare professionals believed that obesity results from the lack of willpower, over-indulgence, and laziness. These perceptions are formed in error and not supported in their study. More often overweight and obesity results from a genetically predetermined body weight set-point which exerts control over body weight related to metabolic rate. This set-point may be influenced by learned eating behaviors, perception of body image, socioeconomic status and the availability of food. This mechanism is complex.

Hacker and Deitel (1991) went on to say that obesity was the leading cause of malnutrition in the United States and that the co-morbid conditions of hypertension, diabetes mellitus type II, and heart disease accounted for immeasurable costs of life,

health care dollars, and a diminished quality of life. There is a great need to understand the causes of overweight and morbidly obese population.

### Psychological Factors Associated with Obesity

Medical risks associated with obesity have been well established, yet the relationship between psychosocial functioning and obesity is cloudy. There have been several large studies which indicate that there is no greater psychopathology in the obese population than in the normal-weight population (Moore, Standard, & Srole, 1996; Hill & Williams, 1998; Stunkard & Wadden, 1992). Wadden, Sarwer, Womble, Foster, McGuckin, and Shimmel, (2001) found that only a small percentage of extremely obese patients seeking bariatric surgery present with significant psychopathology.

A scant number of studies have demonstrated the opposite results (Sullivan, Karlsson, Sjöström, Backman, Bengtsson, Bouchard, et al., 1993; Goldsmith, Anger-Friedfeld, Beren, Rudolph, Boeck, & Arronne, 1992). Their results indicate that obese patients demonstrate a significant level of depression, anxiety, distorted body image, and low self-esteem. Therefore, it should be expected that some level of depression, distorted body image, and low self-esteem will be found in those seeking gastric bypass surgery. Assuming that they do exist prior to surgery, the question becomes: Does the patient's perception of these states change after the surgery, once significant weight loss has begun?

### *Depression*

The National Institute of Mental Health (2006) defines depression as "a serious medical illness, it's not something that one has in his head. It's more than just a feeling



‘down in the dumps’ or ‘blue’ for a few days. A depressive disorder involves the body, mood, and thoughts. It affects the way a person eats and sleeps, the way one feels about self, and the way one thinks about things”. Depression occurs when an individual experiences a discrete episode of persistent and pervasive depressed mood or loss of interest or pleasure, of at least two weeks’ duration, accompanied by impairment in daily functioning. These symptoms include: persistent sad and anxious mood, irritability, hopelessness, helplessness, feelings of guilt, worthlessness, diminished interest in or pleasure in almost all activities; alterations in eating, sleeping, activity level, and libido, difficulty with concentration, memory, and making decisions, and recurrent thoughts of death or self-harm (American Psychiatric Association, 2000). Moore and Jefferson (2004) describe depression as feeling sad, blue, unhappy, miserable, or down in the dumps. Depression is ranked in terms of severity, mild to severe. Low self-esteem is common with depression.

The link between depression and obesity has been studied by a number of researchers, including Onyike, Crum, Lee, Lyketsos, and Eaton (2003), Fabricatore, Wadden, Sarwer, and Myles (2005), Mampleku, Komesiou, Bissias, Papkonstantinou, and Melissas (2005), and Kopec-Shrader, Gertler, Ramsey-Stewart, and Beaumont (1994). In these studies the researchers identified links between obesity and depression and determined that there was a need to screen and follow individuals having gastric restrictive surgery both preoperatively and postoperatively. Onyike et al. (2003) performed a secondary analysis of the data collected from the Third National Health and Nutritional Examination Survey (NHANES III). They investigated the severity of obesity

as a potential discriminator between obese persons with depression and those without depression and focused on a data subset of 8,410 randomly drawn patients. This study operationally defined obesity as a body mass index (weight (kg)/height (m)<sup>2</sup>) of 30 or higher. Depression was defined by the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders*, Third Edition (DSM-III). This non experimental correlation study revealed that the relationship between obesity and depression is dependent on the degree of obesity. Individuals with a BMI > 40 were found to have a significantly greater degree of depression than normal weight persons.

The study classified participants into three classes according to BMI. Class 1 (BMI 30-34.9), Class 2 (BMI 35-39.9), and Class 3 (BMI > 40). Class 1 and 2 revealed no significantly higher degree of depression than found in normal weight persons. Higher levels of depression were found in Class 3, than in Classes 1 or 2. Higher levels of depression were found in more women than men.

This study had some strengths: 1) the sample was large and drawn from households across the United States which minimized selection bias; 2) the structured psychiatric interview provided data equivalent to a DSM-IV diagnosis for depression; 3) data were stratified by gender allowing the researchers to look for gender related patterns; 4) the researchers could examine the association between obesity and depression within subclasses of obesity; and 5) this was the only known study to assess the impact on the association between two conditions of using different time frames to ascertain depression (Onyike, et al., 2003).

Limitations were identified: 1) since a cross-sectional design was used a temporal relation between obesity and depression could not be inferred; 2) data were only available from participants aged 15-39; 3) the male sample was too small to test for an independent association between obesity and depression; and 4) lay interviewers were not trained to probe for answers, thus validity could be challenged (Onyike, et al., 2003).

Fabricatore et al. (2005) conducted a pre-experimental repeated measures longitudinal study to investigate whether the presence of depressive symptoms, measured by the Beck Depression Inventory, in obese people is related to increased specific eating psychopathology and decreased self-esteem. The sample was taken from 306 consecutively enrolled patients seeking bariatric surgery in a large university hospital. The study revealed that those individuals with a mean BMI of 52.7 kg/m<sup>2</sup> ( $n = 59$ ) reported greater depression and lower self-esteem than less obese individuals (mean BMI 36.0 kg/m<sup>2</sup>) ( $n = 105$ ). These results are supportive of those found by Onyike et al. (2003). The study also indicated that individuals with a significant amount of depression had impairments in quality of life with regards to physical functioning, physical role limitations, and bodily pain. As quality of life scores decreased, and BMI increased, depression scores on the Beck Depression Inventory (BDI) increased. Limitations of the study include self-report inventories rather than structured clinical interviews to assess mood disturbances and the use of a preexperimental design which produces severe questions about the internal validity. The results of the study do indicate an understanding of the relation between obesity and depression.

Mamplékou et al. (2005) conducted a pre-experimental repeated measures longitudinal study to study the psychological, emotional, and quality of life aspects of obese persons during a two year period following gastric banding. A sample of 59 patients (45 females and 14 males) were asked to complete questionnaires preoperatively and then complete questionnaires two years postoperatively following vertical banded gastroplasty. Comparisons were made between weight loss, alterations in psychological conditions, and quality of life postoperatively as measured by the SCL-90R questionnaire, which evaluates physical discomfort and symptomatic behavior and the BAROS questionnaire which evaluates the quality of life. Women were found to have a higher degree of depression than the men preoperatively ( $p=0.001$ ), and their postoperative emotional improvement was more marked ( $p=0.008$ ). Sensitivity to interpersonal relations and anxiety was present both preoperatively and postoperatively. It was related to feelings of long-term criticism in relations and from family members. By the end of two years, all patients showed that the more weight that was shed improved their feelings concerning self. The quality of life (physical, professional, social, and sexual) also improved by the end of two years. The improvement correlated with the participant's decrease in BMI (rapid weight loss), improvement in the way the participant felt, and positive experiences in areas of their lives which they once considered closed to them. At the end of the two year follow-up, the participants were considered helped emotionally and psychosocially by having weight reduction surgery. Continued follow-up with these participants will be necessary to determine whether the results are temporary or permanent.

This study had a stable population; only one participant was not available to complete the follow-up questionnaires two years after the initial surgery. The instruments used in the study had good reliability and validity. When self-report by the participant is used to gather data, the researcher must remember that answers may over or under reported, thus leading to inaccurate data.

Kopec-Shrader et al. (1994), conducted a pre-experimental repeated measures longitudinal study in which 60 morbidly obese patients who received a vertical banded gastroplasty were followed for nine years. Preoperative assessment was completed on 60 individuals and long term follow up on was completed on 45 of the original participants. The study covered demographic data at the time of surgery, i.e. marital status, occupation; clinical and life history prior to surgery, i.e. history of obesity, weight at time of surgery, and significant life events; and clinical and significant life events after surgery, i.e. emotional problems, alcohol or drug problems, lowest post-surgical weight, and quality of social life as compared to before surgery. The study revealed that 40% (18 participants) of the participants lost weight and maintained their weight close to their lowest BMI. Twenty-seven participants (60%) had a BMI greater than their beginning BMI. During the preoperative assessment procedure, five participants were identified as having significant depression and were referred for psychiatric evaluations and treatment. Despite regaining weight by some participants, 84% were satisfied with the surgical treatment, 44% reported an improved social life. Only 9% of participants reported that their social life had declined. This study showed that results of vertical gastric banding surgery are unpredictable. Patients initially lose weight but all are not successful in

maintaining that weight loss over time. No significant psychopathology was noted in individuals seeking bariatric surgery. However, it may be necessary to develop means to assess whether a participant will be compliant with post-operative dietary changes and exercise programs in order to maintain weight loss.

In an earlier pre-experimental repeated measures longitudinal study, Dubovsky, Haddenhorst, Murphy, Liechty, and Coyle (1986) interviewed 52 conveniently selected morbidly obese patients, aged 18-57 years, prior to having gastroplasty and again at 26 months postoperatively. There was a significant finding between the degree of clinically estimated preoperative depression and the percentage of weight loss following gastroplasty ( $p < .05$ ). Depression before surgery was the strongest indicator of weight loss postoperatively. Those expressing less depression preoperatively lost less weight and expressed more postoperative depression than the more depressed patients preoperatively. Depression was measured “using an arbitrary scale of 0-no depression; 1-occasional depressive symptoms; 2- frequent depressive symptoms with periods of normal mood; 3-constant depression; and 4-constant severe depression with ongoing thoughts of suicide” (p. 186). Dubovsky et al. suggests that severe depression need not be resolved prior to gastroplasty for the morbidly obese client. Patients who demonstrated a greater degree of depression in the preoperative period lost a greater percentage of their body weight than those who were less depressed. Although instruments used in this study lack some reliability and validity the study revealed that some participants who had suicidal thoughts prior to surgery had no such thoughts postoperatively. The authors reported that

one successful treatment for depression in the morbidly obese population may be the gastric restrictive surgery itself.

However, there were a few issues in this study which need to be considered. The instruments used were not standardized self-administered or observational instrument, and an experimental design was not used to confirm preoperative assessments, the interviewer may not have been as objective as they needed to be. Some participants may have not been as truthful as they could have been. They may have provided answers that they thought would help them have the gastric restrictive surgery they were seeking. Six of the participants were unavailable for follow-up. These participants may have added enough data to change some of the study results.

The Beck Depression Inventory (BDI) has frequently been used to screen depression preoperatively and postoperatively in patients seeking weight loss surgery. A pre-experimental repeated measures longitudinal study by Dixon, Dixon, and O'Brien (2003), administered the BDI questionnaires to a total of 487 conveniently selected consecutively treated patients before gastric restrictive weight-loss surgery. The average BMI was 44.3 kg. The study reported that participants scored an average of 17.7 ( $SD = 9.5$ ) on the BDI. This score was indicative of moderate depression. A total of 262 patients also completed the BDI one year after surgery. The post scores in the sample of 262 were paired with the pre scores and a significant decrease in the BDI from 17.7 ( $SD=9.5$ ) to 7.8 ( $SD=6.5$ ) was seen at one year postoperatively, and indicated no significant depression present following gastric bypass surgery. Severely obese, younger women with a poor body image were at the greatest risk for depression. However, depression lessened with

weight loss. This finding supported the hypothesis that severe obesity is a cause and aggravates depression.

The study had limitations in that the participants were seeking a surgical solution to their severe obesity. Self-report questionnaires may have been over or under reported in an attempt to secure a place in the surgical weight loss study. This problem could be partially addressed by the inclusion of a comparison interviewer-rated scale such as the Hamilton Depression Scale with the Beck Depression Inventory in future studies (Dixon et al, 2003).

Dymek, le Grange, Neven, and Alverdy (2002) administered the SF-36, the BDI, the Impact of Weight on Quality of Life-Lite Questionnaire (IWQOL-Lite), and the Bariatric Analysis and Reporting Outcome System (BAROS) to a group of patients awaiting gastric bypass surgery. The study used a nonexperimental cross-sectional design. The preoperative group (T1;  $n = 80$ ) was compared with three different groups of patients at three different postoperative points in time: 2 to 4 weeks postoperatively (T2;  $n = 60$ ), 6 months postoperatively (T3;  $n = 93$ ), and 1 year postoperatively (T4;  $n = 83$ ). There were no statistically significant differences in the demographic data or the preoperative BMI ( $>40 \text{ kg/m}^2$ , or  $> 35 \text{ kg/m}^2$  with significant co-morbidities) between the groups. Statistically significant improvements ( $p < 0.001$ ) were demonstrated on the mental health subscales of the SF-36 when the preoperative and 2 to 4 weeks postoperative groups were compared. In T1, 57 of 80 participants (71%), T2, 26 of 60 (44%), T3, 12 of 93 (13%); and T4, 12 of 83 (15%) were noted to be depressed. It is



inferred that within the first year after gastric bypass major life changes occur and depression lessens.

Werrij, Mulkens, Hospers, and Jansen (2005), found the BDI useful in identifying depressive symptoms in overweight and obese (BMI > 25) individuals seeking weight reduction. It was hypothesized that that obese participants with depressive symptoms are more concerned with body shape, weight, eating, have a more restrained eating style, lower self-esteem and a higher BMI than non-depressed overweight and obese participants. This study investigated whether the presence of depressive symptoms in overweight and obese individuals is related to increased eating psychopathology and decreased self-esteem. Questionnaires were mailed to a convenience sample of ( $n = 166$ ) participants seeking weight reduction in the depressed group and  $n = 83$  in the non-depressed group. BMI was > 25 in the overweight and obese group seeking weight loss. Eating psychopathology was measured using the Eating Disorder Examination-Questionnaire; depression was measured using the Beck Depression Inventory (BDI); and self-esteem was measured using the Rosenberg Self-Esteem Scale (RSES). Symptomatic participants in the overweight and obese group had a mean score of 17.5 (mild to moderate depression) on the BDI while the non-depressed participants had a mean score of 4.7 ( $P < 0.05$ ). Depressed participants had lower self-esteem ( $P$ -values < 0.03). Thus, it was concluded that one in two participants in the overweight and obese group exhibited some symptoms of depression. Participants in the symptomatic group reported more binge eating behaviors than the non-depressed group.

This study has limitations concerning psychopathology in the obese population. Self-report of binge eating behaviors may have been underestimated or unreliable. It is difficult for a healthcare worker to draw conclusions from this information concerning the reason for depression and binge eating.

### *Body Image*

Many authorities agree that body image is a complex multidimensional construct involving perception, attitude, and behavior. According to Klopp, (1990) “ body image is a phenomenon based on perceptual information about the structure and or function of the body that is tempered by social interaction, events that actually or potentially alter structure and or function in any way and which is altered by experience and time” (Klopp, 1990 p. 100). Although this study dealt with participants who had an ostomy, the definition on body image is applicable to obese persons.

Research has shown that weight loss is one of the most widely practiced interventions used to improve body image. People seek to change their appearance in order to experience a more positive self image. Most improvement in outward appearance is short-lived, when achieved through dieting alone, since people tend to regain the weight they have lost (Valtolina, 1998). In a review of literature on obesity, Kellum, Demaria, and Sugerman (1998), found that most of the morbidly obese patients enrolled in a weight reduction program regained all the weight they lost, as well as additional excess weight within a two year period, thus adding to an impaired self image.

In a pre-experimental repeated measures longitudinal study Foster, Wadden, and Vogt (1997) studied body image in 59 obese females. Body image was measured by the

Multidimensional Body-Self Relationship Questionnaire, Appearance Evaluation and Body Areas Satisfaction Scale. These instruments have documented test-retest reliability and internal consistency. The instruments were administered before the treatment began, 24 weeks after treatment started, and post-treatment. Treatment consisted of very low calorie diet plus one of 4 other components: no exercise, aerobic exercise, strength training, or both strength training and aerobic exercise. Attrition rate was 13 of 59 or 22%. Baseline BMI was 36.3 and mean age was 40 years. Average weight loss at 24 weeks was 19.4 kg and a slight regain of 3 kg between 24 to 48 weeks.

As weight loss continued, body image improved. Body image was found to be improved at 24 weeks, with a slight decline by 48 weeks, subsequent to slight weight increase.

The researchers concluded that although weight loss did effect change in body image, these changes did not appear to be strongly related. The amount of weight loss did not appear to be a good indicator of body image change. No matter the weight loss at 24 weeks, the participants showed an improvement in body image. Early and more frequent assessments of body image were recommended in order to capture the changes in body image.

This study was limited by including only participants presenting at a university hospital clinic and seeking weight reduction. No control group was used in the study. An attrition rate of 22% was significant and may have impacted results of the study. This study included 2 sessions of cognitive-behavioral treatment for body image. This part of

the treatment program may have enhanced the body image improvement, rather than the weight loss.

Stunkard and Mendelson (1967) conducted a qualitative study of 74 randomly selected obese patients from a medical and psychiatric clinic within a large university health science center. They concluded that when body image is distorted there is an overwhelming preoccupation with one's obesity and often the obese person views the world in terms of body weight. The obese person may view him or herself as grotesque and loathsome and think that others view his or her person with horror and contempt. Other attributes, such as talent, wealth, or intelligence become secondary to obesity. The entire being centers on being obese.

Body image is important to many individuals and has significant implications. The pre-experimental repeated measures longitudinal study of 47 patients by Rand and MacGregor (1991) found that persons who lost 99 pounds (45 kg) and maintained the weight loss over a three year period would prefer having a physical disability to being obese. All patients stated that they would rather be a normal weight person than an obese multi-millionaire.

Negative body image is sometimes referred to as a body image distortion. Stunkard and Wadden (1992) reported in a review of literature on psychological aspects in obesity that body image distortion is not universal among obese individuals. After having weight loss surgery the patient's body image improved 50 to 70%. These patients reported less avoidance behaviors (e.g., avoiding wearing shorts, and swimming). They also reported that body image distortions appeared to result from internalized parental

and peer criticisms in childhood and adolescence. As a result of obesity these patients received validation of a distorted body image from the discrimination they encountered from schools, social interactions, and places of employment. However, the meta-analysis did not report that all obese individuals have negative body images. Therefore, mixed findings with regard to accuracy of reported body image exist in the literature.

Some obese individuals have such a negative body image that they cannot accurately determine their own body size and shape. Gardner, Martinez, Espinoza, and Gallegos (1988), attempted to confirm body-size estimation in 42 obese subjects and 42 non-obese subjects using a video camera and TV monitor. Subjects were to manipulate the width of their body image on TV, where they judged the accuracy of their TV image which was presented as normal, too heavy, or too thin. Subjects rated their full body, specific body regions, and two inanimate control objects. The obese subjects overestimated judgment of their body size to a greater extent than did the normal weight subjects. This finding is consistent with other studies, in which the obese subjects overestimated body size (Gardner, Garfinkel, & Moldofsky, 1978). There is substantial support in the literature that obese individuals have some sort of body image disturbance compared to normal weight persons.

Studies indicate that following gastric bypass one's body image normalizes and body image improves. Adami, Meneghelli, and Scoponaro (1999) performed a pre-experimental repeated measures longitudinal study utilizing 30 obese clients requesting bariatric surgery and 30 never-obese clients who served as the control group. Participants were administered the Body Shape Questionnaire (BSQ), the Eating Disorders Inventory

Body Dissatisfaction Questionnaire (BD), and the Body Attitude Questionnaire (BA). The experimental group had the questionnaires re-administered 3 years after their surgery. Prior to surgery the BSQ was  $123 \pm 7$  for the experimental group and  $75 \pm 7$  for the control group; year 3 was  $101 \pm 6$ . Prior to surgery the BD for the experimental group was  $16.1 \pm 1.0$  and  $9.3 \pm 1.2$  for the control group; year 3 was  $10.6 \pm 1.4$ . Prior to surgery the BA for the experimental group was  $15.3 \pm 0.6$  and  $18.0 \pm 0.5$  for the control group; year 3 was  $17.0 \pm 0.6$ . The 3 variables demonstrated significance at  $p < 0.001$  vs. control group. Adami et al. (1999) revealed impairment of several aspects of body image in the surgical participants prior to surgery when compared to the control group. The participants had surgery, normalized their weight within one year and maintained the weight loss for three years following surgery. It was reported that the surgical participants maintained a higher body weight than the control group, yet there was a dramatic change in perceived body image in the surgical group. Body dissatisfaction scores, feelings of fatness, and feelings of unattractiveness decreased in the surgical group and almost matched the control group. Other aspects of body image, such as preoccupation with body weight, fear of regaining lost weight, improved but did not reach the level of the control group. It is noted that the research indicated that within the post-surgical group, body image was found to differ in relation to age of onset, and those with adult onset of obesity rated similar to the never-obese group. The authors noted that weight loss alone may not always be sufficient to change body image perception when obesity occurs during childhood.

Cash (1993) in a pre-experimental repeated measures longitudinal study repeatedly assessed body image in 88 obese persons before and after weight loss. Thirty-six participants were available for post weight reduction assessment and 20 were available for maintenance assessments. The average pre-treatment BMI was 35. The participants were provided with 600-800 calories per day via a liquid drink. Average weight loss was 48 pounds, however the drop-out rate was 64%. Body image was assessed before and after the treatment with the Multidimensional Body-Self Relationship Questionnaire, and the Body Image Assessment. Those completing the study averaged a 24% reduction in their weight and had marked improvement in body image. Participants indicated a strong desire to remain thin after the weight loss. However, this study has some limitations: 1) due to the high attrition rate it is difficult to generalize the findings; 2) body image was not assessed during weight loss, therefore the course of improvement could not be tracked.

### *Self-Esteem*

Self-esteem has several components. Self-esteem is the pride one has in self, or a confidence and satisfaction with self (Rosenberg, 1965). Rosenberg (1979) believed that self-esteem is only one component of the self-concept, which he defines as a "totality of the individual's thoughts and feelings with reference to himself as an object." Self-esteem refers to an individual's sense of worth, or the extent to which a person values, approves of, appreciates, or likes him or herself. Rosenberg (1965), describes self-esteem as a favorable or unfavorable attitude toward the self (p. 15); a positive or negative orientation toward oneself. Blascovich and Tomaka (1991) determined that self-esteem is a widely

used concept. Self-esteem is considered the evaluative component of the self-concept, which includes cognitive and behavioral aspects (Blascovich & Tomaka, 1991). Most often the concept refers to a global sense of self-worth.

Grilo, Wilfley, Brownell, and Rodin (1994), examined 40 obese females who presented consecutively for outpatient weight management treatment at a large university clinic in the northeastern United States. The study included a detailed psychosocial interview, a teasing history, obtained specifics regarding age of onset of excessive weight, and the course of the overweight. The Body Shape Questionnaire, Multidimensional Body-Self Relations Questionnaire, and the Rosenberg Self-Esteem Questionnaires were administered. The measure of being teased about body size at an early age was not significantly correlated with decreased self-esteem. Self-esteem was significantly correlated with appearance evaluation ( $r = .63, p < 0.001$ ) and negatively correlated with body dissatisfaction ( $r = -.50, p = < .01$ ). Self-esteem remained significantly correlated with appearance evaluation and body dissatisfaction even after partialing-out the effects of age (partial  $r = .59, p < .001$ , partial  $r = -.46, p < .004$ , respectively). Participants with early onset obesity reported greater body dissatisfaction than did participants with adult onset obesity.

According to Grilo, et al. (1994), being teased about weight and body shape at an early age may represent a risk factor for a negative body image and lower self-esteem in adult years. These findings point to the importance of assessing teasing experiences, self-esteem issues, and body image in adult obese persons.



Matz, Faith, Foster, and Wadden (2002), assessed 79 obese females participating in a clinical trial for weight loss management. The participants had a mean age of  $45 \pm 9.5$  years, weight of  $96.6 \text{ kg} \pm 12.7 \text{ kg}$ , and a BMI of  $35.6 \pm 4.3$ . The participants were assessed using self-reports on the Body Shape Questionnaire, the Internalization subscale of the Sociocultural Attitudes Towards Appearance Questionnaire, the Rosenberg Self-Esteem Scale, and the Perception of Teasing Scale (POTS). This study concluded that self-esteem, adult teasing, and internalization of sociocultural attitudes predicted body image dissatisfaction. These results were similar to the earlier study by Grilo, et al., (1994) and highlights how self-esteem may influence body dissatisfaction.

There were some limitations to this study. The participants all sought weight loss in the clinical trial and may not represent all obese females. Recall of teasing events may be laced with bias. Some limitations occur when self-report methods are used to obtain data.

Dymek (2001) in a pre-experimental repeated measures longitudinal study assessed 32 morbidly obese patients who were to have gastric bypass surgery to improve their quality of life. Participants completed the SF-36, the Impact of Weight on Quality of Life-Lite Questionnaire, the Bariatric Analysis and Reporting Outcome System, BDI, and the Rosenberg Self-Esteem Scale. The participants were followed after surgery and interviewed at three weeks and six months postoperatively. Dymek describes improvement in six of eight SF-36 subscales: physical functioning, role-physical, bodily pain, vitality, social functioning and mental health. Dymek concluded that a dramatic and

continued reduction in depression occurred over time and a significant increase in self-esteem followed over the course of six months.

Van Gemert, Adang, Greve, and Soeters, (1998) suggested that the greater the percentage of weight loss, the greater the improvements in self-esteem and the better the psychological stability of the person. In his pre-experimental repeated measures longitudinal study, van Gemert (1998) psychologically assessed 62 participants before and after gastric restrictive surgery. The profiles revealed high levels of somatization, depression, and denial of emotional stress prior to surgery. At the eighty-five month follow-up after surgery, it was found that individuals showed significant improvement in all areas of psychological functioning except somatization. Self-esteem normalized (prior to surgery self-esteem was 24.4 on the Dutch Personality Inventory and 26.5 at follow-up), and it was found that the greater the percentage of weight lost, the better the psychological self-esteem of the individuals. Self-esteem was the only variable that correlated significantly with percentage excess weight loss ( $r^2 = 0.154$ ;  $P = 0.002$ ). Findings indicated that individuals with lower self-esteem preoperatively were the ones who achieved the greater weight loss postoperatively.

Studies examining self-esteem and body image in obese individuals have generally shown that an inverse relationship exists between self-esteem and body image; the lower the self-esteem the greater the degree of negative body image (Foster, Wadden, & Vogt, 1997; Grilo et al., 1994). Caucasians appear to be at greatest risk for developing lower self-esteem and greater negative body images given the stigma of being obese in the American society. American society places great emphasis on thinness, physical

fitness, and outward beauty in our society. The desire to increase self-esteem and decrease a negative body image may motivate many individuals to seek treatment for obesity.

### Summary

The chapter reviewed existing literature on the topics of obesity, depression, body image and self-esteem as related to the preoperative and postoperative experience of bariatric patients. Based on the review it was concluded that inconsistent findings were often the result of inconsistencies in methodology and firm conclusions regarding relationships between obesity, and the psychosocial issues of increased depression, distorted body image, and lowered self-esteem could not be drawn (Friedman & Brownell, 1995). Inconsistencies existed in different operational definitions, time frames for measuring variables, and instruments used to measure variables. A complex association between obesity and psychosocial issues does appear to exist. Morbidly obese individuals do constitute a heterogeneous population, making generalizations difficult to draw. There were some inconsistencies concerning whether the decrease in depression and increase in body image and self-esteem are sustained over a significant amount of time. Thus, the literature reviewed support the need for this study. The inconsistencies support the need for further research on depression, body image, and self-esteem for individuals seeking and having bariatric surgery.

Gaps in the literature have been identified after reviewing previously conducted research studies. The gaps are related to depression, low self-esteem, and a negative body image in the obese clients. Therefore, there is a need for further research on these

variables in relation as to whether or not significant weight loss surgery impacts depression, self-esteem, and body image in the obese client.

## CHAPTER III

### PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

The purpose of this study was to assess the effectiveness of gastric bypass surgery on the variables depression, body image and self-esteem in morbidly obese participants before and after gastric bypass surgery. A pre-experimental, repeated measures longitudinal design was used in this research. Data were collected from one cohort over three periods in time: 1) preoperatively (baseline); 2) postoperatively at thirty days; and 3) postoperatively at sixty days.

#### Setting

The setting for the study was a large metropolitan city in the southwestern United States. The sample was obtained from the private practice of one board certified general surgeon, with a subspecialty in bariatric surgery. Participants completed the questionnaires in the privacy of an office examination room.

#### Population and Sample

The target population for this study was obese persons seeking gastric bypass surgery to reduce body weight. The sample was conveniently and consecutively drawn from: 1) individuals, ages 18 and above; 2) having a BMI of 40 kg/m<sup>2</sup> or greater, 3) meeting eligibility criteria for gastric bypass, and 4) signing informed consent. A sample size of 30 was set based on a power of 0.80, an effect size of 0.70, and an alpha of 0.05.

The effect size was estimated from the results of a pilot study conducted with 14 participants that revealed significant results

### Protection of Human Subjects

Prior to data collection, approval from the Institutional Review Board(s) of Texas Woman's University was obtained. Informed consents were obtained from all participants. The researcher has access to the participant's medical records through the physician's office. In order to protect confidentiality of each participant, an identification number was assigned to each participant. The identification number was used in the research database for this study. Data entered into the computer system were coded with the participant identification numbers. Only the researcher has access to the identification numbers.

The researcher personally trained the office registered nurse in how to obtain informed consent and administer the research instruments. If the researcher was not present when the participant completed the demographic sheet and the initial research instruments, the forms were placed in a hole in the locked box kept in the nurse's station to insure confidentiality. Completed instruments were retrieved once a week by the researcher.

Information obtained by the researcher was stored in a locked box and placed in the locked file cabinet (only the researcher had access to the office). Any materials containing identification numbers, except informed consents, were destroyed after data collection was complete. Back-up discs were stored in a fireproof, locked box in the researcher's office. All data were presented in aggregate form containing no identification numbers.

## Instruments

Data for this study were collected using a demographic questionnaire, the Beck Depression Inventory, the Body Shape Questionnaire, and the Rosenberg Self-Esteem Scale. Each of these instruments are described below.

### *Demographic Questionnaire*

Demographic data were gathered using a Demographic Tool. Demographic data were collected on all participants to describe age, educational level, income, ethnicity, gender, height, weight, and body mass index (Appendix A).

### *Beck Depression Inventory (BDI)*

The Beck Depression Inventory (Beck & Steer, 1987) was used to measure depression (Appendix B). This instrument is a widely used measure of cognitive, affective, motivational, and somatic symptoms of depression. The BDI is a 21-item instrument, multiple choice format, instrument designed to measure the presence and degree of depression in adolescents and adults. Each item is rated on a four point scale (0-3) of intensity with a final score determined by adding each of the response ratings. Higher scores indicate a greater severity of depression; a score of 10 or less signifies no depression, 11-16 mild depression, 17-20 mild to moderate depression, 21-30 moderate depression, 31-40 severe depression, and a score over 40 extreme depression (Nielson and Williams, 1980). The BDI is a standardized tool with established reliability and validity (Beck, Steer, & Garbin, 1988; Groth-Marnat, 1990). Several studies have reported adequate internal consistency (coefficient alpha = .73-.92) and acceptable short-term test-retest reliability, and convergent validity (Beck, Steer, & Garbin, 1988). A

Cronbach  $\alpha$  was calculated for this study and resulted in a value of 0.894. The BDI is the most common instrument used in studies used in obese persons to measure the level of depression. It also reports moderately high correlations with psychiatric ratings of depression, which are considered the gold standard (Young, 1982). The BDI items fully represent six and partially represent two of the nine symptom groups from the DSM-III-R criteria for the diagnoses of a major depressive order. However, one item in the BDI did not function well in this study. Item number 19 was concerned with weight loss and all participants in this study lost more than fifteen pounds, therefore this item elevated the participant's scores slightly.

#### *Body Shape Questionnaire (BSQ)*

The BSQ will be used to measure body image (Appendix C). The BSQ (Cooper, Taylor, Cooper & Fairburn, 1987) a 34-item Likert type scale with six responses ranging from never to always and is used to measure the concerns one has with perceptions of body shape and self-depreciation due to physical aspects and feelings of being fat (Cooper, Taylor, Cooper, & Fairburn 1987). Rating of results is according to the total number of points, and reflects the level of concern for body image. A total score of 80 or less is considered to be normal, 81 to 110 reflects mild body image distortion, 111 to 140 moderate body distortion, and 141 and above severe body image distortion. The BSQ has been used as an attitudinal self-report measure of body dissatisfaction in several studies concerned with body image. This instrument has been used in multiple research settings with persons who suffer from eating disorders, are overweight, and with women who have body image disorders. A Cronbach  $\alpha$  was calculated for this study and resulted in a



value of 0.968. The BSQ has a demonstrated reliability and validity (Rosen, Jones, Ramirez, & Waxman, 1996).

#### *Rosenberg Self-Esteem Scale (RSES)*

The RSES was used to measure self-esteem (Appendix D). The RSES is a 10-item Likert type scale with items answered on a four point scale (0-3) from strongly agree to strongly disagree. It is used as a one dimensional measure of global self-esteem (cognitive and affective components), general self-worth, and attitudes of positive self-esteem. Ratings are summed to achieve a total score which ranges from 0-30. Scores between 15 and 25 are within normal range; scores below 15 suggest low self-esteem. Studies have demonstrated adequate internal consistency ( $\alpha = .73-.95$ ) and test-retest reliability coefficients above .85 (Rosenberg, 1979). A Cronbach  $\alpha$  was calculated for this study and resulted in a value of 0.896. The RSES has been used in a variety of psychiatric settings and with persons with eating disorders. The higher the total score, the higher the self-esteem.

#### Data Collection

Participants were recruited from one general surgeon's private practice by the researcher or the nurse research assistant. Those persons interested in participating in the study met one-on-one with the researcher to have the study explained and eligibility established. The researcher had access to the patient's office chart and authorization to discuss the participant's health status with the physician and research assistant.

Those who were interested, met eligibility requirements and sign an informed consent were included in the study. All consenting participants received the BDI, BSQ,

and RSES during their preoperative visit. At thirty and sixty day intervals following the gastric bypass procedure, the participants again received the BDI, BSQ, and RSES.

#### Treatment of Data

Demographic data were analyzed using appropriate descriptive statistics including frequencies, measures of central tendency, and measures of spread. Repeated measures of analysis of variance were used to determine if there were differences preoperatively and at 30 and 60 days postoperatively in the dependent variables depression, body image, and self-esteem.

#### Summary

In summary this pre-experimental repeated measures longitudinal study assessed the effectiveness of rapid weight loss to produce changes in depression, body image and self-esteem rapid weight loss on morbidly obese participants before and after gastric bypass. The setting for this study was in the private practice of one board certified general surgeon, with a subspecialty in bariatric surgery. Thirty participants seeking gastric bypass comprised the sample.

Prior to data collection, approval from the Institutional Review Board of Texas Woman's University was obtained. Participants meeting eligibility criteria were used in the study. Demographic data were obtained using a Demographic Questionnaire.

The Beck Depression Inventory, Body-Shape Questionnaire, and the Rosenberg Self-Esteem Scale were administered prior to the gastric bypass and at 30 and 60 days following gastric bypass. Data were analyzed using SPSS version 17.

## CHAPTER IV

### ANALYSIS OF DATA

A pre-experimental, repeated measures longitudinal design was used to assess the affects of gastric bypass on depression, body image, and self-esteem. Data were collected over three periods of time before and after gastric bypass surgery. A convenience sample of 31 patients seeking gastric bypass surgery was obtained. Eligible participants signed informed consent prior to surgery and then completed a demographic tool, the Beck Depression Inventory (BDI), the Body Shape Questionnaire (BSQ), and the Rosenberg Self-Esteem Scale (RSES) at the time gastric bypass surgery was scheduled. The participants were telephoned at 30 and 60 days postoperatively and the BDI, BSQ, and the RSES were again administered. Twenty seven participants completed all three surveys. Two participants were lost when they elected not to have the surgery and two were lost when they elected not to participate postoperatively. The BDI was used to assess depression, BSQ was used to measure body image and the RSES was used to measure self-esteem at baseline (prior to surgery), and 30 and 60 days postoperatively. Data were analyzed using SPSS version 17. This chapter provides a description of the sample and reports the findings of this study.

## Description of Sample

Thirty one participants met the eligibility criteria and consented to participate in the study. Twenty seven participants completed the study.

Table 1

*Frequencies of Selected Demographic Characteristics (N =27)*

| Variable         | Frequency | Percentage |
|------------------|-----------|------------|
| Gender           |           |            |
| Female           | 21        | 77.78      |
| Male             | 6         | 22.22      |
| Race/Ethnicity   |           |            |
| Caucasian        | 16        | 59.30      |
| African-American | 5         | 18.50      |
| Hispanic         | 6         | 22.20      |
| Marital Status   |           |            |
| Married          | 17        | 63.00      |
| Single           | 5         | 18.50      |
| Divorced         | 5         | 18.50      |
| Education        |           |            |
| High School      | 10        | 37.03      |
| Associate Degree | 10        | 37.03      |
| Bachelor Degree  | 4         | 14.81      |
| Graduate Degree  | 3         | 11.11      |
| Age              |           |            |
| 20-29            | 7         | 25.90      |
| 30-39            | 4         | 14.80      |
| 40-49            | 7         | 25.90      |
| 50-59            | 9         | 33.30      |
| 60 and over      | 5         | 18.50      |
| Employment       |           |            |
| Fulltime         | 23        | 85.20      |
| Part-time        | 4         | 14.80      |
| Health Coverage  |           |            |
| Private Pay      | 26        | 96.29      |
| None             | 1         | 0.30       |

Characteristics of the final sample are summarized in Tables 1 and 2. The majority of participants were white married females ranging in age from 26 to 71 years. Most had either a high school or community college degree and all but one had private pay insurance. Most of the participants had been overweight all of their lives. Baseline weight ranged from 205 pounds to 372 with a baseline Body Mass Index (BMI) of 33.83 to 51.8 kg/m<sup>2</sup>. Baseline mean weights and BMIs for the twenty-seven participants demonstrated a state of morbid obesity. The average weight and BMI decreased significantly for the participants 30 days after surgery and continued to decrease 60 days after surgery. Participants in this sample moved from being morbidly obese to obese in 60 days.

Table 2

*Means, Standard Deviations and Ranges for Selected Demographic Variables (N =27)*

| Variable               | Mean     | Standard Deviation | Range                 |
|------------------------|----------|--------------------|-----------------------|
| Age                    | 48.74    | 11.69              | 26 to 71              |
| Income                 | \$60,666 | \$49,105.85        | \$15,000 to \$268,000 |
| Baseline Weight        | 270.49   | 42.86              | 205 to 372            |
| Weight 30 Days Post-op | 233.11   | 34.89              | 185 to 310            |
| Weight 60 Days Post-op | 206.63   | 31.87              | 145 to 265            |
| BMI Baseline           | 43.28    | 5.25               | 33.83 to 54.9         |
| BMI at 30 Days Post-op | 37.67    | 4.45               | 29.4 to 45.8          |
| BMI at 60 Days Post-op | 37.33    | 4.56               | 24.27 to 39.2         |

### Findings of the Study

The findings of the data analysis are organized around three research questions. Data for three dependent measures were collected prior to surgery and at thirty and sixty days post surgery. There were no missing data. Three one-way repeated measures

ANOVAs were computed to compare scores of depression, body image and self-esteem across the three periods for the 27 participants. A Bonferroni adjustment factor was applied to the alpha value to protect against the commission of a Type I error. The adjusted alpha used for determining the significance of the three ANOVAs based on the Bonferroni calculation was .017.

### *Research Question One*

The first research question addressed was “Are morbidly obese individuals less depressed after undergoing a gastric bypass procedure?” The means and standard deviations are presented in Table 3 and reveal that the initial depression score indicated that the sample was suffering from severe depression. Subsequent scores measured after surgical intervention indicate a drop into the moderate depression range.

Table 3

#### *Means and Standard Deviations of Depression Scores for Participants Across Time*

| Time Period     | N  | Mean  | Standard Deviation |
|-----------------|----|-------|--------------------|
| BDI pre surgery | 27 | 34.59 | 8.63               |
| BDI at 30 days  | 27 | 29.93 | 4.81               |
| BDI at 60 days  | 27 | 25.96 | 3.25               |

Before examining the ANOVA results, a Mauchly’s test of sphericity was used to test the assumption that the population variance of the difference scores computed between any two scores is the same regardless of the two scores chosen. A violation of sphericity was discovered and the Wilk’s Lambda = .336,  $F(2,25) = 24.66$ ,  $p < .000$  was

used. The partial  $\eta^2$  of .66 indicates that this is a very large effect size. Pairwise comparisons revealed that significant differences existed between all pairs. Post hoc tests revealed significantly improved BDI scores between the preoperative and the 30 days and 60 days scores. This indicates that morbidly obese individuals were less depressed 30 days after undergoing a gastric bypass procedure and that depression decreased even more 60 days after the procedure.

### *Research Question Two*

The second research question addressed was “Are morbidly obese individuals more satisfied with their body image after undergoing a gastric bypass procedure?” The means and standard deviations are presented in Table 4 and reveal that the initial satisfaction with body image scores indicated a moderate body distortion for the participants. Subsequent scores measured at 30 and 60 days after surgery indicate that body image returned to a normal range after surgical intervention.

Table 4

#### *Means and Standard Deviations of Body Image Scores for Participants Across Time*

| Time Period     | N  | Mean   | Standard Deviation |
|-----------------|----|--------|--------------------|
| BSQ pre surgery | 27 | 118.63 | 35.46              |
| BSQ at 30 days  | 27 | 79.04  | 28.38              |
| BSQ at 60 days  | 27 | 53.56  | 19.07              |

Mauchly’s test for sphericity revealed a violation and a Wilk’s Lambda was used to examine test results. The Wilk’s [ .162,  $F(2,25) = 64.61$ ,  $p < .000$ ] indicated a

significant difference in body image over time. A partial  $\eta^2$  of .84 indicates that this is a very large effect size. Post hoc pairwise comparisons discovered and revealed significantly improved BSQ scores between the preoperative and the 30 and 60 day postoperative scores. This indicates that morbidly obese individuals had a return to normal body image 30 days after undergoing a gastric bypass procedure and that body image continued to improve even more 60 days after the procedure.

### *Research Question Three*

The third research question was “Do morbidly obese individuals have increased levels of self-esteem after undergoing a gastric bypass procedure?” The means and standard deviations are presented in Table 5 and baseline scores indicated the participants displayed on average a low normal self-esteem. Self-esteem increased at both 30 and 60 days post surgery.

Table 5

#### *Means and Standard Deviations of Self-Esteem Scores for Participants Across Time*

| Time Period      | N  | Mean  | Standard Deviation |
|------------------|----|-------|--------------------|
| RSES pre surgery | 27 | 18.04 | 6.36               |
| RSES at 30 days  | 27 | 22.96 | 5.18               |
| RSES at 60 days  | 27 | 27.22 | 4.13               |

The Wilk’s Lambda [.246,  $F(2,25) = 38.29$ ,  $p < .000$ ] indicated a significant effect on self-esteem over time. A partial  $\eta^2$  of .75 indicates that this is a very large effect size. Post hoc pairwise comparisons discovered significant differences existed between all



pairs and revealed significantly improved RSES scores between baseline and 30 and 60 day postoperative scores. This indicates that morbidly obese individuals had a marginally normal self-esteem level at baseline which improved significantly at 30 and 60 days after undergoing a gastric bypass procedure.

### Summary of Findings

This chapter presented findings on three identified variables for twenty-seven morbidly obese participants who underwent gastric bypass surgery. Findings indicated significant decreases in depression, body image, and an increase in self-esteem from presurgery baselines to 30 and 60 day postoperative measures.

## CHAPTER V

### SUMMARY OF THE STUDY

This study was designed to assess depression, body image, and self-esteem before and at two intervals following gastric bypass surgery as measured by the Beck Depression Inventory, the Body Shape Questionnaire, and the Rosenberg Self-Esteem Scale. This chapter presents a summary of the study and will discuss the findings of the study in light of current literature. Conclusions, implications for practice and recommendations for future study are also included.

#### Summary

A pre-experimental repeated measure longitudinal design was used to assess the affects of gastric bypass surgery on one cohort over three periods of time. Data were collected from the cohort at baseline (preoperatively), at 30 and 60 days postoperatively to assess depression, body image and self-esteem.

Appropriate ANOVAs and post hoc analyses were computed and indicated the participants who had gastric bypass surgery showed significant decreases in depression and body image scores, and significant increases in self-esteem scores at 30 and 60 days postoperatively. The greatest improvement occurred with the improvement of body image distortion. This finding moved from moderate body distortion to normal body distortion within 30 days.

## Discussion of Findings

The findings in this study are supported by studies found in current literature. Morbid obesity has long been associated with severe co-morbid conditions of depression, distorted body image and low self-esteem (Hsu, et al. 1998; Martin, 1999; Deitel, 2001). This study revealed that all three co-morbid conditions were present in this sample at baseline (pre gastric bypass). Follow-up studies have revealed that depression reverses following gastric restrictive surgery (Maddi, et al. 2001; Shai, et al. 2003). Results of this study support those findings to some degree as significant depression was present in participants preoperatively and that depression had lessened to a moderate depression by the end of 60 days.

Research has revealed that weight loss is one of the most widely practiced interventions used to improve body image and body perception (Valtolina, 1998; Kellum, et al 1998). One study reported that all participants in the study demonstrated a 50% to 70% improvement in body image and practiced fewer avoidance behaviors (e.g. avoiding wearing shorts or swimming with others)(Stunkard & Wadden, 1992). In this study participants were abnormally concerned with their body image and revealed a fairly distorted image of themselves. By 60 days after surgery body image scores indicated normal concern for body image.

Self-esteem is frequently lacking in the morbidly obese individual (Oniyke, et al, 2003; Grilo, et al. 1994). Weight loss has been shown to increase self-esteem dramatically over six months (Van Gemert, et al. 1998). Dymek (2001) studied 32

morbidly obese females seeking gastric bypass surgery and found a significant increase in self-esteem 6 months post gastric bypass surgery. A 1998 study by Van Gemert, et al. reported similar findings in their study of 62 participants after gastric bypass surgery. Again this study supports the findings in the literature. The preoperative self-esteem scores indicated self-esteem fell in the low end of the normal range. Following the gastric bypass procedure there was continued increase in self-esteem at 30 and 60 days.

Roy's Adaptation Theory (1999) was the theoretical frame for this study and the results followed the pattern predicted by Roy's theory. Obesity causes the individual to suffer from some degree of depression, altered body image, and lower self-esteem. In this study, obesity served as the focal stimulus which demands attention (the surgery: gastric bypass). Focal stimuli such as being discriminated against due to size or hearing sarcastic remarks about one's size and contextual stimuli such as wanting to perform an activity which cannot be done due to size influence how human beings handle the focal stimuli. Contextual stimuli such as the individual and significant others response to weight loss will ultimately affect the person's adjustment to depression, body image, and self-esteem.

Roy and Andrews (1999) note that adaptation occurs when one responds positively to residual stimuli in the environment, thus promoting integrity, which leads to health. If the participants continue to respond positively to residual stimuli greater will be satisfaction with self and the sense of well-being.

### Conclusions

The following conclusions are derived from the findings of this study:

1. Severe depression, moderate body image distortion, and lowered self-esteem were the norm prior to gastric bypass surgery.
2. Depression decreased to a moderate levels, perception of body shape fell within the normal range, and self-esteem was enhanced after gastric bypass surgery.
3. There is improvement in depression, body image and self-esteem at 30 and 60 day intervals following gastric bypass surgery.

#### Implications for Nursing

The following are implications for practice:

1. Depression, lowered body image, and lowered self-esteem are significant issues affecting the care of patients as nurses strive to promote health and well-being of people in a global society
2. Interventions that improve depression, body image, and self-esteem as indicated by research need to guide the clinical implementation of best practices in assisting the morbidly obese individuals to increase their health.

#### Recommendations for Further Study

Based on this study, additional studies regarding depression, body image, and self-esteem before and after gastric bypass are needed. Several recommendations for future research were generated:

1. A two group experimental pre test-post test design needs to be conducted using a treatment and non-treatment group to test the effects of the three variables.

2. A study which compares male to female results to determine if males respond to treatment on the variables of depression, body image, and self-esteem in the same fashion as females is indicated.
3. A longitudinal study conducted over the course of two to five years would be useful to determine if there is permanency of the changes in depression, body image, and self-esteem.
4. Qualitative exploration of obesity and participant perceptions of obesity would be useful.

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## APPENDIX A

### Demographic Collection Tool

### Demographic Collection Tool

Date \_\_\_\_\_

Code Number \_\_\_\_\_

1. Age \_\_\_\_\_ Gender: (circle one)      Female              Male

2. Height \_\_\_\_\_ Weight \_\_\_\_\_ BMI \_\_\_\_\_

3. Ethnicity (circle one): Black    Caucasian    Hispanic    Asian    Other \_\_\_\_\_

4. How long have you been overweight? Entire life \_\_\_\_\_ Since age \_\_\_\_\_

5. Please list your highest level of education. \_\_\_\_\_

6. Your annual income is \_\_\_\_\_

7. Do you have insurance? \_\_\_\_ Yes      \_\_\_\_ No

If yes, name of insurance company: \_\_\_\_\_

8. Are you employed \_\_\_\_ Full-time      \_\_\_\_ Part-time

Name of employer: \_\_\_\_\_

9. \_\_\_\_ Single      \_\_\_\_ Married      \_\_\_\_ Separated      \_\_\_\_ Divorced

\_\_\_\_ Never Married      \_\_\_\_ Widowed

10. Telephone Number: \_\_\_\_\_

11. Please provide the telephone number of a relative not living with you: \_\_\_\_\_

Thank you for your time and completing this survey

## **APPENDIX B**

### **Beck Depression Inventory**

## Beck Depression Inventory

|    |   |
|----|---|
| 1. | <p>0 I do not feel sad.</p> <p>1 I feel sad.</p> <p>2 I am sad all the time and can't snap out of it.</p> <p>3 I am so sad or unhappy that I can't stand it.</p>  |
| 2. | <p>0 I am not particularly discouraged about the future.</p> <p>1 I feel discouraged about the future.</p> <p>2 I feel I have nothing to look forward to.</p> <p>3 I feel that the future is hopeless and that things cannot improve.</p> |
| 3. | <p>0 I do not feel like a failure.</p> <p>1 I feel I have failed more than the average person.</p> <p>2 As I look back on my life, all I can see is a lot of failures.</p> <p>3 I feel I am a complete failure as a person.</p>           |
| 4. | <p>0 I get as much satisfaction out of things as I used to.</p> <p>1 I don't enjoy things the way I used to.</p> <p>2 I don't get real satisfaction out of anything anymore.</p> <p>3 I am dissatisfied or bored with everything.</p>     |
| 5. | <p>0 I don't feel particularly guilty.</p> <p>1 I feel guilty a good part of the time.</p> <p>2 I feel quite guilty most of the time.</p> <p>3 I feel guilty all of the time.</p>   |
| 6. | <p>0 I don't feel I am being punished.</p> <p>1 I feel I may be punished.</p> <p>2 I expect to be punished.</p> <p>3 I feel I am being punished.</p>  |
| 7. | <p>0 I don't feel disappointed in myself.</p> <p>1 I am disappointed in myself.</p> <p>2 I am disgusted with myself.</p> <p>3 I hate myself.</p>  |
| 8. | <p>0 I don't feel I am worse than anybody else.</p> <p>1 I am critical of myself for my weaknesses or mistakes.</p> <p>2 I blame myself all the time for my faults.</p> <p>3 I blame myself for everything bad that happens.</p>          |
| 9. | <p>0 I don't have any thoughts of killing myself.</p> <p>1 I have thoughts of killing myself, but I would not carry them out.</p> <p>2 I would like to kill myself.</p> <p>3 I would kill myself if I had the chance.</p>                 |

|     |   |
|-----|---|
| 10. | 0 I don't cry any more than usual.<br>1 I cry more now than I used to.<br>2 I cry all the time now.<br>3 I used to be able to cry, but now I can't even cry even though I want to.  |
| 11. | 0 I am no more irritated by things than I ever am.<br>1 I am slightly more irritated now than usual.<br>2 I am quite annoyed or irritated a good deal of the time.<br>3 I feel irritated all the time now.                                    |
| 12. | 0 I have not lost interest in other people.<br>1 I am less interested in other people than I used to be.<br>2 I have lost most of my interest in other people.<br>3 I have lost all of my interest in other people.                           |
| 13  | 0 I make decisions about as well as I ever could.<br>1 I put off making decisions more than I used to.<br>2 I have greater difficulty in making decisions than before.<br>3 I can't make decisions at all anymore.                            |
| 14. | 0 I don't feel that I look any worse than I used to.<br>1 I am worried that I am looking old or unattractive.<br>2 I feel that there are permanent changes in my appearance that make me look unattractive.<br>3 I believe that I look ugly.  |
| 15. | 0 I can work about as well as before.<br>1 It takes an extra effort to get started at doing something.<br>2 I have to push myself very hard to do anything.<br>3 I can't do any work at all.  |
| 16. | 0 I can sleep as well as usual.<br>1 I don't sleep as well as I used to.<br>2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.<br>3 I wake up several hours earlier than I used to and cannot get back to sleep. |
| 17. | 0 I don't get tired more than usual.<br>1 I get tired more easily than I used to.<br>2 I get tired from doing almost anything.<br>3 I am too tired to do anything.  |
| 18. | 0 My appetite is no worse than usual.<br>1 My appetite is not as good as it used to be.<br>2 My appetite is much worse now.<br>3 I have no appetite at all anymore.   |

|            |  |
|------------|--|
| <b>19.</b> | 0 I haven't lost much weight, if any, lately.<br>1 I have lost more than five pounds.<br>2 I have lost more than ten pounds.<br>3 I have lost more than fifteen pounds.  |
| <b>20.</b> | 0 I am no more worried about my health than usual.<br>1 I am worried about physical problems such as aches or pains, or upset stomach, or constipation.<br>2 I am very worried about physical problems and it's hard to think of much else.<br>3 I am so worried about my physical problems that I cannot think about anything else. |
| <b>21.</b> | 0 I have not noticed any recent change in my interest in sex.<br>1 I am less interested in sex than I used to be.<br>2 I am much less interested in sex now.<br>3 I have lost interest in sex completely.  |

### Interpreting the Beck Depression Inventory

Add up the score for each of the twenty-one questions and obtain the total. Since the highest score that you can get on each of the twenty-one questions is three, the highest possible total for the whole test would be sixty-three [this would mean that you circled number three on all twenty-one questions].

Since the lowest score for each question is zero, the lowest possible score for the test would be zero [this would mean that you circled zero on each question]. You can now evaluate your depression according to table 2-2."

Table 2-2 Interpreting the Beck Depression Inventory

#### Total Score Levels of Depression\*

- 1-10 These ups and downs are considered normal.
- 11-16 Mild mood disturbance.
- 17-20 Borderline clinical depression.
- 21-30 Moderate depression.
- 31-40 Severe depression.
- over 40 Extreme depression.

\* A persistent score of 17 or above indicates you may need professional treatment.

Although the BDI test is not difficult or time-consuming to fill out and score, don't be deceived by its simplicity. You have just learned to use a highly sophisticated tool for

diagnosing depression. Many research studies in the past decade have demonstrated that the BDI test and similar mood-rating devices are highly accurate and reliable in detecting and measuring depression.

In a recent study in a psychiatric emergency room, it was found that a self-rating depression inventory similar to the one you just filled out actually picked up the presence of depressive symptoms more frequently than formal interviewing by experienced clinicians who did not use the test.

## APPENDIX C

### Body Shape Questionnaire



## BODY SHAPE QUESTIONNAIRE

|   | Never (1) | Rarely<br>(2) | Sometimes<br>(3) | Often (4) | Usually<br>(5) | Always<br>(6) |
|---|-----------|---------------|------------------|-----------|----------------|---------------|
| 1. Has feeling bored made you brood about your shape?   |           |               |                  |           |                |               |
| 2. Have you been so worried about your shape that you have been feeling that you ought to diet? |           |               |                  |           |                |               |
| 3. Have you thought that your thighs, hips, or bottom are too large for the rest of you?        |           |               |                  |           |                |               |
| 4. Have you been afraid that you might become fat (fatter)?                                     |           |               |                  |           |                |               |
| 5. Have you worried about your flesh not being firm enough?                                     |           |               |                  |           |                |               |
| 6. Has feeling full (e.g., after eating a large meal) made you feel fat?                        |           |               |                  |           |                |               |
| 7. Have you felt so bad about your shape that you   |           |               |                  |           |                |               |

|  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
| have cried?  |  |  |  |  |  |  |
| 8. Have you avoided running because your flesh might wobble?   |  |  |  |  |  |  |
| 9. Has being with thin women or men made you feel self-conscious about your shape?                   |  |  |  |  |  |  |
| 10. Have you worried about your thighs spreading out when sitting down?                              |  |  |  |  |  |  |
| 11. Has eating even a small amount of food made you feel fat?  |  |  |  |  |  |  |
| 12. Have you noticed the shape of other women/men and felt that your own shape compared unfavorably? |  |  |  |  |  |  |
| 13. Has thinking about your shape interfered with your ability to                                    |  |  |  |  |  |  |

|   |  |  |  |  |  |  |
|---|--|--|--|--|--|--|
| concentrate<br>(while<br>watching TV,<br>reading,<br>listening to<br>conversations)?  |  |  |  |  |  |  |
| 14. Has being<br>naked, such as<br>when taking a<br>bath, made you<br>feel fat?   |  |  |  |  |  |  |
| 15. Have you<br>avoided<br>wearing<br>clothes which<br>make you<br>particularly<br>aware of the<br>shape of your<br>body?         |  |  |  |  |  |  |
| 16. Have you<br>imagined<br>cutting off<br>fleshy areas of<br>your body?  |  |  |  |  |  |  |
| 17. Has eating<br>sweets, cakes,<br>or other high<br>calorie food<br>made you feel<br>fat?  |  |  |  |  |  |  |
| 18. Have you<br>not gone out to<br>social<br>occasions (e.g.,<br>parties)<br>because you<br>have felt bad<br>about your<br>shape? |  |  |  |  |  |  |
| 19. Have you<br>felt excessively<br>large and   |  |  |  |  |  |  |

|   |  |  |  |  |  |  |
|---|--|--|--|--|--|--|
| rounded?  |  |  |  |  |  |  |
| 20. Have you felt ashamed of your body?   |  |  |  |  |  |  |
| 21. Has worry about your shape made you diet?   |  |  |  |  |  |  |
| 22. Have you felt happier about your shape when your stomach has been empty?                |  |  |  |  |  |  |
| 23. Have you thought that you are the shape you are because you lack self-control?          |  |  |  |  |  |  |
| 24. Have you worried about other people seeing rolls of flesh around your waist or stomach? |  |  |  |  |  |  |
| 25. Have you felt that it is not fair that other men or women are thinner than you?         |  |  |  |  |  |  |
| 26. Have you vomited in order to feel thinner?  |  |  |  |  |  |  |
| 27. When in company, have   |  |  |  |  |  |  |

|   |  |  |  |  |  |  |
|---|--|--|--|--|--|--|
| you worried about taking up too much room (e.g., sitting on the sofa or a bus seat)?                                |  |  |  |  |  |  |
| 28. Have you worried about your flesh being too dimply?   |  |  |  |  |  |  |
| 29. Has seeing your reflection (e.g., in a mirror or a shop window) made you feel bad about your shape?             |  |  |  |  |  |  |
| 30. Have you pinched areas of your body to see how much fat there is?   |  |  |  |  |  |  |
| 31. Have you avoided situations where people could see your body (e.g., communal changing rooms or swimming baths)? |  |  |  |  |  |  |

|   |  |  |  |  |  |  |
|---|--|--|--|--|--|--|
| 32. Have you taken laxatives in order to feel thinner?  |  |  |  |  |  |  |
| 33. Have you been particularly self-conscious about your shape when in the company of other people? |  |  |  |  |  |  |
| 34. Has worry about your shape made you feel you ought to exercise?                                 |  |  |  |  |  |  |

## APPENDIX D

### Rosenberg Self-Esteem Scale

## Rosenberg Self-Esteem Scale

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, check SA. If you agree with the statement, check A. If you disagree, check D. If you strongly disagree, check SD.

| Statement   | SA | A | D | SD |
|---|----|---|---|----|
| 1. On the whole, I am satisfied with myself.                                  |    |   |   |    |
| 2. At times, I think I am no good at all.                                     |    |   |   |    |
| 3. I feel that I have a number of good qualities.                             |    |   |   |    |
| 4. I am able to do things as well as most other people.                       |    |   |   |    |
| 5. I feel I do not have much to be proud of.                                  |    |   |   |    |
| 6. I certainly feel useless at times.   |    |   |   |    |
| 7. I feel that I'm a person of worth, at least on an equal plane with others. |    |   |   |    |
| 8. I wish I could have more respect for myself.                               |    |   |   |    |
| 9. All in all, I am inclined to feel that I am a failure.                     |    |   |   |    |
| 10. I take a positive attitude toward myself.                                 |    |   |   |    |

Thank you



## APPENDIX E

### Informed Consent

TEXAS WOMAN'S UNIVERSITY  
CONSENT TO PARTICIPATE IN RESEARCH

Title: Depression, Body Image, and Self-Esteem Before and After Gastric Bypass Surgery

Investigator: Sandra Brannan ..... 409-880-8822

Advisor: Rae Langford, Ed.D. .... 713-794-2393

Explanation and Purpose of the Research

You are being asked to participate in a research study for Ms. Brannan's dissertation at Texas Woman's University. You are being asked to participate in this study since you have chosen to have a gastric bypass procedure to reduce your weight. The purpose of this research is to described depression, body image, and self-esteem before having a gastric bypass procedure and after having the gastric bypass procedure.

Research Procedures

For this study, the investigator or Jamie Carr, R.N. will ask you to complete four questionnaires. When you have answered all the questions you will give the completed questionnaires to the investigator or Jamie Carr, R.N. After your surgery has been completed, the investigator will telephone you (30 and 60 days after your surgery) and ask you the same questions you are being asked today. Your estimated maximum total time commitment in this study is estimated to take no more than 90 minutes.

Potential Risks and Benefits

The potential risks of participating in this study are few but may include potential loss of confidentiality and mild distress when answering the questions asked on the questionnaires.

The researchers will try to prevent any problems that could happen because of this research. You should let the researcher know at once if there is a problem and she will try to help you. However, Texas Woman's University does not provide medical services or financial assistance for injuries that take place because you are taking part in this research.

\_\_\_\_\_  
Initial

Title: Depression, Body Image, and Self-Esteem Before and After Gastric Bypass Surgery

Confidentiality

The questionnaires you complete will be kept in locked files, and like other medical records will be kept confidential. This study involves the investigator, her advisor, Garth Davis, M.D., and Jamie Carr, R.N. Thus, these people will review the research records for data analysis. Your name will not appear on the research records. Information obtained from this study may appear in medical, nursing, or scientific publications, but will not contain the name or identifying information of any participant.

Participation and Benefits

Your participation in this study is completely voluntary, and you may discontinue your participation in the study at any time without penalty. There are no direct benefits to your participation in this study. If you would like to receive a summary of this study, please provide an address on the lines below.

Questions Regarding the Study

If you have any questions about the research study you may ask the investigator. You have received a business card containing contact information for the investigator. If you have any questions about your rights as a participant in this research or the way this study has been conducted, you may contact the Texas Woman's University Office of Research at 713-794-2840 or via e-mail at [IRB@twu.edu](mailto:IRB@twu.edu). You will be given a copy of this signed and dated consent form to keep.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

The above consent form was read, discussed, and signed in my presence. In my opinion, the person signing said consent form did so freely and with knowledge of its contents.

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Date

If you would like to receive a summary of the results of this study, please provide an address to which the summary should be sent:

## APPENDIX F

### Human Subjects Review Committee Approval



Office of Research  
6700 Fannin Street  
Houston, TX 77030-2343  
713-794-2480 Fax 713-794-2488

July 29, 2008

Ms. Sandra Brannan  
College of Nursing - Rae Langford Faculty Adv  
6700 Fannin Street

Dear Ms. Brannan:

Re: *"Depression, Body Image, and Self-Esteem Before and After Gastric Bypass"*

Your application to the IRB has been reviewed and approved.

This approval lasts for one (1) year. The study may not continue after the approval period without additional IRB review and approval for continuation. It is your responsibility to assure that this study is not conducted beyond the expiration date.

Any changes in the study or informed consent procedure must receive review and approval prior to implementation unless the change is necessary for the safety of subjects. In addition, you must inform the IRB of adverse events encountered during the study or of any new and significant information that may impact a research participant's safety or willingness to continue in your study.

Remember to provide copies of the signed informed consent to the Office of Research, IHS 10110 when the study has been completed. Include a letter providing the name(s) of the researcher(s), the faculty advisor, and the title of the study. Graduation may be blocked unless consents are returned.

Sincerely,

Dr. John Radcliffe, Chair  
Institutional Review Board - Houston