

What is the Prevalence of Binge Eating Disorder in Women ever Enrolled in a  
Weight Management Program?

By

Brenda Pope. RN, BSN

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Science in Nursing  
The University of Michigan-Flint  
May 2006

APPROVED:

Chairperson:

Jan Brady 4-24-06  
Date

Jan Brady, PhD, RN

Date

Committee Member:

Laura Syenta 4/22/06  
Date

Laura Syenta, RN, MSN, APRN, BC

Date

Abstract

This study examined: (a) the prevalence of binge eating disorder (BED) in women ever enrolled in a weight management program, (b) the differences in body mass index (BMI) between women who have BED and those who do not, and (c) the relationship between weight cycling (WC) and BED. The biopsychosocial model provided the theoretical framework for this study. Using a convenience sampling technique, women 21 years of age and older were recruited from a local fitness studio. Participants ( $N = 51$ ) completed a demographics questionnaire, a 16-item binge eating scale (BES), and a five-item weight cycling questionnaire. Results of this study revealed that over half of respondents had no BED, just over one-fourth had moderate BED, and one-tenth had severe BED. In this study, findings revealed there was no statistically significant difference in mean BMI scores between the women who had BED and those who did not. Results indicated that there was a statistically significant strong relationship between WC and severity of BED. This study supports the use of the binge eating scale (BES) and a weight cycling (WC) questionnaire to assess patients for BED tendencies; however, these results must be viewed with some caution due to the low reliability of the WC tool.

Implications for nursing practice include the use of screening instruments such as the BES to identify women with BED tendencies. Further research is needed to develop a more precise and reliable WC tool.

# Prevalence of Binge Eating Disorder

APRIL 26. 2006

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Dedication

This thesis is product of three years of a quality education at the University of Michigan-Flint. I would like to thank everyone who was even remotely a part of this research project.

A special thanks to my thesis chairperson, Jan S. Brady, PhD RN, for her guidance, support and academic excellence throughout this endeavor. I hope someday to understand the reason why our paths crossed. Another thank you to Laura Sychta, RN, FNP-C, my reader, my friend, a mentor and future colleague; I appreciate your enthusiasm and encouragement in helping me to pursue my Nurse Practitioner credential.

I would like to thank Carol Rossman, RN CPNP who was my peds instructor and eventually became my mentor, and most importantly, my friend. An incredibly dynamic woman and instructor, I was truly blessed to have had the opportunity to grow professionally with her. Her teaching strategies are professional and always fresh. I will always remember Carol as having a passion for asthma, and a passion for children that is reflected in her teaching style.

I would like to thank all of my friends and family for their encouragement and support during the challenging and difficult times at University of Michigan-Flint. All of my CCU buddies at St. Joseph Mercy-Oakland, and my non-CCU buddies, my physician preceptors, my NP preceptors-- you know who you are...a very special thanks to all of you. Hey Wilson, I got the stuff.

Most of all I would like to thank my mom and dad for encouraging me to believe in myself. I did it, I actually got my Masters degree...*who wouldda thunk it?* I am truly blessed to have such wonderful parents.

A special thanks to Lori Hakim who stood by me when I didn't think I could write it, rewrite, rewrite it again, and finally finish it. Your friendship and support will never be forgotten- I promise.

One final acknowledgement to my classmates Shauna, Alyssa, Tammy, Sandy, Pam and Jim (Mike)...you guys are all going to be successful and wonderful NPs. It has been a pleasure to work, laugh and freak out with all of you these last three years.





## Prevalence of Binge Eating Disorder

### List of Abbreviations

BED	Binge Eating Disorder
BES	Binge Eating Scale
BMI	Body Mass Index
CBT	Cognitive Behavioral Therapy
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders
EDNOS	Eating Disorders Not Otherwise Specified
FNP	Family Nurse Practitioner
WC	Weight Cycling
WIN	Weight Information Network

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- L- Sample Free DVD coupon

## CHAPTER I

### INTRODUCTION

The two conditions of overweight and obesity are in epidemic proportion across the United States (US). The conditions of overweight and obesity contribute to serious health problems and are identified as preventable causes of illness and death in *Healthy People 2010*. The objective of the United States Department of Health and Human Services (USDHHS) is to reduce the proportion of children and adults who are overweight and to reduce the proportion of adults who are obese (USDHHS, 2005). The consequences of the conditions of overweight and obesity contribute to the development of cardiovascular disease, arthritis, diabetes, and psychologic dysphoria such as depression and low self-esteem (Weight Information Network [WIN], 2005). Additionally, obesity contributes to dyslipidemia, pregnancy complications, stress incontinence, depression, and increased surgical risk. Economically, lost productivity and medical costs attributed to overweight and obesity in the US were estimated at 99 billion dollars in 1995 (USDHHS).

The prevalence of the conditions of overweight and obesity in the US is staggering. The United States Census Bureau *Census 2000* reveals startling statistics. Less than half of US adults are at a healthy weight with a body mass index (BMI) of 18.5-25 kg/m<sup>2</sup> (Centers for Disease Control & Prevention, 2004). According to the 1999-2000 National Health and Nutrition Survey (NHANES), nearly two-thirds of US adults (20 years and older) are overweight with a BMI of greater than greater than 25 kg/m<sup>2</sup>. One-third of US adults are obese with a BMI of greater than 30 kg/m<sup>2</sup>. The USHHS

weight information network (WIN) examined data related overweight and obesity in minority populations. The highest rates of overweight and obesity are found in non-Hispanic African-American women (77%) and Mexican-American women (71%) (WIN, 2005). In men, Mexican-Americans have a higher prevalence of overweight and obesity than non-Hispanic whites or non-Hispanic African-Americans (USDHHS, 2005). The prevalence of overweight and obesity in Asian-Americans is lowest (WIN, 2005).

Women of lower socioeconomic status (income less than 130% of poverty threshold) are 50% more likely to be obese than those of higher socioeconomic status (USDHHS).

The national health objectives for 2010 are to reduce the prevalence of obesity to less than 15% (USDHHS, 2002). The conditions of overweight and obesity are the result of an imbalance between caloric consumption and caloric expenditure combined with inadequate physical activity. In addition, genetic, metabolic, behavioral, environmental, cultural, and socioeconomic factors play a role in determination of body weight.

The role of physical activity in achieving ideal BMI cannot be overemphasized. In *Healthy People 2010*, physical activity is identified as a leading health indicator. A *Healthy People 2010 objective* is to “increase the proportion of adults who engage regularly, preferably daily, in moderate physical activity for at least thirty minutes per day” (p.26). The USPSTF reported “the evidence is insufficient to recommend for or against behavioral counseling in primary care settings to promote physical activity (Rating I Recommendation)” (p.123). A level I recommendation means the USPSTF determined the quality of evidence of a recommendation was based on at least one properly randomized controlled trial.

The USDHHS (2005) and the USPSTF (1996) report regular physical activity prevents cardiovascular disease, hypertension, Type II Diabetes, obesity, and osteoporosis. In addition to increasing muscle and bone strength, physical activity increases lean muscle and helps decrease body fat, aids in weight control, and plays a key role in any weight loss effort. Physical activity also enhances psychological well-being and appears to reduce the symptoms of depression and anxiety (USDHHS). The WIN (2006) reports women of all ages are less active than men, and women with lower socioeconomic status engage in less physical activity than men.

Dietary intake also contributes to the conditions of overweight and obesity. A diet high in carbohydrates, fat and calories, and low in fiber and protein increases the amount of body fat. The United States Department of Agriculture (USDA) recently revised the *Dietary Guidelines for Americans* and developed the *MyPyramid* food system that can be tailored to meet individual needs based on gender, age and physical activity (USDA, 2005). Recommendations for daily intake of grains, vegetables, fruits, milk, meat, and beans for individuals are discussed in the pyramid (USDA).

The 97 million adults in the US who are overweight or obese are at elevated risk for cardiovascular disease, hypertension, certain cancers, social stigmatization, and discrimination (National Heart, Lung, and Blood Institute [NHLBI], 2005). Higher body weight contributes to all causes of mortality. Both myocardial infarction and diabetes mellitus are correlated with conditions of overweight and obesity (Brownell & Fairburn, 1995). Additionally, conditions of overweight and obesity contribute to low high-density lipoprotein, elevated total cholesterol, elevated triglycerides, and elevated low-density lipoprotein cholesterol levels. Endometrial and gall bladder cancer rates are higher

among overweight and obese individuals. Mortality from breast cancer is correlated with excess body weight, possibly due to late detection of tumors in obese individuals. Knee and hip osteoarthritis is prevalent in overweight and obese individuals.

In addition to the physiologic consequences of the conditions of overweight and obesity, there are psychologic and social consequences. American society places a great deal of value on physical appearance. The media equates body size with success and beauty. People face emotional suffering, discrimination, and prejudice at home, work, school, and in social settings. Social suffering and stigma can result in feelings of shame, guilt, rejection, and depression.

Researchers are also investigating the role of genetics contributing to body weight. The scientific community, with advanced technology, is striving to understand the genetic and molecular etiology of obesity (Brownell & Fairburn, 1995; Fairburn & Harrison, 2003; NHLBI, 2005). However, studies indicate that the conditions of overweight and obesity have multifactorial influences; these influences have social, psychological, behavioral, and hereditary origins.

### *Purpose*

The purpose of this research study was to investigate the prevalence of binge eating disorder (BED) in females ever enrolled in a weight management program. Three specific questions addressed in this study were:

- 1. What is the prevalence of binge eating disorder (BED) in women ever enrolled in a weight management program?***
- 2. Is there a difference in body mass index (BMI) between women who have binge eating disorder (BED) and those who do not?***



### ***3. Is there a relationship between weight cycling (WC) and binge eating disorder (BED)?***

#### *Significance to Nursing*

Identifying factors that contribute to the conditions of overweight and obesity in women is significant to nursing. Excess weight contributes to the development of cardiovascular disease, arthritis, diabetes, and psychologic dysphoria such as depression and low self-esteem. Depression and the effects of poor self-image and low self-esteem can contribute to an ineffective coping mechanism such as overeating. Working to reduce the number of children, adolescents, and adults who are overweight and obese in our communities is the responsibility of all health care providers, including the nurse practitioner (NP). Results of this study can assist the NP to identify binge eating disorder (BED) tendencies.

#### *Conceptual Framework*

Several different models have been used by researchers to examine binge eating disorder (BED). For example, the addictions model, the conditioning model, the affective disorders/regulation models, the escape model, the dieting model, the holistic model, and the biopsychosocial model attempt to explain BED (Fairburn & Wilson, 1993). The biopsychosocial model addresses the multitude of behaviors associated with BED.

BED tendencies do not fit the addictions model. The addictions model is represented in the 12-step approach of Alcoholics Anonymous. Contrary to popular belief, the addictions model is misrepresentative of BED (Fairburn & Wilson, 1993). Wilson (as cited in Fairburn & Wilson, 1993) discussed: “The concept of addiction has

been debased by promiscuous and imprecise usage to describe virtually any form of repetitive behavior” (p. 98). The definition of the addictions model is the development of a tolerance, development of a physical dependence with withdrawal, loss of control over use, and/or craving of a substance (Fairburn & Wilson). There are similarities between binge eating and substance abuse but these similarities are only superficial. Examples of similarities between alcohol/drug use and binge eating behavior include cravings and urges to engage in the behavior, feeling a loss of control over the behavior, and using the behavior to relieve tension and negative feelings (Fairburn, 1995). Research supports tolerance to food is only a behavioral tolerance (Fairburn & Wilson). The addictions model supports abstinence to cope with tolerance, physical dependence, and withdrawal of substances. Those women with Bulimia Nervosa and BED try to restrict their food intake but do not abstain from food intake. Loss of control is a classic component of the addictions model. Studies show alcohol alone does not trigger uncontrollable drinking. Psychosocial and environmental factors, coupled with the alcoholic’s expectations of the alcohol’s effects, trigger uncontrollable drinking. Studies reveal obese and non-obese binge eating persons engage in varying degrees of loss of control of eating (Fairburn & Wilson). The addictions model also suggests the concept of craving. Alcoholics crave a substance, whereas those with BED and Bulimia Nervosa are concerned with the amount of the substance or food. In conclusion, the addictions model does not realistically support the notion of eating disorders.

Evaluation and management of eating disorders from a biopsychosocial standpoint offers the broadest, most complete explanation of the behaviors associated with eating disorders (Brownell & Fairburn, 1995; Fairburn & Wilson, 1993; Pull, 2004).

Proposed by psychiatrist George Engel in 1977, the biopsychosocial model addresses the biological, psychological, and social systems of an individual versus individual system assessment typically addressed in the medical model (Engel, 1977). Due to the complexity of BED, only a broad-based, all encompassing model could offer an explanation of BED. The biopsychosocial model may represent the behaviors associated with BED. The model addresses the five behaviors inherent to BED. The five behaviors are: (a) eating rapidly; (b) eating until uncomfortably full; (c) eating a large amount of food when not feeling hungry; (d) eating alone because of embarrassment by volume of food consumed; and (e) feeling disgusted, depressed, or guilty after overeating (American Psychiatric Association [APA], 2000). Additionally, the biopsychosocial model can offer an explanation to address the emotional co-morbidities associated with BED such as anxiety and various affective disorders (Pull). The biopsychosocial model represents a framework in which to address the complex psychological (cognition, affect, coping), biological (genetic), and social (sociocultural milieu) of BED (Brownell & Fairburn).

## CHAPTER II

## REVIEW OF LITERATURE

*Binge Eating*

Eating disorders are identified by the American Psychiatric Association (APA, 2000) in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR). The manual identifies Anorexia Nervosa, Bulimia Nervosa, and Eating Disorders Not Otherwise Specified (EDNOS) as eating disorder diagnoses. In this research study, only binge eating disorder (BED) was addressed.

The definition of BED originated from the definition of Bulimia Nervosa in 1993. Historically, individuals not meeting the criteria for Bulimia Nervosa were categorized as binge eaters under the heading of EDNOS in the APA manual. The APA only recognized EDNOS with the 1993 (fourth-edition) of the DSM-IV-TR. Differentiating from Bulimia Nervosa, BED is Bulimia Nervosa without a compensatory mechanism such as purging, fasting, and excessive exercise (Fairburn & Wilson, 1993). The APA (2000) defines binge eating as “Binge eating is characterized by the recurrent episodes of two behaviors: (a) eating in a discrete period of time an amount of food that is definitely larger than most people would eat in a similar period of time under similar circumstances, and (b) a sense of lack of control over eating during the episodes” (p. 594). These episodes need to be associated with three (or more) of the following five behaviors: (a) eating rapidly; (b) eating until uncomfortably full; (c) eating a large amount of food when not feeling hungry; (d) eating alone because of embarrassment by volume of food consumed and; (e) feeling disgusted, depressed, or guilty after overeating (APA). BED

tendencies are considered when a patient reports a sense of loss of control (of eating) as well as three of the five criteria (APA).

Fairburn and Wilson (1993) identify poor body image and prevalence of BED in the overweight and obese person. First, obese persons view their body image as grotesque. Obese persons think other people perceive them with resentment and disrespect. Brownell & Fairburn (1995) found “the population with poor body-image were ridiculed and belittled since childhood by peers, friends, and family” (p. 151). Secondly, *binge eating* is prevalent in obese persons. Binge eaters report increased frequency of depression and anxiety (Brownell & Fairburn; DeZwaan, 2001; Fairburn & Wilson, 1993; Gormally, Black, Daston, & Rardin, 1982). Obese binge-eaters are more likely to drop out of weight management programs prematurely. Obese binge eaters tend to regain their weight more often than non-binging obese persons (Brownell & Fairburn; Fairburn & Wilson).

BED is associated with the conditions of overweight and obesity (Kotwal, Kaneria, Guerdjikova, & McElroy, 2004). Most BED study participants are overweight. It is estimated that 30% of participants in weight loss programs have BED. Additionally, 70% of participants in groups such as Overeaters Anonymous and 50% of patients who seek bariatric surgery have BED (Kotwal et al.). Persons with BED are typically in their 40s and it is estimated that up to 25% are male (Fairburn & Harrison, 2003). Approximately 5-10% of those seeking treatment for obesity have BED.

Contemporary society places a great emphasis on being thin. In an effort to meet societal demands of being attractive, women are often dieting at younger ages. Research suggests chronic dieting contributes to the development of BED (Brownell & Fairburn,

1995; Fairburn & Wilson, 1993; Polivy & Herman, 1985). Dieting has been shown to be a trigger and pre-requisite for the development of BED (Brownell & Fairburn). Studies by Russell (as cited in Polivy & Herman, 1985) revealed 62 out of 68 patients dieted prior to the development of Bulimia Nervosa; in a second study, 22 out of 30 patients dieted within one-year prior to the onset of Bulimia Nervosa. Chronic dieting represents self-rejection, poor self-esteem, and an over-indulgence in body image and shape.

Binge eaters are predominantly women between the ages of 30-45 years (Fairburn & Wilson, 1993). Pull (2004) reported that white women were more than eight times more likely to develop Bulimia Nervosa than African-American women. Furthermore, African-American women with BED reported more binge episodes per week, less dietary restraint, and were less concerned with eating, weight, and shape than white women with BED (Pull).

Binge eating behavior increases with the amount of adipose tissue (Fairburn & Wilson, 1993). Fairburn & Wilson (1992) revealed 30% of persons attending hospital-based weight loss programs were obese. In addition, obese binge eaters tend to drop out of weight control programs and report more frequent episodes of weight loss and regain (Fairburn & Wilson). A 2002 study on the prevalence of BED in an outpatient weight loss clinic revealed 36 cases of BED as defined by the DSM-IV-TR (Kalman, Cascarano, Krieger, Incledon, & Woolsey, 2002). A study by Borges et al. (as cited in Pull, 2004) demonstrated the prevalence of BED in obese and extremely obese patients in a weight loss program was 16%, Hsu et al. (as cited in Pull) found a prevalence of 25%, (Delgado Calvete et al. (as cited in Pull) reported a prevalence of 27.5%. Eating patterns of obese binge eaters differ from non-obese binge eaters (Fairburn & Wilson). Obese binge eaters

do not use the strategies that obese non-binge eaters use such as portion control, calorie counting, or eating slowly like their non-binging counterparts. Most obese binge eaters have an earlier onset of overweight and dieting, lower self-esteem and more depression, anxiety, and personality disorders (Pull).

The cause of BED is unknown; however, biological, familial, and psychosocial factors seem to contribute to the development of BED. Biological factors that may contribute to the cause of BED include low levels of the neurotransmitters serotonin and dopamine (Kotwal et al., 2004). Genetic factors that may contribute to the cause of BED include the identification of a mutation on the Melatonin-4 receptor gene in patients with a body mass index (BMI) of 44 or greater. Familial factors that may contribute to the cause of BED are parental depression and parental obesity. Psychosocial factors that may contribute to the cause of BED include prevalence of physical and sexual abuse, bullying by peers, and social discrimination (Kotwal et al.; Pull, 2004). Additionally, other factors contributing to the cause of BED include chronic dieting, excessive exercise, the quest for thinness, dieter's deprivation and low self-esteem (Fairburn & Wilson, 1993). Emotional instability and overreaction to certain food cues may also contribute to the development of BED (Fairburn, 1995; Fairburn & Wilson, 1993; Kotwal et al.).

The role of physical activity in any weight management program, especially weight loss maintenance, cannot be overemphasized. Several studies report a positive relationship between regular exercise and weight maintenance (Brownell & Fairburn, 1995; Fairburn & Wilson 1993; Polivy & Herman, 1985; Pull, 2004). Excessive exercise is associated with poor body-image and poor self-image, both contributing to BED

tendencies. Additionally, excessive exercise is linked to chronic dieting (Fairburn & Wilson; Brownell & Fairburn; Fairburn, 1995).

Many studies report ethnicity, gender, societal pressure to be thin, emotional eating, appearance over-evaluation, body dissatisfaction, body mass, depressive symptoms, and low social support as risk factors for the development of BED tendencies (Brownell & Fairburn, 1995; Fairburn & Harrison, 2003; Gormally et al., 1982; Pull, 2004). Childhood emotional abuse, sexual abuse, physical abuse, emotional and physical neglect, and bullying by peers may also be risk factors for the development of BED tendencies (Pull, 2004). Grilo & Masheb (2002) indicated that 21% of binge eaters reported posttraumatic stress disorder; whereas, only 9% of non-bingers reported the disorder. Grilo & Masheb also indicated that 82% of those with personality disturbances report emotional abuse as a leading risk factor for the development of BED tendencies. Additional studies cite major depression in subjects with BED and Bulimia Nervosa (DeZwaan, 2001; Fairburn & Harrison; Fairburn & Wilson, 1993; Grilo & Masheb).

Another factor that contributes to the development of BED tendencies is the desire to be thinner. This desire is often expressed through dieting and exercise. Many studies use the term chronic dieting alternately with the term restrained eating. The desire for thinness, through chronic dieting and/or exercise, creates a feeling called dieter's deprivation that can lead to overeating and bingeing (Fairburn & Wilson, 1993). Researchers have yet to determine if food deprivation leads to a binge, or if the food deprivation alters a person's food-reaction cue, thus leading to a binge. Regardless of a supposed causal relationship, there are multiple studies supporting chronic dieting (restrained eating) as a factor contributing to BED.



Low self-esteem accompanies body-image dissatisfaction (Fairburn & Wilson, 1993). Several studies identify low self-esteem as a factor contributing to BED tendencies (Wildes, Simons, & Marcus, 2005). Body-image dissatisfaction can lead to low self-esteem which can lead to chronic dieting. Conversely, some researchers propose that unsuccessful dieting leads to low self-esteem which may trigger episodes of binge eating or overeating.

### *Weight Cycling*

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) of the National Institutes of Health (NIH) implemented the Weight Information Network (WIN) as the lead agency for research on nutrition and obesity in the US (NIH, 2006). Weight cycling (WC) is defined as a repeated loss and regain of body weight (WIN, 2004). This is commonly referred to as *yo-yo dieting*.

Studies show WC does not decrease metabolic rate; however, the natural process of aging decreases metabolic rate (Brownell & Fairburn, 1995). Researchers also hypothesize that decreased metabolic rate may be a natural physiologic defense mechanism to prevent repeated dieting (Brownell & Fairburn). Other studies report individuals have fewer adherences to subsequent diets, thus weight loss is perceived as decreased metabolic rate (Brownell & Fairburn). WC can also be a risk factor for the development of hypertension, hyperlipidemia, and gall bladder disease (WIN, 2005). With 3130 subjects, the Framingham Heart Study results concluded (as cited in Brownell & Fairburn, 1995) that “all-cause and coronary heart disease (CHD) mortality were increased significantly in both men and women with high levels of weight variability” (p. 57). Morbidity from CHD was also increased. The Multiple Risk Factor Intervention

Trial sample included 10,594 men at risk for CHD (National Heart Lung, and Blood Institute [NHLBI], 1998). This study concluded that there was a 55% increase in all-cause mortality in subjects who had undergone at least one weight cycle in comparison with others who had stable weights (Blair, Shaten, Brownell, Collins, & Lissner, 1993; Brownell & Fairburn). Several other studies, including the two previously mentioned, indicate that individuals with a history of WC have higher morbidity and mortality rates than those who do not have a history of WC.

The association between WC and psychologic functioning is dependent upon the method used to assess WC (Friedman, Schwartz & Brownell, 1998). Friedman, Schwartz, & Brownell (1998) identify three methods of collecting participant WC data: (a) based on recalled history of weight loss and regain, (b) based on actual weight loss and regain, and (c) based on subjective evaluation of an individuals ability to maintain weight loss. Wadden et al. (as cited in Friedman, Schwartz, & Brownell, 1998) studied 50 obese persons to determine if a relationship existed between WC and psychological function. WC was measured by identifying the total number of diets where 10 pounds were lost over a period of a lifetime. Results concluded no relationship between WC and depression, binge eating, or chronic dieting. Studies by Kuehnel, Wadden, & Bartlett et al. (as cited in Friedman, Schwartz, & Brownell, 1998) studied obese women ( $N = 200$ ) and also concluded no relationship between WC and depression, binge eating, or chronic dieting.

Studies measuring WC based on weight regain after weight loss during a treatment program offer opposing results. Wadden (as cited in Friedman, Schwartz, & Brownell, 1998) concluded weight regain in obese women is associated with poor

perceived appearance and lower self-esteem. Conversely, Foster et al. (as cited in Friedman, Schwartz, & Brownell, 1998) concluded obese women with weight regain is not significantly associated with negative mood status and increased binge eating. Subjective assessment of WC is a method of measuring WC. In a study by Foreyt et al. (1995), results concluded that obese subjects have lower self well-being and lower self-efficacy.

Regardless of the method used to measure WC, most studies conclude there is at least a minimal relationship between WC and psychologic dysphoria. Several studies, however, indicate a relationship exists between WC and binge eating disorder (BED) (National Task Force on the Prevention and Treatment of Obesity, 2000; Brownell & Fairburn, 1995; Fairburn & Wilson, 1993).

#### *Weight Cycling (WC) and Binge Eating Disorder (BED)*

Research supports a correlation between binge eating disorder (BED) and weight cycling (WC). Several studies used the binge eating scale (BES) to identify and determine severity of BED in study subjects (Borges, Jorge, Morgan, Silvera, & Custodio, 2002; DeZwaan, 2001; Kotwal, Kaneria, Guerdjikova, & McElroy, 2004; Pull, 2004; Spitzer et al. 1992; Venditti, Wing, Jakicic, Butler & Marcus, 1996; Yanovski & Sebring, 1994).

A study on Brazilian women with BED ( $N = 217$ ), ages 15-59 years of age, concluded that women with BED who were enrolled in a weight-loss program had higher body mass index (BMI) and an increased frequency of WC episodes than those without BED (Borges, Jorge, Morgan, Silvera, & Custodio, 2002). Study participants were grouped into four categories: (a) those who met criteria for BED, (b) those who met

criteria for Bulimia Nervosa, (c) those who had symptoms of BED but did not meet BED criteria, and (d) those with no symptoms of an eating disorder. The study used the 16-item BES to identify individuals with BED tendencies. Results demonstrated 16% of women had BED, 4% had Bulimia Nervosa, and 22% had binge eating symptoms without meeting criteria for BED.

In another study of women ( $N = 120$ ) a relationship was found between psychologic health and binge eating (Venditti, Wing, Jakicic, Butler & Marcus, 1996). The study used the 16-item BES to identify women with BED tendencies. The BES identifies the primary behaviors associated with BED. WC was measured with a self-reported frequency of weight fluctuations experienced over time. Psychologic self-report instruments also assessed psychiatric symptoms, eating behavior, stress, mood, and perceptions of physical health. Results demonstrated a correlation between BED and psychologic distress, as well as a correlation between BED and WC.

Spitzer et al. (1992) reported a correlation between BED and WC. The study used the 16-item BES to identify individuals with BED tendencies. Results of the study ( $N = 68$ ) demonstrated 30% of women with severe obesity enrolled in a hospital-based weight loss program had BED. In contrast, only 6% of women with severe obesity who were enrolled in a less intensive community-based weight loss program had BED (Spitzer et al.).

Research findings by Yanovski and Sebring (1994) support a correlation between binge eating and WC. The study used the 16-item BES to identify individuals with BED tendencies. Study results indicated that binge eaters had more episodes of WC than non-binge eaters. The study ( $N = 38$ ) consisted of 17 obese women with BED and 16 obese

women without BED. Participants were placed on very low calorie diets and asked to record food intake. The study investigated the relationship between dietary restraint and BED. The study concluded a relationship existed between BED and WC. The researchers found pre-weight loss that the obese binge eaters had higher caloric intake (2707 vs. 1869 kcal/day) and more frequent binge eating days than obese non-binge eaters. However, post-weight loss, researchers found no significant difference in caloric intake between subjects with and without BED.

Kensinger, Murtaugh, Reichtman, & Tangney (1998), examined the psychological characteristics of weight cyclers and binge eaters in overweight women ( $N = 62$ ). The study used the 16-item BES to identify individuals with BED tendencies. Results concluded that 58% of the weight cyclers met criteria for BED and that 42% did not meet criteria for BED. The researchers used other instruments to measure: (a) self-esteem, (b) self-efficacy, (c) coping strategies, (d) psychological symptoms, (e) depression, (f) binge eating, (g) restrained eating, and (h) disinhibition. Results also demonstrated weight cyclers had a greater severity of BED. Those with severe BED reported: (a) greater disinhibition, (b) lower self-efficacy, (c) greater psychological distress, (d) depression, (e) lower self-esteem, and (f) less healthful coping strategies than those with no or moderate BED.

#### *Management of Binge Eating Disorder (BED)*

Management of binge eating disorder (BED) represents a multidisciplinary team approach and includes a psychotherapist, a primary care clinician, and a nutritionist. The treatment team must meet the complex biological, psychological, and social needs of the binge eater. Cognitive behavioral therapy (CBT) is used in the treatment of depression,

anxiety, and other mood disorders (Burns, 1999). CBT is the most widely used and studied approach in the management of BED. CBT is a therapeutic technique used by trained therapists to identify and alter a dysfunctional thought pattern that may trigger an episode of binge eating (Burns). The CBT model for BED proposes that BED develops in response to a restrictive food intake combined with the experience of negative emotions (Levine & Marcus, 2003). Researchers have cited CBT as the most effective treatment for BED (Brownell & Fairburn, 1995; Burns; Fairburn, 1995; Fairburn & Wilson, 1993; Levine & Marcus; Rich, 2004). A study by Brody, Masheb, and Grilo (2005) investigated obese binge eaters' ( $N = 103$ ) preference for CBT versus behavioral weight loss therapy. Results concluded that 63% of respondents preferred CBT. The National Institute of Health (NIH), after reviewing 26 randomized controlled trials, also supported the use of CBT as the most effective method of weight loss (NHLBI, 2005). Wilfley (as cited in Levine & Marcus, 2003) reported that management of BED with CBT and interpersonal therapy resulted in a decrease in binge eating episodes and an increase in self-esteem. The same study also reported positive changes in dietary restraint and improved thoughts about body shape and weight at a one-year follow up (Levine & Marcus).

Management of BED can include the use of pharmacotherapy. Pharmacotherapy involves the use of antidepressant medications such as: (a) selective serotonin reuptake inhibitors (SSRIs), (b) monoamine oxidase inhibitors, and (c) tricyclic antidepressants (Levine & Marcus, 2003; Page, Curtis, Sutter, Walker, & Hoffman, 2002; Pull, 2004). Researchers studied the effects of sibutramine (an SSRI) with CBT on 29 women with BED and 44 women without BED (Bauer, Fischer, & Keller, 2005). The study ( $N = 73$ )

demonstrated that all participants had weight loss. However, the BED patients with CBT and sibutramine had a significant decrease in the frequency of binge eating episodes (Bauer, Fischer, & Keller). CBT with or without pharmacotherapy is useful in decreasing the frequency of binge eating episodes.

## CHAPTER III

### METHODS

A quantitative descriptive design was used for this research study. A convenience sample of women was obtained from a local Midwestern exercise studio. Eligibility was restricted to women 21 years of age and older who were members of the fitness studio and had a current or previous enrollment in any type of weight management program. Permission to conduct the study was granted by the University of Michigan-Flint Human Subjects Review Board (see Appendix A), and from the fitness studio (see Appendix B). Potential subjects were informed that participation in the study was voluntary, confidentiality would be maintained, and data would be reported as group data.

#### *Procedure*

As fitness studio members entered the building to exercise, the researcher or a research assistant (a registered nurse [RN] associate or an employee of the fitness studio) asked members if they would be interested in participating in a research study. All research assistants were trained by the researcher regarding every aspect of the research study. If members agreed to participate in the study, researchers confirmed eligibility requirements. If the fitness studio member met eligibility requirements, the researcher distributed a research packet to the participant. Additionally, a notice was posted on the locker room wall in the fitness studio requesting any member interested in participating in a study inquire at the “front desk.” At the front desk, a fitness studio employee research assistant explained the study, determined eligibility requirements, and distributed a research packet to the willing interested participants. The research packet included: (a) cover letter (see Appendix C), (b) demographics questionnaire (see



Appendix D), (c) the binge eating scale (BES)—also identified as the eating habits checklist (see Appendix E), (f) three question (five-item) weight cycling (WC) instrument (see Appendix F), (g) document describing how to obtain and interpret eating habits checklist score (see Appendix G), (h) two resources to obtain information on eating disorders (see Appendix H), (i) thank you note (see Appendix I), (j) post card for obtaining study summary results (see Appendix J) and (k) a coupon for a free movie rental.

The cover letter explained the guidelines for participation. The letter clearly stated participation in the research study was voluntary and that participation in the study would not have any effect on services offered at the fitness studio. Subjects were informed there was no monetary compensation for their participation in the study; however, subjects received a coupon for a free movie rental as an incentive to return the completed questionnaires.

Participants who agreed to participate in the study completed the self-administered questionnaires at the fitness studio, placed the questionnaires in the provided envelope, sealed the envelope, and deposited the sealed envelope into a locked box located in a secure area in the facility locker room. No names were written on any of the questionnaires. To ensure participant confidentiality, only code numbers were used on the questionnaires in order to monitor and track the response rate. Implied consent to participate in the study was understood to be given when participants deposited the completed questionnaires into the provided locked box.

### *Instruments/Measures*

#### *Demographic Questionnaire*

A 10-item tool developed by the investigator was used to collect demographic data. The questionnaire included: (a) marital status, (b) age, (c) number of biologic children, (d) ethnicity, (e) highest education level completed, (f) annual household income, (g) enrollment status and length of time in a weight management program, (h) previous enrollment in a weight management program, (i) height, and (j) weight (see Appendix D). Participants were asked to self-report their height in feet and inches and weight in pounds. Stunkard & Albaum, (1981) studied the accuracy of self-reported weights and found a strong correlation between self-reported weights and actual weights,  $r(548) = .99, p = .05$ .

#### *Binge Eating Scale (BES)/Eating Habits Checklist*

The binge eating scale (BES), developed by Dr. James Gormally, is also known as the eating habits checklist (see Appendix E). Across the literature, the tool has been used to identify individuals with binge eating disorder (BED) as well as assess for severity of BED. This tool is inexpensive, time efficient, and does not require specially trained personnel to administer unlike the Eating Disorder Examination (EDE) or the Questionnaire on Eating and Weight Patterns (QWEP) (Gladden, Wadden, Foster, Vogt, & Wingate, 1998; Greeno, Marcus, & Wing, 1995). The BES questionnaire has been widely used by researchers in the field of eating disorders (Fairburn & Wilson, 1993; Gormally, Black, Daston, & Rardin, 1982; Pull, 2004; Yanovski & Sebring, 1994).

Permission to use the BES in this study was provided via electronic mail from Dr. James Gormally (see Appendix K). The tool consists of closed-ended, forced-choice items using a 4-point Likert-type scale format. Study participants were asked to circle the one response that best described their feelings associated with controlling an eating

behavior. Fairburn and Wilson (1993) reported good test-retest reliability of the BES. Timmerman (1999) also reported test-retest reliability of the BES,  $r = .87$  ( $p < .001$ ). In this research study, reliability analysis of the BES generated a Cronbach's alpha of .89, which reflects a high level of internal consistency of the instrument.

Instructions for scoring the BES and subsequently determining binge-eating severity based on BES responses were reported in the literature (Gormally, Black, Daston & Rardin, 1982). The developers of the BES assigned a weighted numerical value for each response on the BES. Weighted values were summed and a total BES score was generated. Possible scores on the BES can range from 0-46. The higher the numerical score on the BES, the greater the severity of BED (Gormally, Black, Daston, & Rardin, 1982). Consistent with the literature, three categories of BED severity were determined by scores on the BES: scores of 17 or less—no BED, scores of 18-26—moderate BED, and scores of 27 or greater—severe BED. Those with no binge eating disorder (BED) are individuals who do not exhibit behaviors and feelings associated with BED as defined in the *DSM-IV-TR*. Moderate binge eaters are those persons exhibiting moderate amounts of behaviors and feelings associated with BED as defined in the *DSM-IV TR*. Severe binge eaters are those individuals exhibiting severe behaviors and feelings associated with BED.

#### *Weight Cycling (WC) Questionnaire*

The weight cycling (WC) questionnaire is a five-item self-report measure cited extensively throughout obesity and weight management literature (Fairburn & Wilson, 1993; Freidman, Schwartz & Brownell, 1998; Gormally et al., 1982; Kensinger, Murtaugh, Reichmann &, Tangney, 1998). The WC questionnaire captures participants'

patterns of weight loss and regain while investigating psychological well-being (feeling terrible) related to the pattern. Participants were asked to circle the best answer to each of the five-items (see Appendix F).

A typographical error on the WC questionnaire was noted by the researcher after approximately 25 questionnaires were returned; therefore, item one was excluded from data analysis. Item one requested participants to circle the best response regarding being a *yo-yo dieter*. The five-point Likert responses should have been: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree. However, the typographical error consisted of a duplication of strongly disagree responses for item one.

Prior to data analysis, each of the scores on the four WC items was transformed into a standardized score. Following conversion to standardized scores, the WC score was computed as the sum of the standardized scores on the four WC items. A higher standardized score reflects a participants' decrease in psychological well-being (feeling terrible); inability to maintain weight loss, and a likelihood of regaining lost weight. Friedman, Schwartz & Brownell (1998) reported a Cronbach's alpha of .64 on the five-item WC questionnaire.

SPSS for Windows versions 10 and 11 were used for data analysis in this study. The alpha was set at a level of .05 to determine statistical significance.

### *Operational Definitions*

#### *Binge Eating Disorder (BED)*

For this study, the definition of BED was adopted from the *Diagnostic and Statistical Manual of Mental Disorders* (2000): "Binge eating is characterized by the recurrent episodes of two behaviors: (a) eating in a discrete period of time an amount of

food that is definitely larger than most people would eat in a similar period of time under similar circumstances, and (b) a sense of lack of control over eating during the episodes” (pp. 785-786). These episodes need to be associated with three or more of the following five behaviors: (a) eating rapidly, (b) eating until uncomfortably full, (c) eating a large amount of food when not feeling hungry, (d) eating alone because of embarrassment by volume of food consumed and (e) feeling disgusted, depressed, or guilty after overeating. In addition to meeting at least three of the five criteria to determine BED tendencies, the person must report a sense of loss of control of eating. In this study, the term BED was used to identify women who self-reported symptoms of BED as measured on the BES tool. (DeZwaan, 2001; Kotwal, Kaneria, Guerdjikova, & McElroy, 2004; Pull, 2004).

#### *Body Mass Index*

Body Mass Index (BMI) is used as guideline to determine healthy body weight. BMI was statistically calculated using the formula:  $BMI = (\text{Weight [pounds]} \times 704.5 / (\text{Height [inches]} )^2$  (WIN, 2005). For this study, BMI categories represented terminology used by the National Institutes of Health: (a) underweight as less than 18.5 kg/m<sup>2</sup>, (b) normal weight as 18.5-24.9 kg/m<sup>2</sup>, (c) overweight as 25-29.9 kg/m<sup>2</sup> and (d) obesity as a BMI of 30-39 kg/m<sup>2</sup>, and (e) severe obesity as 40 or greater.

## CHAPTER IV

## RESULTS

*Description of the Sample*

A convenience sample of women was obtained from a local fitness studio that offers full-service fitness and nutritional management. Research packets were distributed to a total of 56 women, aged 21 years and over, who were fitness studio members and who agreed to participate in this study. Of the 56 women who originally agreed to participate in the study and complete questionnaires, study data for three of the women were excluded because they did not meet eligibility criteria related to enrollment in a weight management program. Another two women did not return the questionnaires. Therefore, the study sample consisted of 51 women, resulting in a response rate of 91%.

Demographics of study participants ( $N = 51$ ) are shown in Table 1. More than three-fourths (84%) of women in the sample were Caucasian, and over half (57%) were currently married. More than two-thirds (69%) held a higher-education degree, and more than one-fourth (28%) had an income of \$90,000 or greater.

Table 1

*Demographic characteristics of the sample (N = 51)*

<b>Characteristics</b>	<b>Percent</b>
<b>Ethnicity/Race</b>	
Caucasian	84
Black	10
Asian or Pacific Islander	4
American Indian or Alaskan Native	2
<b>Marital Status</b>	
Single	19
Divorced	18
Married	57
Widowed	2
Other	4
<b>Education</b>	
High school graduate	12
Some college	15
Technical school	4
Associate's degree	22
Bachelor's degree	39
Master's, Doctoral degree, or post Doctoral studies	8
<b>Income</b>	
\$20,000-29,999	6
\$30,000-39,999	10
\$40,000-49,999	10
\$50,000-59,999	20
\$60,000-69,999	10
\$70,000-79,999	10
\$80,000-89,999	6
\$90,000 or greater	28

Table 2 identifies demographics specific to participants' age and number of children.

Table 2

*Descriptive statistics for study participants (N = 51)*

<b>Variable</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Range</b>
Age in years	42.7	10.2	21-61
Number of children	1.6	1.3	0-4

In this study, participants self-reported their height and weight. BMI was statistically calculated based on reported height and weight. Table 3 identifies demographics related to height, weight, and calculated body mass index (BMI) of the sample. According to previously defined BMI categories, no study participants were underweight. Twelve participants (24%) were normal weight, 17 participants (33%) were overweight, and 22 participants (43%) were obese. Additionally, of the obese participants, 6 (27%) had a BMI of 40 or greater, which is defined as extreme obesity.

Table 3

*Height, weight, & BMI of study participants (N = 51)*

<b>Variable</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Range</b>
Height in inches	64.9	2.9	58-71
Weight in pounds	188.6	46.7	115-350
Calculated BMI	31.3	6.9	20.5-53.2

The demographics questionnaire also included an item related to participants' current or past enrollment in a weight management program. In this study, results demonstrated more than one-third (37%) of the sample was currently enrolled, and more than three-fourths (88%) had previously been enrolled in a weight management program.



*Binge Eating Scale (BES)/Eating Habits Checklist Results*

The binge eating scale (BES) is a self-report questionnaire containing 16 items for assessing level of severity of BED. On the BES, participants chose the item that best described their eating behavior. In this study, two BES questionnaires were excluded from data analysis due to incomplete responses; therefore, questionnaires from 49 participants were eligible for inclusion in data analyses related to the BES.

Item response values for each of the 16 items were weighted according to instructions provided with the BES tool. Weighted values were summed to generate a total BES score. Possible scores on the BES can range from 0-46. In this study, participants' BES scores ranged from 1-37, with a mean of 15.4 and a standard deviation of 8.6. Using scoring methods for the BES as reported in the literature, BES scores in this study were analyzed to identify participants with BED tendencies. For this study, three categories of BED severity were created: scores of 17 or less—no BED, scores of 18-26—moderate BED and scores of 27 or greater—severe BED.

Table 4 identifies mean BES scores of participants in the three categories of BED severity.

Table 4

*Participants' mean BES scores in three categories of BED severity (n = 49)*

<b>BED severity</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Range</b>
No binge eating ( <i>n</i> = 31)	10.0	4.6	1-17
Moderate binge eating ( <i>n</i> = 13)	21.7	2.8	18-26
Severe binge eating ( <i>n</i> = 5)	31.8	3.3	28-37

This study also examined demographic characteristics of participants in the three BED categories (see Table 5).

Table 5

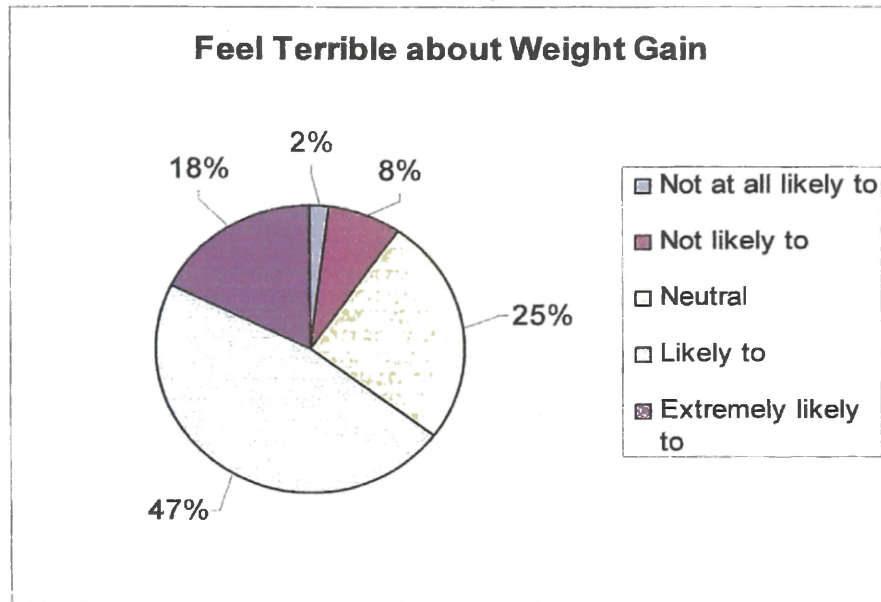
*Demographics of participants in three BED categories*

<b>Characteristic</b>	<b>No BED (n = 31)</b>	<b>Moderate BED (n = 13)</b>	<b>Severe BED (n = 5)</b>
<b>Mean age (years)</b>	41.4	45.5	39.2
<b>Mean BMI (statistically calculated index)</b>	30.4	31.2	33.2
<b>Ethnicity/Race (%)</b>			
White	90	69	100
Black or African American	3	23	-
Hispanic or Latino	-	-	-
Asian or Pacific Islander	7	8	-
American Indian or Alaska Native	-	-	-
Other	-	-	-
<b>Marital status (%)</b>			
Single	23	15	20
Divorced	13	31	-
Married	61	46	60
Widowed	-	8	-
Other	3	-	20
<b>Level of education (%)</b>			
Less than High School	-	-	-
High school graduate	10	15	20
Some college	23	8	-
Technical school	7	-	-
Associate's degree	23	23	-
Bachelor's degree	32	46	80
Master's, Doctoral degree, or post Doctoral studies	7	8	-
<b>Annual income (%)</b>			
\$19,000 or less	-	-	-
\$20,000-29,999	10	-	-
\$30,000-39,999	7	15	20
\$40,000-49,999	7	15	-
\$50,000-59,999	13	31	40
\$60,000-69,999	13	8	-
\$70,000-79,999	13	-	20
\$80,000-89,999	7	8	-
\$90,000 or greater	30	23	20

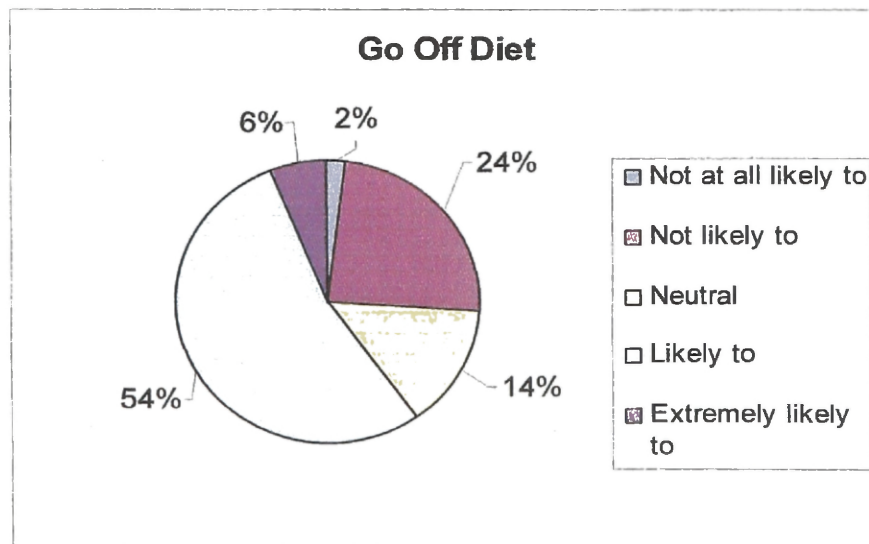
The three categories of binge eating severity were collapsed into two categories (groups) for parametric data analysis. Participants with BES scores of 1-17 comprised the No BED group and participants with BES scores of 18-37 comprised the BED group. In this study ( $n = 49$ ), BES scores identified that 31 (61%) participants had no BED, and 18 (35%) had BED.

### *Weight Cycling Experience*

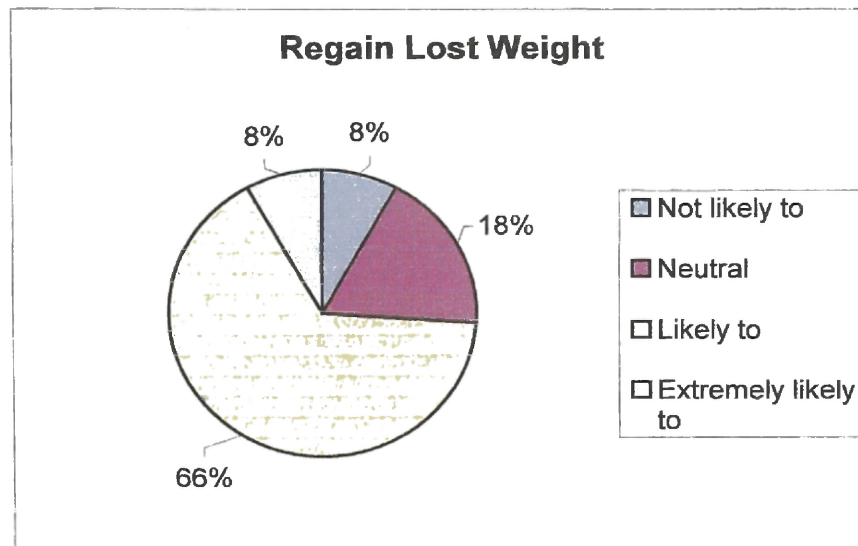
Participants' weight cycling (WC) experience was evaluated with a self-report, five-item WC questionnaire (see Appendix F). The first item, addressing *yo-yo dieting*, was eliminated from data analysis due to a typographical error. The remaining four WC items used for data analysis focused on behaviors and emotions associated with weight loss and weight regain, including the amount of weight regained after weight loss. Data analysis revealed that almost two-thirds (65%) of respondents ( $N = 51$ ) were likely to feel terrible about regaining lost weight, over half (60%) were likely to go off their diet, almost three-fourths (74%) were likely to regain lost weight, and less than half (45%) were likely to regain more than their starting weight. Itemized percentages of participants' responses are illustrated in the following figures. Figure 1 illustrates the percent responses to the likelihood of feeling terrible, Figure 2 illustrates the percent responses related to the likelihood to go off their diet, and Figure 3 illustrates the percent responses related to the likelihood to regain lost weight.



*Figure 1.* Percentage of participants likely to feel terrible about regaining lost weight.



*Figure 2.* Percentage of participants likely to go off their diet.



*Figure 3.* Percentage of participants likely to regain lost weight.

The last item on the WC questionnaire requested participants to report the amount of weight typically regained after a weight loss. Results demonstrated that more than one-third (39%) of participants typically regained their weight back to original starting weight, and just less than half of participants (45%) regained more than their original starting weight. Shown in Figure 4 are percent responses to this final item on the WC questionnaire.

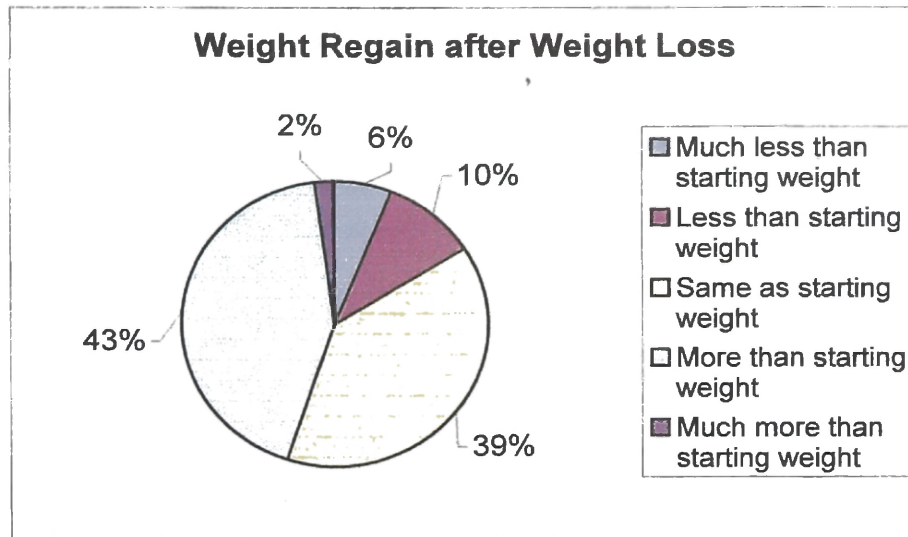


Figure 4. Percentage of participants according to weight regain after weight loss.

***RESEARCH QUESTION ONE: What is the prevalence of binge eating disorder (BED) in women ever enrolled in a weight management program?***

Using scoring methods for the BES as reported in the literature, BES scores in this study were analyzed to identify participants with BED tendencies. For this study, three categories of BED severity were created: scores of 17 or less—no BED, scores of 18-26—moderate BED, and scores of 27 or greater—severe BED. In this study ( $n = 49$ ), the BES scores identified that over half (63%) of respondents had no BED, just over one-fourth (27%) had moderate BED, and one-tenth (10%) had severe BED. Figure 5 illustrates the percentage of women in each of the three BED categories.

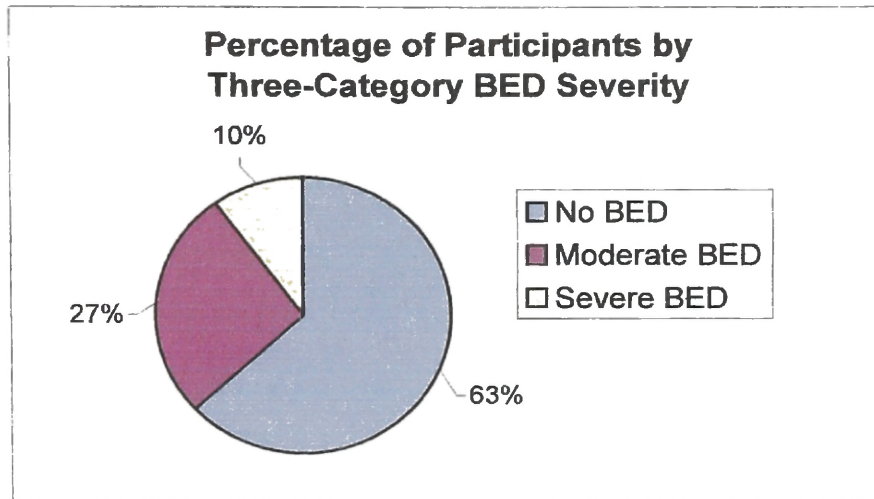


Figure 5. Percentage of participants by three-category BED severity.

***RESEARCH QUESTION TWO: Is there a difference in body mass index (BMI) between women who have binge eating disorder (BED) and those who do not?***

Consistent with reported BES scoring and for purposes of data analysis, scores on the binge eating scale (BES) were collapsed into two groups that represented presence or absence of binge eating disorder (BED). Participants with BES scores of 1-17 were those who had no BED ( $n = 31$ ) and participants with BES scores of 18-37 were those who had BED ( $n = 18$ ). In this study, the BES scores identified that over half (63%) of respondents had no BED and over one-third (37%) had BED. Figure 6 illustrates the percentage of participants in the two BED categories.

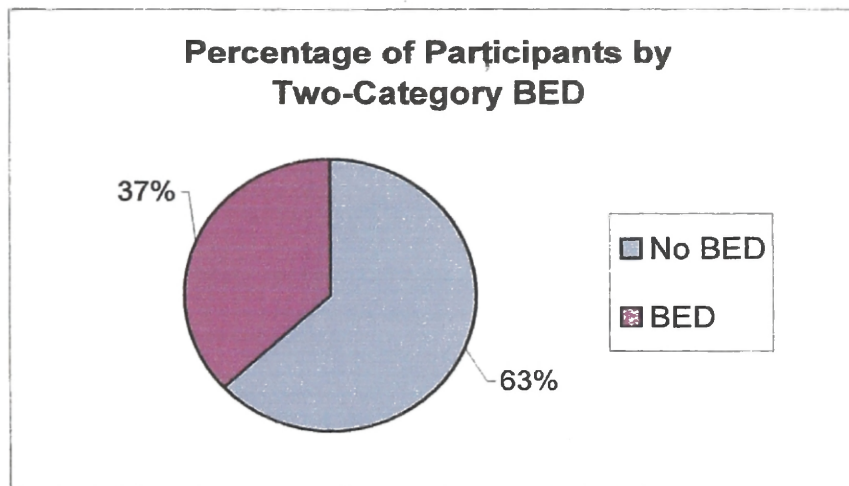


Figure 6. Percentage of participants by two-category BED severity.

Table 6 identifies mean BES scores of participants in the two categories of BED severity.

Table 6

*Participants' mean BES scores in two categories of BED severity (N = 49)*

<b>BED severity</b>	<b>M</b>	<b>SD</b>	<b>Range</b>
No BED ( <i>n</i> = 31)	10.0	4.6	1-17
BED ( <i>n</i> = 18)	24.5	5.5	18-37

Table 7 identifies demographics of the participants in the two categories of BED severity.



Table 7

*Demographics of participants in two BED categories*

<b>Characteristic</b>	<b>No BED (n = 31)</b>	<b>BED (n = 18)</b>
<b>Mean age (years)</b>	41.4	43.7
<b>Mean BMI (statistically calculated index)</b>	30.4	31.7
<b>Ethnicity/Race (%)</b>		
White	90	78
Black or African American	3	17
Hispanic or Latino	-	-
Asian or Pacific Islander	-	-
American Indian or Alaska Native	7	6
Other	-	-
<b>Marital Status (%)</b>		
Single	23	16
Divorced	13	22
Married	61	50
Widowed	-	6
Other	3	6
<b>Level of Education (%)</b>		
Less than high school	-	-
High school graduate	10	17
Some college	23	6
Technical school	7	-
Associate's degree	23	17
Bachelor's degree	32	56
Master's, Doctoral degree, or post-Doctoral studies	7	6
<b>Annual Income (%)</b>		
\$19,000 or less	-	-
\$20,000- \$29,000	10	-
\$30,000- \$39,0000	7	17
\$40,000-\$49,000	7	11
\$50,000-\$59,000	13	33
\$60,000-\$69,000	13	6
\$70,000-79,000	13	6
\$80,000-\$89,000	7	6
\$90,000 or greater	30	22

Participants' BMI scores were statistically calculated using the formula:  $BMI = (\text{Weight [pounds]} \times 704.5 / (\text{Height [inches]} )^2$  (WIN, 2005). An independent-samples  $t$ -test was conducted to determine if the BMI scores differed between the two groups. Results indicated that the  $t$ -test was not significant,  $t(47) = -.73, p = .47$ . There was no statistically significant difference in mean BMI scores between the group with no BED ( $M = 30.4, SD = 6.8$ ) and the group with BED ( $M = 31.7, SD = 5.3$ ). A Pearson product-moment correlation test was also performed to test for a relationship between BMI and severity of BED. Results indicated there was a statistically significant weak relationship between BMI and BED severity,  $r(47) = .28, p < .05$ . Women with a higher BMI also tended to have a higher severity of BED.

***RESEARCH QUESTION THREE: Is there a relationship between weight cycling (WC) and binge eating disorder (BED)?***

To test for a relationship between weight cycling (WC) and severity of binge eating disorder (BED), a Pearson product-moment correlation statistical test was performed. Results indicated there was a statistically significant strong relationship between WC and severity of binge eating disorder (BED),  $r(45) = .54, p < .01$ . High scores on the WC questionnaire were positively correlated with high scores on the BES questionnaire. As participants reported a decrease in psychological well-being (feeling terrible), inability to maintain weight loss, and a likelihood of regaining lost weight, they also reported a higher degree of BED severity.

***Additional Analysis***

To test for a relationship between BMI and participants' age, a Pearson product-moment correlation statistical test was performed. Results indicated there was a

statistically significant moderately strong relationship between BMI and the age of participants,  $r(49) = .43, p < .01$ . These findings suggest that older age is associated with a higher BMI.

## CHAPTER V

## DISCUSSION AND SUMMARY

The prevalence of the conditions of overweight and obesity in the United States is staggering. Sedentary lifestyle coupled with a lack of dietary restraint contributes to the conditions of overweight and obesity. The consequences of the conditions of overweight and obesity contribute to the development of cardiovascular disease, arthritis, diabetes, and psychologic dysphoria such as depression and low self-esteem. Supported in the literature, as well as in this research study, binge eating disorder (BED) and weight cycling (WC) are associated with the conditions overweight and obesity (DeZwaan, 2001; Kotwal et al. 2004; Pull, 2004; Spitzer et al., 1992; Venditti et al.1996; Yanovski & Sebring, 1994).

Binge eating disorder (BED) is characterized by having recurrent episodes of eating large amounts of food and feeling a sense of lack of control when eating the large amount of food. The purpose of this study was to investigate the prevalence of BED in females ever enrolled in a weight management program. A convenience sample of women ( $N = 51$ ) was obtained from a local fitness studio that offers full-service fitness and nutritional management. Participants completed a demographics questionnaire, a 16-time binge eating scale (BES)/eating habits checklist, and a four-item weight cycling questionnaire. Three research questions in this study were:

- 1. What is the prevalence of binge eating disorder (BED) in women ever enrolled in a weight management program?***

2. *Is there a difference in body mass index (BMI) between women who have binge eating disorder (BED) and those who do not?*
3. *Is there a relationship between weight cycling (WC) and binge eating disorder (BED)?*

### *Conceptual Framework*

This study utilized the biopsychosocial model which supports the majority of biological, psychological, and social behaviors associated with binge eating disorder (BED) tendencies. Society places a great deal of pressure on women to be thin, attractive and youthful in appearance. This societal pressure encourages women to diet and exercise. However, demanding home, work, and financial obligations often prohibit women from maintaining a schedule that requires daily dieting and exercise. Thus, when societal demands are not met, self-esteem and self-worth are compromised. This in turn can lead to unsuccessful restrained eating (dieting) which can trigger behaviors leading to a binge eating episode. The binge eating episode can lead to weight gain. Weight gain can be an antecedent to poor self-esteem and decreased self-worth. Thus, the cycle of binge eating is in motion.

The instruments used in this study identified the biological, psychological, and social components associated with the behaviors contributing to the development of BED. The demographics questionnaire identified the biologic and socioeconomic characteristics of women participating in this study. The binge eating scale (BES) questionnaire identified the behaviors, feelings, and cognitions associated with BED. In this study, the 16-item BES tool was used to identify women with BED tendencies.

The WC questionnaire identified participants' patterns of weight loss and regain while investigating psychological well-being (feeling terrible) related to the WC pattern.

***RESEARCH QUESTION ONE: What is the prevalence of binge eating disorder (BED) in women ever enrolled in a weight management program?***

This study identified the prevalence of binge eating disorder (BED) in women ever enrolled in a weight management program. In this study, data analysis revealed that over half (61%) of respondents had no BED, just over one-fourth (26%) had moderate BED, and one-tenth (10%) had severe BED. Overall, in this study, more than one-third of the sample reported behaviors associated with moderate and severe BED.

The literature reports binge eating disorder (BED) as being prevalent in the normal weight, overweight, and obese woman (Fairburn & Harrison, 2003; Kotwal et al., 2004). Primarily with women, the majority of studies investigating BED report typical participants are Caucasian and in their forties, are likely to be overweight or obese, have a tendency to drop out of weight management programs, and report more frequent episodes of weight loss and regain (Brownell & Fairburn, 1995; Fairburn & Harrison; Kotwal et al.; Pull, 2004). In this study, the demographic findings of women with BED are consistent with the majority of reported studies about women with BED.

On average, the women with no BED were 41 years old with a mean BMI of 30 kg/m<sup>2</sup>. Ninety percent of them were Caucasian, 61% of them were married, 32% held a Bachelor's degree, and 30% had an annual income of \$90,000 or greater. On average, the women with moderate BED were 55 years old with a mean BMI of 31 kg/m<sup>2</sup>. Sixty-nine percent of them were Caucasian, 46% of them were married, 46% held a Bachelor's degree, and 31% had an annual income of \$50,000-\$59,000. On average, the women

with severe BED were 39 years old with a mean BMI of 33 kg/m<sup>2</sup>. One hundred percent of them were Caucasian, 60% of them were married, 80% held a Bachelor's degree, and 40% had an annual income of \$50,000-\$59,000.

To aid in the identification of women with or without BED, results of this study suggest demographic characteristics alone are not adequate when evaluating for BED tendencies. Clearly, it is necessary to use both the BES and a WC tool in order to adequately evaluate BED tendencies. The BES identifies behaviors, feelings, and cognitions associated with BED, while the WC tool identifies psychological well-being and patterns of weight loss and weight regain.

***RESEARCH QUESTION TWO: Is there a difference in body mass index (BMI) between women who have binge eating disorder (BED) and those who do not?***

In this study, an independent-samples *t*-test was conducted to determine if the body mass index (BMI) differed between women with and without BED. The results of this study indicated is no statistically significant difference in BMI between women who have binge eating disorder (BED) and those who do not. However, results of this study also revealed a significant positive weak correlation between BMI and severity of BED. Such a finding warrants further investigation. Perhaps a relationship, other than a linear one, exists between BMI and BED. Historically, clinicians have regarded an elevated BMI as a risk factor for the development of coronary artery disease, dyslipidemia, arthritis, diabetes, hypertension, and emotional dysphoria. The correlation results of this study seem to suggest that clinicians should also regard an elevated BMI as a potential risk factor for BED.

Research studies investigating BED primarily focused on persons with the conditions of overweight and obesity. Thus, the conditions of overweight and obesity are prevalent in those with BED (Brownell & Fairburn, 1995; DeZwaan, 2001; Fairburn & Wilson, 1993; Gormally et al. 1982; Kotwal et al., 2004). In this study, no participants were defined as underweight, 12% of participants were defined as normal weight, 33% of participants were defined as overweight, 43% of participants were defined as obese, and 27% were extremely obese. Overall, the majority of women (88%) in this study were overweight. These findings are consistent with the literature; the conditions of overweight and obesity are prevalent in those with BED. These findings also suggest the prevalence of the conditions of overweight and obesity in our communities is staggering.

***RESEARCH QUESTION THREE: Is there a relationship between weight cycling (WC) and binge eating disorder (BED)?***

In this study, to test for a relationship between weight cycling (WC) and severity of binge eating disorder (BED), a Pearson product-moment correlation statistical test was performed. Results indicated that there was a statistically significant positively strong relationship between WC and severity of BED. In this study, participants experienced decreased psychological well-being (feeling terrible), inability to maintain weight loss, and a likelihood of regaining lost weight as they reported a higher severity of BED. Possibly, this can be attributed to the pressure society places on women to be thin, attractive, and youthful in appearance. Demanding home, work, and financial obligations often prohibit women from maintaining a schedule that includes dieting and exercise. Unable to meet these demands, women can “feel terrible” which results in compromised feelings of self-esteem and self-worth. This can lead to cycles of restrained eating



(dieting) which can trigger BED tendencies. Previous studies concluded a relationship exists between WC and BED (Brownell & Fairburn, 1995; Fairburn & Wilson, 1993; National Task Force on the Prevention and Treatment of Obesity, 2000; Spitzer et al., 1992).

#### *Discussion and Summary of Additional Analysis*

This study revealed a significant moderately strong relationship between body mass index (BMI) and age of the participants. This additional finding suggests that older age is associated with elevated BMI; as a woman ages, her BMI has a tendency to increase. The findings in this study seem to support previous research suggesting that the natural process of aging decreases metabolic rate, thus increasing BMI. Patients with unrealistic BMI goals may lead to low self-esteem and lack of dietary restraint that may trigger a binge eating episode. As a partner in health, the family nurse practitioner (FNP) can promote optimal levels of health and well being. By setting mutual realistic BMI goals with a patient, the FNP can help to minimize the harmful physiologic and psychologic effects of elevated BMI.

This study resulted in finding a significantly weak relationship between BMI and severity of binge eating disorder (BED); perhaps a nonlinear relationship exists between BMI and severity of BED. Further research is warranted in this area. Clinicians can best incorporate both study results into practice by providing women with this information as anticipatory guidance for disease prevention.

#### *Implications for practice*

Nearly all nursing programs teach students to approach patient care using a form of the biopsychosocial theoretical framework. Most nurses incorporate such a model into

everyday practice. The family nurse practitioner (FNP) program is no exception. The biopsychosocial framework encompasses concepts and behaviors associated with binge eating disorder (BED) tendencies and weight cycling (WC). The FNP is in a position to impact the multiple factors that influence health and wellness. Obtaining an accurate medical, family, and social history, the FNP can help women understand their biologic-genetic and psychologic familial patterns that may trigger the conditions of overweight and obesity.

Aware that the demographic characteristics of women with BED are relatively noncontributory when attempting to evaluate BED tendencies, the FNP can utilize specific tools to screen for BED. In this study, women with BED were typically Caucasian and in their early forties, have a body mass index (BMI) of greater than 30, and report an annual income of greater than \$20,000. This study supports the use of the binge eating scale (BES) and a weight cycling (WC) questionnaire to assess patients for BED tendencies.

Identified in this study, and perhaps the most important information to elicit from women struggling with weight management issues, is the importance of determining their WC experience and screening for their BED tendencies. The FNP can assess for BED and subsequently refer patients to the appropriate resources to manage BED tendencies. Cognitive behavioral therapy (CBT), when administered by licensed providers, is effective in the management of BED and other eating disorders. The use of pharmacotherapy to treat BED is also effective for the treatment and management of BED. Additionally, the FNP can assess the psychological well-being of women who may have BED. Assessment of a woman's emotional health can provide clues to the

psychologic conditions associated with BED, such as depression and low self-esteem. For example, the Beck Depression Inventory is a reliable tool to screen for depression (Burns, 1999).

For patients without BED, the FNP can assist them in identifying factors that contribute to the conditions of overweight and obesity. Some factors that contribute to the conditions of overweight and obesity may be a biologic-genetic predisposition, inactivity, a diet high in fat and calories, a diet low in fiber, or other physiologic and psychologic factors. If the cause is inactivity, the FNP can counsel patients about the role that exercise plays in achieving and maintaining a normal BMI. The FNP can also assist patients in creating individually tailored exercise programs. If the cause is related to a diet high in fat and calories and low in fiber, the FNP can offer resources to ensure the patients eat an appropriate amount of food from each of the food groups. The federal government has outlined types and amount of foods necessary to maintain good nutritional health as identified in *MyPyramid* (USDA, 2005). Thyroid disorder and diabetes are examples of physiological factors contributing to the conditions of overweight and obesity. Finally, if factors are psychologic, the FNP can screen for depression or anxiety disorder and choose to make appropriate referrals.

### *Limitations*

One limitation of this study was the small sample size ( $N = 51$ ). For this study, a convenience sample of women was obtained from an upscale fitness studio in a relatively affluent county in a Midwestern state. Furthermore, this study consisted primarily of Caucasian participants, most with at least some level of higher education. This study may not reflect demographics, weight cycling experience, and binge eating disorder

may have been under time constraints or had inadequate recall when completing the questionnaires.

A typographical error on the weight cycling (WC) questionnaire, forced the elimination of item one from the five-item WC questionnaire. However, items two through five were included in the analysis of this study. The reported Cronbach's alpha score on the weight cycling tool was .64 (Friedman, Brownell & Schwartz, 1998). However, in this study, the reliability of the WC tool was recalculated using items two through four and the reliability was consistent at .64 (Cronbach's .64). These results must be viewed with some caution due to the low reliability of the WC tool.

The literature identifies the Eating Disorders Examination (EDE) as the most reliable tool to evaluate severity of BED (Fairburn, 1995; Fairburn & Wilson, 1993; Pull, 2004; Wilfley, Schwartz, Spurrell & Fairburn, 2000). However, the binge eating scale (BES) was used in this study to evaluate severity of BED. Unlike the EDE, the BES is convenient, less time consuming and does not require the researcher to have specialized training.

### *Recommendations*

Replicating this study with a more diverse and representative population of women may permit results to be generalized across the weight loss community. Obtaining a random sample from a commercial weight loss program or obtaining a convenience sample from, for example, women entering a grocery store may increase the diversity of the population. A sample with more diverse economic, educational, and cultural backgrounds may demonstrate valuable research findings. Additionally, with a Cronbach alpha of .64, the weight cycling (WC) tool has poor internal consistency. Replicating this

research findings. Additionally, with a Cronbach alpha of .64, the weight cycling (WC) tool indicated poor reliability. Replicating this study with a more precise and reliable tool to capture women's weight cycling (WC) experience would definitely strengthen the reliability and validity of the research findings. Additional research is needed to develop a tool that reflects the complex phenomenon of WC.

Previous studies have demonstrated the accuracy of self-reported weights (Stunkard & Albaum, 1981). Additional studies are needed to validate that self-reported weights are indeed accurate.

The conditions of overweight and obesity are in epidemic proportions across the United States; these conditions contribute to serious physiologic and psychologic health problems. The nurse practitioner (NP) is in an optimal position to assist patients in identifying possible causes of conditions of overweight and obesity. The NP can reliably screen for binge eating disorder (BED) tendencies by using the 16-item binge eating scale (BES) and a weight cycling (WC) tool. By working as a partner in health care with patients, the NP can empower women to take control of their weight, thus decreasing the prevalence of the conditions of overweight and obesity in our communities.

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Appendix A

University of Michigan-Flint Human Subjects Approval



THE UNIVERSITY OF MICHIGAN-FLINT

OFFICE OF RESEARCH  
(810) 752-3180

UNIVERSITY OF MICHIGAN – FLINT  
Human Subjects Review

February 14, 2005

To: Jan Brady  
Nursing Department

From: Marianne McGrath, Chair, Human Subjects Committee 

Re: What is the Prevalence of Binge Eating Disorder in Females Ever Enrolled in a  
Weight Management Program?  
(Approval #57/04)

This is to inform you that the human subject review requested for student project "What is the Prevalence of Binge Eating Disorder in Females Ever Enrolled in a Weight Management Program?" has been approved by the Human Subjects Committee. Should you wish to make any changes in the use of human subjects which differ from the original approved proposal, you must inform this committee prior to making these changes. If you are seeking funding for this proposal, it is your responsibility to ensure that your proposed use of human subjects in your funding application is consistent with that approved by this memo.

This approval for your project is valid for a period of twelve months. If your project extends beyond this period (twelve months), please re-submit your proposal for consideration.

Appendix B

Fitness Studio Letter of Approval

**Fitness studio**

**February 8, 2005**

**To Whom It May Concern:**

**The intent of this letter is to authorize Brenda Pope and two research assistants, to ask members of this fitness studio to participate in Brenda's study. In addition, I have read, understand and agree to the study guidelines as outlined on the cover letter given to the study participants. I have had the opportunity to approve the contents of the research packet given to the subjects.**

**The study participants will be aware that by agreeing to or not agreeing to participate in the study will have no bearing or effect on services offered and provided by this fitness studio.**

**Yours in fitness,**

**XXXX XXXX  
Studio manager**

Appendix C

**Letter to Participants**



February 24, 2005

Dear Interested Volunteer,

I would like to invite you to participate in a study about eating habits that I am conducting as a Family Nurse Practitioner student at the University of Michigan-Flint. The purpose of the study is to identify the prevalence of binge eating among women who are 21 years of age and older who have ever been enrolled in a weight management program. Knowledge gained from this study may assist health care professionals in providing assistance to their patients with weight management problems.

I am asking you to fill out a three-part questionnaire which will take you approximately 15-30 minutes to complete. The first part will ask 16 questions about your eating habits. The second part will ask three questions related to your dieting history. The third part will ask about your marital status, age, ethnicity, educational level, annual household income, history of being enrolled in a weight management program, and your current weight and height.

At the beginning of each section of the questionnaire, there will be directions on how to complete the form. Please place the completed questionnaire forms in the provided envelope, seal the envelope, and place the sealed envelope into the locked box. The locked box is located in the locker room. By completing and returning the questionnaires, you are giving consent to participate in this study.

Study participants can request a summary of study results by completing the provided pre-stamped addressed post card.

The information provided will be kept completely confidential by using only a code number as an identifier on the questionnaires. You are requested not to write your name on the questionnaire or on the envelope. Study results will be reported only as group data. To help ensure the confidential nature of this study, the postcards with the address of the study participants who request a mailing of the project summary will be destroyed upon completion of the project no later than May of 2006. Your participation in this study is entirely voluntary.

You may choose not to answer any of the questions.

You will not be paid to participate in the study. A thank you note card is enclosed in the packet. In addition, as a token of my appreciation for participating in the study, a coupon for a free movie rental is also enclosed.

A written explanation on how to obtain and interpret your eating habits checklist score will be posted on the bulletin board after the required number of questionnaires has been tabulated. Finally, enclosed in the packet will be the

address, telephone number, and electronic mail addresses of two organizations that can provide study participants with information on eating disorders.

Thank you in advance for agreeing to participate in this study. If you have any questions, please contact me at the following University phone number: (810) 762-3420 or via electronic mail (e-mail) at [brpope@umflint.edu](mailto:brpope@umflint.edu).

Brenda J. Pope RN, BSN  
Graduate Student  
Master of Science in Nursing  
Family Nurse Practitioner Program  
University of Michigan – Flint  
Department of Nursing

Research assistants:

Appendix D

Demographics Questionnaire

Code # \_\_\_\_\_

Demographic Information

Directions: For each question, please circle the appropriate number, select the appropriate response, or write your answer in the space provided.

A. What is your marital status?

1. Single
2. Divorced
3. Married
4. Widowed
5. Other \_\_\_\_\_

B. What is your age in years? \_\_\_\_\_

C. How many biological children do you have? \_\_\_\_\_

D. What ethnicity/race do you identify with?

1. White
2. Black or African American
3. Hispanic or Latino
4. Asian or Pacific Islander
5. American Indian or Alaska Native
6. Other \_\_\_\_\_

E. What is the highest grade or degree you completed in school?

1. Less than high school
2. High School Graduate
3. Some college
4. Technical school
5. Associate's Degree
6. Bachelor's Degree
7. Master's, Doctoral Degree, or Post Doctoral studies

F. What is your annual household income?

1. \$19,999 or less
2. \$20,000 - \$29,999
3. \$30,000 - \$39,999
4. \$40,000 - \$49,999
5. \$50,000 - \$59,999
6. \$60,000 - \$69,999
7. \$70,000 - \$79,999
8. \$80,000 - \$89,999
9. \$90,000 or greater

G. Are you currently enrolled in any type of weight management program?

YES \_\_\_\_\_ NO \_\_\_\_\_ (if no, proceed to question H.)

How long? (Please write your response for all that apply below.)

YEARS \_\_\_\_\_ MONTHS \_\_\_\_\_ WEEKS \_\_\_\_\_

H. Have you previously been enrolled in a weight management program?

YES \_\_\_\_\_ NO \_\_\_\_\_

I. What is your body weight today? \_\_\_\_\_ POUNDS.

J. What is your height today? \_\_\_\_\_ FEET.  
\_\_\_\_\_ INCHES.

Appendix E

Binge Eating Scale (BES)/Eating Habits Checklist

Code # \_\_\_\_\_

Eating habits checklist

**Directions:** Below are groups of numbered statements. Read all of the statements in each group and circle the number of the one response that best describes the way you feel about the problems you have controlling your eating behavior.

**Group #1**

1. I don't feel self-conscious about my weight or body size when I'm with others.
2. I feel concerned about how I look to others, but it normally does not make me feel disappointed with myself.
3. I do get self-conscious about my appearance and weight which makes me feel disappointed in myself.
4. I feel very self-conscious about my weight and frequently, I feel intense shame and disgust for myself. I try to avoid social contacts because of my self-consciousness.

**Group # 2**

1. I don't have any difficulty eating slowly in the proper manner.
2. Although I seem to "gobble down" foods, I don't end up feeling stuffed because of eating too much.
3. At times, I tend to eat quickly and then, I feel uncomfortably full afterwards.
4. I have the habit of bolting down my food, without really chewing it. When this happens, I usually feel uncomfortably stuffed because I've eaten too much.

**Group # 3**

1. I feel capable to control my eating urges when I want to.
2. I feel like I have failed to control my eating more than the average person.
3. I feel utterly helpless when it comes to feeling in control of my eating urges.
4. Because I feel so helpless about controlling my eating I have become very desperate about trying to get in control.

**Group #4**

1. I don't have the habit of eating when I'm bored.
2. I sometimes eat when I'm bored, but often I'm able to "get busy" and get my mind off food.
3. I have a regular habit of eating when I'm bored, but occasionally, I can use some other activity to get my mind off eating.
4. I have a strong habit of eating when I'm bored. Nothing seems to help me break the habit.

**Group #5**

1. I'm usually physically hungry when I eat something.
2. Occasionally, I eat something on impulse even though I really am not hungry.
3. I have the habit of eating foods that I might not really enjoy, to satisfy a hungry feeling even though physically, I don't need the food.
4. Even though I am not physically hungry, I get a hungry feeling in my mouth that only seems to be satisfied when I eat food, like a sandwich, that fills my mouth. Sometimes, when I eat the food to satisfy my mouth hunger, I then spit out the food so I won't gain weight.

**Group # 6**

1. I don't feel any guilt or self-hate after I overeat.
2. After I overeat, occasionally I feel guilt or self-hate.
3. Almost all the time I experience strong guilt or self-hate after I overeat.

**Group # 7**

1. I don't lose total control of my eating when dieting even after periods when I overeat.
2. Sometimes when I eat a "forbidden food" on a diet, I feel like I "blew it" and eat even more.
3. Frequently, I have the habit of saying to myself, "I've blown it now, why not go all the way" when I overeat on a diet. When that happens I eat even more.
4. I have a regular habit of starting diets for myself, but I break the diets by going on an eating binge. My life seems to be either a "feast" or a "famine."

**Group # 8**

1. I rarely eat so much food that I feel uncomfortably stuffed afterwards.
2. Usually about once a month, I eat such a quantity of food, I end up feeling very stuffed.
3. I have regular periods during the month when I eat large amounts of food, either at mealtime or at snacks.
4. I eat so much food that I regularly feel quite uncomfortable after eating and sometimes a bit nauseous.

**Group #9**

1. My level of calorie intake does not go up very high or go down very low on a regular basis
2. Sometimes when I overeat, I will try to reduce my caloric intake to almost nothing to compensate for the excess calories I've eaten.
3. I have a regular habit of overeating during the night. It seems that my routine is not to be hungry in the morning but overeat in the evening.
4. In my adult years, I have had week-long periods where I practically starve myself. This follows periods when I overeat. It seems like I live a life of either "feast" or "famine."



**Group #10**

1. I usually am able to stop eating when I want to. I know when "enough is enough."
2. Every so often, I experience a compulsion to eat which I can't seem to control.
3. Frequently, I experience strong urges to eat which I seem unable to control, but at other times I can control my eating urges.
4. I feel incapable of controlling urges to eat. I have a fear of not being able to stop eating voluntarily.

**Group #11**

1. I don't have any problems stopping eating when I feel full.
2. I usually can stop eating when I feel full but occasionally overeat leaving me feeling uncomfortably stuffed.
3. I have a problem stopping eating once I start and usually I feel uncomfortably stuffed after I eat a meal.
4. Because I have a problem not being able to stop eating when I want, I sometimes induce vomiting to relieve my stuffed feeling.

**Group #12**

1. I seem to eat just as much when I'm with others (family, social gatherings) as when I'm by myself.
2. Sometimes, when I'm with other persons, I don't eat as much as I want to eat because I'm self-conscious about my eating.
3. Frequently, I eat only a small amount of food when others are present, because I'm very embarrassed about my eating.
4. I feel so ashamed about overeating that I pick times to overeat when I know no one will see me. I feel like a "closet eater."

**Group #13**

1. I eat three meals a day with only an occasional between meal snack.
2. I eat three meals a day, but I also normally snack between meals.
3. When I am snacking heavily, I get in the habit of skipping regular meals.
4. There are regular periods when I seem to be continually eating, with no planned meals.

**Group # 14**

1. I don't think much about trying to control unwanted eating urges.
2. At least some of the time, I feel my thoughts are pre-occupied with trying to control my eating urges.
3. I feel that frequently I spend much time thinking about how much I ate or about trying not to eat anymore.
4. It seems that most of my waking hours are pre-occupied by thoughts about eating or not eating. I feel like I'm constantly struggling not to eat.

**Group #15**

1. I don't think about food a great deal.
2. I have strong cravings for food but they last only for brief periods of time.
3. I have days when I can't seem to think about anything else but food.
4. Most of my days seem to be pre-occupied with thoughts about food. I feel like I live to eat.

**Group #16**

1. I usually know whether or not I'm physically hungry. I take the right portion of food to satisfy me.
2. Occasionally, I feel uncertain about knowing whether or not I'm physically hungry. At these times it's hard to know how much food I should take to satisfy me.
3. Even though I might know how many calories I should eat, I don't have any idea what is a "normal" amount of food for me.

Appendix F

Weight Cycling (WC) Questionnaire

Code# \_\_\_\_\_

### Weight Cycling Questionnaire

Weight cycling refers to the number of times a person loses or gains weight in a lifetime. Please answer the following three questions below by circling the one appropriate response to each item.

1) Are you a yo-yo dieter? (Do you lose and regain weight?)

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly disagree

2) If you lose weight but then begin regaining, how likely are you to have the following responses? (Please circle one response for each category.)

**Feel terrible:**

1. Not at all likely to
2. Not likely to
3. Neutral
4. Likely to
5. Extremely likely to

**Go off the diet:**

1. Not at all likely to
2. Not likely to
3. Neutral
4. Likely to
5. Extremely likely to

**Regain:**

1. Not at all likely to
2. Not likely to
3. Neutral
4. Likely to
5. Extremely likely to

3) If you gain weight back after dieting do you typically gain back the same weight you started at, or more than the weight you started at?

1. Much less than starting weight
2. Less than starting weight
3. The same as starting weight
4. More than starting weight
5. Much more than starting weight

## Appendix G

### How to Obtain and Interpret Eating Habits Checklist Score

### Binge eating habits checklist explanation and interpretation of results

The sixteen-item eating habits checklist is a tool researchers use to assess the level of binge eating severity. The tool, developed by four researchers, identifies the behaviors of binge eating as defined in the *Diagnostic and Statistical Manual of Mental Disorders*. The *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* identifies two characteristics unique to a binge-eating episode:

- 1) “eating, in a discrete period (e.g., within any two-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances”
- 2) “a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating)”

A score can be calculated based on your answers to the 16 questions on the ***Eating Habits Checklist***. Please refer to the original Eating Habits checklist posted on the bulletin at the exercise studio. For each question, there is a number in parentheses next to the item answers. A score is determined by summing the numbers in parentheses that corresponds with one’s selected response. The sum of the selected 16 numbers reflects one’s score on the binge eating scale. The resulting score determines the severity of binge eating. A score of:

- 17 or less is considered a non-binger
- 18-26 a moderate binge eater;
- 27 or greater is considered a severe binge eater.

Please contact the provided resources for more information on the eating disorder.

Appendix H

Eating Disorder Information Resources

### Eating Disorder Resources

The following two organizations can provide you with additional information on eating disorders and Binge Eating Disorder:

- 1) The National Eating Disorders Association  
603 Stewart Ave. Suite 803  
Seattle, WA 98101  
  
Telephone: (206) 382-3587  
Helpline: (800) 931-2237  
Electronic mail- <http://www.nationaleatingdisorders.org>
  
- 2) International Eating Disorder Referral and Information center  
Electronic mail: <http://www.EDReferral.com>



Appendix I

Thank You Note

**Thank you note to subjects:**

Thank you for participating in this study. I appreciate the time you have spent to complete the questionnaires.

Good luck and best wishes to all of you.

Brenda Pope BSN  
Graduate Student  
Master of Science in Nursing  
Family Nurse Practitioner Program  
University of Michigan- Flint Department of Nursing

Appendix J

Post Card for Obtaining Study Summary Results

POST CARD

PI name \_\_\_\_\_  
PI address \_\_\_\_\_

Please send a summary of your study  
results to me.

Participant address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Appendix K

Sample Free Movie Rental Coupon

