The Effects of Prescription Diet Pills on the Quality of Life in Adult Women

Peter Panagakis

A Dissertation Submitted to the Faculty of
The Chicago School of Professional Psychology
In Partial Fulfillment of the Requirements
For the Degree of Doctor of Psychology

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Abstract

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An estimated 67% of the United States population is currently overweight and is at risk for numerous impairments. These impairments affect the quality of life of an individual. Appetite suppressants have been utilized as an effective means for reducing weight. However, it is unclear the impact appetite suppressants have on the perception of quality of life. Adult females ($N = 30$) who resided in Southern California and made the decision to seek medical weight loss services participated. Participant quality of life was measured at baseline by the Quality of Life Index (QLI) and was then measured again after six weeks following use of appetite suppressants. Results suggest that use of appetite suppressants was associated with improvement in overall quality of life $t(29) = 11.48$, $p <$. 05).

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Chapter 1: Nature of the Study

In the United States, there are numerous concerns that trouble the minds and hearts of its citizens. One such concern has become so prevalent that 67% of US adults are troubled by it. Individuals with obesity are subjected to ridicule, mockery, and pity, which is in addition to the social, emotional, physical, and interpersonal issues that come with it. To magnify this concern even further, when it is compared to the lifetime rate of US citizens being diagnosed with cancer, which is roughly 6% according to the Centers for Disease Control and Prevention (2010), the probability of one becoming medically overweight or obese is magnified.

The severity of obesity is commonly defined by the body mass index (BMI), which is calculated as weight (kg)/height (m^2). BMI's greater than 25 kg/m^2 are considered as overweight, and BMI's greater than 30 kg/m^2 as obese, and BMI's greater than 40 kg/m^2 as extreme obesity (National Heart, Lung, and Blood Institute [NHLBI], 1998).

The prevalence of those who are overweight and obese is increasing at an alarming rate. In 1961, about 25% of the US population was obese, and by 1996 that figure climbed to 34% (Graff, 1997). Presently, one of every three men and women in the US weighs more than 20% above his or her ideal body weight. Body weight issues also plague those who are young. The prevalence rate of those who are overweight among pre-adolescents and adolescents, ages 12 to 19 years, has increased from 14.8% in 1999 through 2000 to 17.4% in 2003 through 2004 (Harring, Montgomery, & Hardin, 2010).

A variety of consequences are correlated with increased and unhealthy weight. Among these consequences are health problems, social stigma, mental illness, and economic constraints. These consequences can be dreadfully debilitating. They can be so dire that an individual who is classified as overweight or obese is more likely to die early than individual who is not overweight.

According to Phelan (2001), increasing weight is correlated with an increased risk of numerous health problems, which include the following: sleep apnea, dyslipidemia, hypertension, coronary artery disease, gallbladder disease, type two diabetes mellitus, stroke, osteoarthritis, and endometrial, breast, prostate and colon cancers. Studies indicate that an increased risk of death is associated with excess body weight (NHLBI, 1998). Abdominal obesity, in particular, is associated with health problems, independent of total body fat (Bjorntorp, 1998). In addition to the health risks associated with weight, excess body fat invites social stigma.

Being overweight and obese is a stigmatized condition. Overweight individuals are seen as less employable (Roe & Eickwort, 1976), ugly, morally and emotionally impaired, asexual, discontented, weak-willed, and unlikeable (Crandall, 1994). Compared to individuals with expected weight, overweight individuals are more likely to be of low socioeconomic status and less likely to marry (Sobal & Stunkard, 1989). In addition, Western societies equate slenderness with control, social acceptability, and happiness; thus by not maintaining the ideal slim image, nonconformity is correlated with prejudice and social discrimination (Grogan, 2008). To make matters worse, individuals who are overweight are prone to mental health concerns.

Although individuals who are overweight do not tend to differ significantly from normal weight individuals on general tests of psychopathology (e.g., depression, anxiety), body image dissatisfaction is common among obese individuals, especially adolescents and college students (Friedman & Brownell, 1995), and greater psychopathology is seen in obese individuals seeking weight loss treatment (Friedman & Brownell). Studies suggest that increases in weight are significantly related to low self-esteem and depression (Kushner & Foster, 2000). In particular, obese binge eaters (American Psychiatric Association [APA], 1994), who make up approximately 15% to 30% of obese treatment seekers, commonly have personality disorders and depression (Friedman & Brownell).

Just as obesity can lead to mental health concerns, obesity can lead to economic hardship. The economic toll of obesity is immense. In 1995, the economic consequences of obesity were estimated to be $99.2 billion (Wolf, 1998). This estimate includes medical costs (such as physician services, hospital care, and medications) and mortality and indirect morbidity costs (such as lost workdays, restricted activity days, excess bed-days) due to obesity.

Becoming overweight or obese is the byproduct of a chronic imbalance in the amount of energy consumed versus energy expended (intake > expenditure). Research has studied numerous factors that affect energy imbalance, including genetics, culture, and behavior (Brownell & Wadden, 1992).

Genetic factors account for an estimated 30% of the variance in BMI or body fat (NHLBI, 1998). Multiple genes are thought to connect to weight gain. Low resting metabolic rate (RMR) relative to the size of the fat-free mass (Foster, Wadden, & Vogt,

1997), low fat oxidation rate (Zurlo et al., 1990), low plasma leptin level for a given fat free mass (Ravussin et al., 1997), high fat cell number (Sjostrom, 1980), and low sympathetic activity (Young & Macdonald, 1992) are the likely causes are becoming overweight or obese.

A genetic disposition to obesity may or may not be expressed as obesity depending, in part, on the environmental factors present (Brownell, 1992). Easy access to inexpensive and high fat foods (e.g., fast food drive through windows and food delivery services) and decreased lifestyle activity (e.g., remote controls, cars, microwave ovens, and television) are components of what some researchers have called a "toxic environment" for becoming overweight and obese (Brownell, 1998).

Statement of the Problem

As genetics and biology create limitations to losing weight, the goal of weight loss is to help individuals regulate weight at the low end of the range of possible weights, despite remaining overweight following treatment. Most patients can lose 5% to 10% of initial body weight and, with continued care, maintain the loss for up to one year (Wadden & Steen, 1996). As larger losses of weight are associated with greater health improvements (Wing, 1992), even a 10% weight loss is associated with improved blood pressure, cholesterol, blood glucose levels, and sleep apnea (NHLBI, 1998). As such, the National Heart, Lung, and Blood Institute recommends a weight loss goal of 10% of initial body weight.

A problem that many individuals with weight concerns face is how to lose weight. For some individuals dieting, exercise, and eating right do not help. For others, exploring alternative avenues to shed pounds is more feasible. In 2003, Americans spent close to $40 billion dollars to lose weight. Additionally, a report conducted by Marketdata Enterprises (a service sector market research specialist) in 2002, forecast that a close to 6% annual growth in the US weight loss industry would yield an astounding $48.8 billion industry by 2006. One method that individuals have turned to in order to lose weight is the use of diet pills (Rao, 2010).

In a report published in February 2009, the US Weight Loss and Diet Control Market, Marketdata Enterprises projected revenues of prescription diet drugs to grow at 13.5% and cassettes, diet books, and exercise videos to grow at 12.1% annually through 2012 (Rao, 2010). The prescription diet drug growth rate is high, likely because there are many pharmaceutical and biotech companies working on anti-obesity drugs, and it is likely that several new drugs will be approved in the next few years.

The Food and Drug Administration (FDA) has been more willing to approve new obesity drugs due to the scope of the weight problem in the US. For example, the appetite suppressant, Phentermine, is the most commonly prescribed diet pill, accounting for 50% of the market (Rao, 2010). Other popular prescription diet pills include Diethylpropion and Phendimetrazine. An inherent concern caused by the use of prescription diet pills typically revolves around questions pertaining to their effectiveness and safety, but one overlooked area of concern involves their effect on quality of life.

Weight Loss and Quality of Life

A potential explanation as to why quality of life seems to improve following weight loss may be found with the Health Belief Model (HBM; Rosenstock, 1974). The HBM, which is based on the individual's perception of a medical condition, theorizes that individuals will pursue and follow through with a medical direction based on their perception of the condition. The psychology of a person's perception is tied to four factors: perceived susceptibility (i.e., an individual's evaluation of their risk of getting the condition), perceived severity (i.e., an individual's evaluation of the seriousness of the condition, and its potential consequences), perceived barriers (i.e., an individual's evaluation of the influences that facilitate or discourage adoption of the promoted behavior), and perceived benefits (i.e., an individual's evaluation of the positive effects of adopting the behavior). Overweight individuals who maintain a perception that their weight will lead to negative consequences and think that losing weight will protect them appear to be strict followers of the HBM. It appears that by utilizing the HBM, researchers are able to see the connection between motivation, weight loss, and improved quality of life.

Purpose

The purpose of this study is to investigate the impact of prescription diet pills on quality of life, as well as to assess the effect of prescription diet pills on weight loss for adult women. Utilization of the Quality of Life Index III (QLI), developed by Ferrans and Powers (1998), will help to assess overall quality of life changes, as well as allow for a

consideration of four other domains (psychological/spiritual, health and functioning, social and economic, and family) that impact quality of life. Although the brunt of this study is to evaluate overall quality of life scores, these four domains can be considered as stand-alone scores that collectively influence overall quality of life.

Research Question

Improved health, quality of life, and permanent weight control should be the ultimate goal of weight loss (Robinson, Hoerr, Strandmark, & Mavis, 1993). This particular study seeks to find a relationship between use of prescription diet pills and improved quality of life in adult women. Therefore, the research question for this study will be:

1. Do overall quality of life scores differ prior to and after study participants use prescription diet pills?

Hypothesis

1. As weight loss is associated with psychosocial improvements in women (Epiphaniou & Ogden, 2010), it is hypothesized that women who utilize prescription diet pills will show a significant pretest-posttest improvement in overall quality of life scale scores, as well as improvement in health, social and economic, psychological and spiritual, and family functioning.

Definition of Terms

Prescription Diet Pill – Also known as appetite suppressant. A FDA regulated and approved medication that is prescribed by a licensed medical doctor, designed to suppress appetite, which then leads to desired weight loss.

Quality of Life - A person's sense of well-being as measured by the Quality of Life Index (Ferrans & Powers, 1985).

Chapter 2: Literature Review

Introduction

The economic toll of obesity is immense. In 1995, the economic consequences of obesity were estimated to be $99.2 billion (Wolf, 1998). This estimate includes medical costs (e.g., physician services, hospital care, and medications) and mortality and indirect morbidity costs (e.g., lost workdays, restricted activity days, excess bed-days) due to obesity. Obesity leads to chronic medical concerns and impairments, as well as numerous psychosocial impairments. Obesity is also associated with various psychiatric concerns. Individuals who are overweight spend close to $40 billion dollars on various weight loss methods in an effort to lose weight and feel better.

In order to avoid the repercussions associated with elevations in weight, many individuals utilize a proactive approach that ties in nicely with the Health Belief Model (Rosenstock, 1974). The Health Belief Model (HBM) attempts to predict and explain health behaviors, and the main focus of the HBM is on individual attitudes and beliefs. The HBM suggests that if a negative health condition can be avoided, then an individual will take a health-related action. The individual likely believes that he or she can be successful when taking a recommended health action, as well as having a positive expectation that by taking a recommended action he or she will avoid a negative health condition.

The HBM may help to explain why individuals engage in countless measures to lose weight. This is probably why the weight loss industry generates $40 billion dollars

annually and probably a reason why individuals turn to medical weight loss doctors to lose weight. The use of appetite suppressants has a long history of effective and relatively safe results, thus enticing overweight people to pursue their use. The high efficacy of diet pills may also dictate why people follow through adherence of the medication as prescribed by a doctor. Individual beliefs and attitudes seem to be a motivator, which translates into success via weight loss and improved quality of life (Rosenstock, 1974).

Review of Literature/Overview

Individuals with overly high weight elevations are likely to have numerous health problems. According to Sarlio-Lahteenkorva (2001), adult obesity is associated with heart disease and cardiovascular problems, Type 2 diabetes, cancers (e.g., endometrial, breast, kidney, colorectal, gallbladder and prostate), digestive problems, sleep apnea, arthritis, and sex hormone problems.

On top of all of the negative medical consequences, overweight individuals have to contend with stigmatization. People who are overweight are less likely to have gainful employment (Roe & Eickwort, 1976). Obese individuals are typically viewed by others are emotionally impaired, asexual, and unlikeable (Crandall, 1994). Compared to those with expected weights, overweight individuals are more likely to be of low socioeconomic status and less likely to marry (Sobal & Stunkard, 1989).

Although individuals who are overweight do not tend to differ significantly from normal weight individuals on general tests of psychopathology (e.g., depression, anxiety), body image dissatisfaction is common among obese individuals, especially for adolescents

and college students (Friedman & Brownell, 1995), and greater psychopathology is seen in obese individuals seeking weight loss treatment (Friedman & Brownell). Studies indicate that depression and low self-esteem is significantly related to increased weight (Kushner & Foster, 2000). In particular, obese binge eaters (APA, 1994), who make up approximately 15% to 30% of obese treatment seekers, commonly have personality disorders and depression (Friedman & Brownell).

Eating more than necessary can be suggestive of an addiction that comes from a variety of psychological as well as physiological causes (Liu, von Deneen, Kobeissy, & Gold, 2010). Binge eating in particular has been categorized as an eating disorder in the proposed revision of the DSM. As an addictive process, overeating is characterized as a chronic relapsing problem caused by various fundamental factors that encourage food cravings so as to obtain a state of heightened excitement, energy, or pleasure (Tartar, Ammerman, & Ott, 1998). Most food addiction is caused by emotional and environmental conditions and a psychological dependence on food that results in loss of control and impulsive or compulsive behavior (Gold, 1999). This process can lead to a binge eating disorder, which is defined as an escalation of food intake with a high proportion of food intake at one time, usually after a period of voluntary non-eating or forced deprivation of food (Avena, Rada, & Hoebel, 2008).

Scientists have conducted research to determine how the brain may impact weight gain. Research has concluded that the brain areas involved in satiety include the orbitofrontal cortex (OFC), ventromedial prefrontal cortex, hypothalamus, insula, inferotemporal cortex, and the limbic/paralimbic areas. These particular areas of the brain

are involved in motivation, arousal, reward, memorization, and emotional responses to food and eating (Tataranni & DelParigi, 2003).

Methods of Weight Loss

Overweight individuals who are seeking to lose weight have an array of weight loss tactics and methods to choose from. Some methods are viewed as typical, while others as atypical. Typical methods include healthy eating and eating less (e.g., low carbohydrate diets) and exercise, while atypical methods include extreme dieting, gastric bypass, Lap-Band, and prescription diet pills.

The Atkins diet, a popular low carbohydrate diet, is a diet that drastically restricts carbohydrates to a mere fraction of that found in the typical American diet. As a result, the body goes into a state of ketosis, which is a process of the body burning its own fat for fuel (Bravata et al., 2003). Once in ketosis, the body receives energy from ketones, which are little carbon fragments that are the fuel created by the breakdown of fat stores. When in ketosis, the body tends to feel less hungry, and thus an individual is likely to eat less.

Bravata et al. (2003) reviewed numerous studies on the effects of low carbohydrate diets on weight loss, fasting serum glucose, serum lipids, blood pressure, and fasting serum insulin levels among adults using low-carbohydrate diets in the outpatient setting. Of the 107 articles reviewed, weight loss was correlated with restriction of calorie intake ($P = .03$), longer diet duration ($P = .002$), but not with reduced carbohydrate content ($P = .90$). Low carbohydrate diets were found to have no significant adverse effect on fasting serum glucose, serum lipids, and fasting serum insulin levels, or blood pressure. Results

of this study indicate that there is a lack of evidence to make recommendations for or against the use of low carbohydrate diets.

Another typical method for weight loss is exercise. In an analysis on the efficacy of exercise on weight loss, Ross et al. (2000) report that there is a lack of randomized research that equally compare exercise only to diet only weight loss programs. Hagan, Upton, Wong, and Whittam (1986) compared the amount of weight lost through an exercise program to the amount of weight lost through diet only. 24 obese men and women in the diet only group lost 8.4 kg and 5.5 kg, respectively, when reducing their caloric intake. To achieve these results, women decreased their mean caloric intake by 945 kilocalories a day while the men decreased their average intake by 1705 kilocalories a day. Twenty-four obese men and women in the exercise only group performed a 30-minute walk/jog program five days/week. On average, the men expended an average of 255 kilocalories per session while the women expended 190 kilocalories per session, which resulted in a total weight loss of 0.3 kg and 0.6 kg for men and women, respectively. The women in the diet only program decreased their body fat from 35% to 29%, whereas the women doing exercise only went from 35% to 33% body fat. Additionally, the men in the diet only group decreased body fat from 26% to 21% whereas the exercise only group experienced no change in their body fat. This study is suggestive that expecting equal amounts of weight loss to occur during dieting and exercise is unlikely.

When typical weight loss methods fail, individuals may then pursue atypical methods. Extreme diets that are usually low in caloric intake are successful in producing weight loss but can lead to potentially harmful consequences. Low-calorie diets typically

produce an energy deficit of 500 to 1,000 calories per day, which can result in a weekly weight loss of 0.5 kilogram to one kilogram. Some of the most commonly utilized low-calorie diets include Weight Watchers, Diet to Go, and the DASH diet. In a review of 34 randomized controlled trials to determine the effectiveness of low-calorie diets, the National Institutes of Health found that these diets lowered total body mass by 8% in the short term, over 3 to 12 months (Tsai & Wadden, 2006). Very low calorie diets provide less than 1000 calories per day (200 to 800 calories per day) while still maintaining protein intake but limiting calories from both fat and carbohydrates. They subject the body to starvation and produce an average weekly weight loss of 1.5 to 2.5 kilograms. A popular diet of this variety, the "2-4-6-8", is a four-day cycle diet in which only 200 calories are consumed the first day, 400 the second day, 600 the third day, 800 the fourth day, and then the cycle repeats. These diets are not recommended for general use as they are associated with adverse side effects such as increased risks of gout, loss of lean muscle mass, and electrolyte imbalances. Individuals engaging in these diets must be monitored by a physician to prevent complications (Tsai & Wadden).

A more direct method to quickly losing weight is via gastric bypass surgery. In investigating the efficacy of gastric bypass surgery (reducing the size of the stomach) on weight loss and obesity comorbidities, Peluso and Vanek (2007) conducted an analysis on postoperative resolution or improvement of obesity-related comorbidities in a retrospective study of 400 consecutive gastric bypass patients. Results of this study indicated that comorbidities were present in 21% to 65% of the patients. Diabetes mellitus, hyperlipidemia, hypertension, GERD, obstructive sleep apnea, and asthma either resolved

or improved in 80% to 100% of the patients. Depression, arthritis, and back or extremity pain, also improved but to a lesser extent, in 52% to 73% of patients. Patients' quality of life greatly improved even at six weeks postoperatively in 35% of the patients, and this increased to > 80% after 18 months. It appears that for the treatment of morbidly obese patients, gastric bypass surgery has a profound positive impact, and that the quality of life of patients is dramatically improved when compared with their preoperative status.

Relative to the gastric bypass, laparoscopic adjustable gastric banding, or lap band, works by placing an inflatable silicone device around the top portion of the stomach, which creates a smaller stomach pouch. Introduced in the early 1990s, laparoscopic adjustable gastric banding was marketed as a safe, controllable, and reversible method for achieving significant weight loss in the severely obese. The Bioenterics Lap-Band® system is the device most commonly used. In a review of the treatment of patients with Lap-Band, O'Brien and Dixon (2003) found that Lap-Band placement has proved to be a very safe procedure with a mortality rate in the published reports of one in 2000, only 10% of the published mortality rate of gastric bypass. The early complication rate has been very low, but late complications of erosions or prolapse have been more frequent, particularly during the early stages. Weight is lost during the first two to three years after surgery. The systematic review reports 56% excess weight loss at five years (three reports). In comparison, Roux-en-Y gastric bypass is reported to have achieved 59% estimated weight loss at five years (four reports). In association with weight loss after Lap-Band placement, major improvements in comorbid conditions have been reported. Most importantly, Type 2 diabetes is typically cured, and reduced pancreatic β-cell function and insulin resistance are

reversed. Depression, obstructive sleep apnea, and gastroesophageal reflux are other diseases in which marked improvement is noted (O'Brien & Dixon).

While it is typically preferred to attempt to lose weight via healthy eating and exercise, some individuals require extra support and will seek out the services of a doctor who specializes in weight loss. In particular, a weight loss doctor who prescribes diet pills. According to the Mayo Clinic (2010), prescription diets pills are designed for individuals who historically have had trouble losing weight through diet and exercise, and as a result, are experiencing weight-related health problems.

Doctors who prescribe diet pills to patients must always first meet with the individual in need before selecting which diet pills to prescribe. In doing so, the doctor considers a patient's medical history, possible side effects of the medication, and the potential interaction effects of weight loss drugs with other medications that a patient may be taking. Once prescribed a particular medication, the weight loss doctor typically educates a patient on the importance of having a low calorie diet and exercising in conjunction with the medication. Diet pills typically produce an average weight loss of 5% to 10% of total body weight within a year (Mayo Clinic, 2010); this is an expected goal for any weight loss effort. Exercise and diet are responsible for part of this weight loss and medications are accountable for the other part.

Although losing 5% to 10% of your total weight may not seem to suggest enough loss, it is important to reiterate that even modest weight loss can improve health by decreasing lipid levels, decreasing blood pressure, decreasing blood glucose levels, and increasing insulin sensitivity (Mayo Clinic, 2010). As effective as diet pills are, however,

these medications do not necessarily work for everyone 100% of the time. It is unclear as to why this is so, but research is certain as to how diet pills affect the brain.

Prescription diet pills, typically known as appetite suppressants, work by affecting the appetite regulation area of the brain known as the hypothalamus (Watson, 2005). Aside from controlling appetite, the hypothalamus regulates sleep cycles and body temperature and controls the autonomic nervous system. Diet pills work by blocking the re-uptake of the neurotransmitters norepinephrine and serotonin, which produce a feeling of satiety in the brain following a meal. As more of these neurotransmitters begin circulating in the brain, the more full a person feels, so he or she then feels the need to stop eating or begin eating less. This translates into less calorie intake by a person, allowing the body's metabolism to burn off fats and sugars in the blood easily, which leads to weight loss.

Phentermine, one of the Food and Drug Administration's (FDA) approved drugs for weight loss, is an amphetamine-like medication. Approved in 1959 by the FDA, phentermine is one of the most commonly prescribed appetite suppressants in the US (Hensrud, 2009). Phentermine works by stimulating the hypothalamus and blocking the re-uptake of serotonin and norepinephrine, thus creating a feeling of fullness following a small meal.

Phentermine is commonly prescribed for weight loss, because of its history of effectiveness and relatively mild side effects (Hensrud, 2009). Side effects from phentermine may include: increased blood pressure, blurred vision, sleeplessness, nervousness dizziness, dry mouth, and constipation. Phentermine is not meant to be taken

if there are any pre-existing medical conditions, such as high blood pressure, an overactive thyroid gland, heart disease, or glaucoma.

Another amphetamine-like appetite suppressant, diethylpropion, works similarly to phentermine, as it stimulates the hypothalamus and blocks the re-uptake of serotonin and norepinephrine, thus creating a feeling of fullness following a meal (Goldstein & Potvin, 1994). Usually taken three times per day, and one hour prior to a meal, diethylpropion also has a history of exhibiting mild side effects. Possible side effects of this drug include: dizziness, nausea, vomiting, dry mouth, difficulty sleeping, irritability, and diarrhea or constipation. Like phentermine, diethylpropion is not meant to be taken if there are any pre-existing medical conditions, such as heart disease, high blood pressure, an overactive thyroid gland, or glaucoma.

Due to their amphetamine-like quality, phentermine and diethylpropion have the capability of causing dependence and tolerance in those who do not take them as medically directed. As a result, these and other prescription diet pills are controlled substances, which means prescribing doctors are required to follow certain restrictions to prevent addiction. Just as with other narcotic-like substances, prescription diet pills can lead to the development of tolerance. Weight loss tends to plateau after six months of taking a diet pill, which is why prescription diet pills are meant as only a short-term alternative to other weight loss methods.

According to Wyatt and Hill (2004), in order for prescription diet pills to work, the pharmacologic action of the pill must be translated into behavior. As the pills begin to work and an individual's sense of hunger has decreased, it is up to the individual to make sure he

or she also decreases the size of usual meals. The failure of a patient to reduce the size of meals in relation to his or her sense of hunger will result in little or no weight loss.

Current weight loss medications are efficacious when combined with a specific plan set by a specialist to alter a patient's lifestyle behaviors, such as reducing food intake and increasing physical activity (Wyatt & Hill, 2004). Prescription diet pills are never meant to work alone but to instead maximize a patient's efforts to lose weight.

One such addition to the prescription diet pill plan is the addition of a Mediterranean diet (Mohamed, El-Swefy, Rashed, & El-Latif, 2010). The Mediterranean diet is centered on a large variety of foods, mostly of the vegetable origin. High consumption of vegetables, fruits, nuts, and olive oil combined with a low ingestion of meats has been connected to improved cardiovascular health and reduced obesity. In their rat study, Mohamed et al. found that rats treated with a Mediterranean diet had significant weight loss, which suggests that this type of diet is a practical nutritional intervention in conjunction with diet pills.

Effectiveness of Phentermine

The prescription diet pill, phentermine, is extremely effective in weight loss. In a study conducted by Gadde et al. (2011), overweight American adults with two or more comorbidities (e.g., hypertension, dyslipidemia, diabetes, or abdominal obesity) were randomly assigned to two conditions: one group receiving 15 mg of phentermine and the other group receiving a placebo. The purpose of the study was to assess the efficacy and

safety of phentermine in weight reduction for adults who were overweight and obese, with two or more risk factors.

After 56 weeks, the placebo group, which contained 979 participants, lost an average of 1.4 kg; the phentermine group, which contained 981 participants, lost an average of 10.2 kg. The results of the Gadde et al. (2011) study indicate that those in the phentermine group lost a significantly greater amount of weight ($p < .0001$) than those who were given a placebo. The researchers concluded that when combined with lifestyle interventions, phentermine is a viable and valuable treatment for obesity in adults with health risks.

Weintraub, Sundaresan, and Madan (1992) investigated the combination of phentermine (15 mg) with another prescription diet pill, fenfluramine (60 mg), as an adjunct to behavior, nutrition and exercise in a 34-week, double-blind, placebo-controlled trial of 121 obese patients. At the end of the 34 weeks, patients treated with the diet pills lost more weight (14.3 kg) than those who took a placebo (4.6 kg). This study is an indication that phentermine is statistically effective in weight reduction.

Munro, MacCuish, Wilson, and Duncan (1968) performed a long-term, double blind placebo-controlled study on 108 obese women who engaged in phentermine use. Using a traditional experimental design, they compared three groups of continuous phentermine therapy, intermittent phentermine therapy (administration of phentermine and placebo every four weeks, alternatively) and placebo for 36 weeks. At the conclusion of the study, both continuous therapy (12.2 kg) and intermittent therapy (13 kg) resulted in significant weight reduction than placebo (4.8 kg, $p < .001$). Langlois, Forbes, Bell, and

Grant (1974) performed a placebo-controlled study on 59 patients who utilized phentermine for 22 weeks. Following the study, the phentermine group (mean weight loss 16.1 kg) showed significantly more weight loss than placebo (3.9 kg, $p < .001$). In both studies, the researchers suggested that side effects were not serious.

Effectiveness of Diethylpropion

Another popular prescription diet pill, diethylpropion, has a positive effect on weight loss. McKay (1973) utilized a 24-week, double-blind trial comparing the effects of diethylpropion and placebo in 20 overweight patients who had failed on diet alone. At the beginning of the study, patients in the diethylpropion group were 42.5% above the ideal weight and those in the placebo group were 32.3% about ideal weight. Following treatment with Diethylpropion, patients lost an average of 12.3% of their initial weight whereas those in the placebo group lost an average of 2.8% of their initial weight. A statistically significant result, there was no indication of the development of tolerance to the diet pill, and only minor side effects (insomnia and flatulence) were reported.

Cultural Effectiveness of Appetite Suppressants

The use of appetite suppressants with an American population has proven to be efficacious in achieving weight loss. It appears the same can be said with a non-American population. To assess the effectiveness of phentermine on weight loss in a Korean population, Kim, Cho, Kang, Young, and Lee (2006) completed a randomized, double-blind, placebo-controlled study. Sixty-eight obese adults over the age of 20 without

other serious health concerns, completed the 14-week-long study. Results of the study showed that those who took 37.5 mg of phentermine, once daily, lost an average of 7.2 kg, compared to the 1.9 kg lost by those in the placebo group. A statistically significant result ($p < .001$), this study confirms that the diet pill phentermine helps support weight loss in a Korean population.

To assess the long term use and efficacy of diethylpropion, Cercato et al. (2009) utilized a double-blind, randomized, placebo-controlled study with 69 Brazilian men and women aged 18 years and older. The study was divided into two phases. In phase one, patients in the treatment group were given 50 mg of diethylpropion for six months. At the conclusion of six months, those in the treatment group lost an average of 9.3 kg weight, whereas those in the placebo group lost 3.1 kg; a statistically significant result ($p < .0001$). In phase two, participants were switched to diethylpropion after being originally treated with placebo for another six months. This change resulted in this group losing an additional 3.6 kg of weight. In contrast, participants originally treated with diethylpropion who continued medication lost an additional 0.8 kg, a total of 10.1 kg for the entirety of the study. Those participants in the placebo group who were switched at month seven to the diet pill lost a total of 6.7 kg. The difference between groups at month 12 was not significant ($p < .07$). The results of this study and the McKay (1973) study suggest that diethylpropion is effective in reducing body weight.

Psychosocial Impact of Weight Loss

Weight stigma has been shown to be pervasive, and that it results in the poor and unfair treatment of the overweight Weight stigma has been described as "negative weight-related attitudes and beliefs that are manifested by stereotypes, rejection, and prejudice towards individuals because they are overweight or obese" (Puhl, Moss-Racusin, Schwartz, & Brownell, 2007, p. 347). Weight stigma has been identified in the home, workplace, medical, school, and social environments. Obese individuals commonly report being the recipient of negative stereotypes regarding their weight, and being avoided, encountering physical barriers, being ignored or excluded because of weight, and receiving hurtful comments from children, family, and medical professionals (Friedman et al., 2005).

Previous research suggests that stigma can be experienced at an internalized level, an interpersonal level, and an institutional level. As weight steadily increases, so does perceived weight-related mistreatment. Evidence suggests a strong correlation between psychological distress, weight stigma, and maladaptive eating patterns among adults seeking weight loss treatment (Wott & Carels, 2010). Beyond the impact of stigmatizing experiences, additional research suggests that internalized weight bias may be detrimental to weight loss treatment outcomes (Wott & Carels).

To highlight the impact of internalized perceptions of elevations in weight, Wott and Carels (2010) examined the association of depression, binge eating, overt weight stigma, and weight loss treatment outcomes in a sample of 55 overweight and obese adults in a 14-week behavioral weight loss program. These researchers identified that overt weight stigma was significantly associated with binge eating, greater depression, and

poorer weight loss outcomes. This study suggests that overt weight stigma may be detrimental to overweight and obese individuals' ability to lose weight and engage in behaviors consistent with weight loss.

Although obesity is not a psychiatric disorder, obese patients may be at greater risk for having comorbid psychiatric diagnoses, and are more likely to exhibit psychiatric symptoms (Black, Goldstein, & Mason, 1992). Specifically, previous research has demonstrated high rates of depressive symptoms, as well as poor body image, symptoms of anxiety, and maladaptive eating behavior in patients attempting to lose weight in clinical settings (Sarwer et al., 2004).

To understand the relationship with high weight and psychological symptomology, Goldstein, Goldsmith, Anger, and Leon (1996) studied the prevalence and severity of psychiatric symptoms of individuals in a commercial weight reduction program by comparing them with individuals who sought general outpatient medical treatment. Participants in each group were given questionnaires to assess their levels of anxiety (Spielberger State and Trait Anxiety Inventories; Spielberger & Krasner, 1989), depressive symptoms (Beck Depression Inventory; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), body image (Body Shape Questionnaire; Cooper, Taylor, Cooper, & Fairburn, 1987), and social, occupational, and familial impairment (Sheehan Disability Scale; Sheehan, 1986). The results of this study indicated that when compared to patients presenting for medical treatment, weight loss clients had significantly higher rates of depressive symptomology and psychosocial disability. Weight loss clients were also more likely to demonstrate body dissatisfaction regardless of actual weight, while levels of

anxiety were not significant. This was all despite the overall reporting of the medical group identifying themselves to be in poorer health as compared with the weight loss group.

This data suggests that individuals seeking to lose weight via commercial weight loss methods are likely to have high rates of depressive symptomology and are more likely than people seeking general medical treatment to have these symptoms. Female patients, in particular, who presented for weight reduction, were found to be more preoccupied and dissatisfied with body shape in a manner that was unrelated to actual body size.

In addition to body dissatisfaction, depression and obesity appear to be related. According to Ludman et al. (2009), past research endorses a strong relationship between clinically significant levels of depression and obesity, especially among women. The same research, although quite limited, suggests that comorbid depression is associated with high dropout rates and outcomes in behavioral weight loss programs. Research is limited due to a typical exclusion of majorly depressed people from weight loss intervention trials.

In an effort to determine if psychiatric symptoms, particularly depression, play a role on weight loss, Ludman et al. (2009) investigated the effects of depression on women's' participation and weight loss in behavioral treatment. Sixty-five obese women over the age of 40 with major depressive disorder (MDD) and 125 obese women over the age of 40 without MDD were recruited into a 26 session group intervention. Participants' weights were assessed at baseline, 6 months, and 12 months. At 6 months, women with MDD lost 3.8 kg vs. the 4.3 kg of weight lost by women without MDD. At 12 months, women with MDD lost 3.0 kg vs. the 3.6 kg of weight lost by women without MDD. At both measuring points, neither group lost a statistically significant amount of weight on

comparison. The results of this study indicate that depression does not necessarily yield less or more weight loss, and that individuals with depression should not be excluded from weight loss intervention programs.

In a follow up study, Linde et al. (2011) examined treatment outcomes among adult women with comorbid depression and obesity. Of the 203 women in the study, 102 were randomized into a behavioral weight loss treatment group, and the other 101 were placed in a behavioral weight loss combined with cognitive-behavioral depression management group. Utilizing the Patient Health Questionnaire and Hopkins Symptom Checklist (SCL-20; Derogatis, Rickels, Uhlenhuth, & Covi, 1974), mean scores indicated moderate to severe baseline depression in all participants. At the conclusion of the study weight loss and SCL-20 changes did not differ between groups at 6 or 12 months. This study indicates that depressed obese women demonstrated improved mood and lost weight in both treatment programs.

To investigate the association between loss of weight and improvement in depression among women with depressive symptoms entering a behavioral weight loss program, Simon et al. (2010) randomly assigned 203 obese female participants to one of two treatment conditions: one focusing on weight loss and the other focusing on weight loss and depression. A total of 26 sessions were utilized over the course of 12 months. Assessments on weight and depressive symptoms were taken at baseline, 6 months, 12 months, and 24 months. Over the first six months women with a decrease in depression scores were more likely to lose five kg or more of weight than women without a significant decrease in depression. Change in weight and change in depression were not significantly

associated over later intervals (between 6 and 12 months or between 12 and 24 months). This study indicates that among women with co-occurring depression and obesity, weight loss is associated with short-term improvement in depression.

As weight decreases, so too does depression. Faulconbridge et al. (2009) investigated the effects of an appetite suppressant (sibutramine) on symptoms of depression. This particular study investigated changes in symptoms of depression in 194 obese individuals who participated in a one year randomized weight loss trial. Treatment groups included: lifestyle modification alone, sibutramine alone, and a combination of the two. Mood was assessed seven times during the course of the study by utilizing the Beck Depression Inventory (BDI; Beck et al., 1961). At the conclusion of the study, participants in the combined lifestyle modification and sibutramine group lost the most weight. Mean BDI scores across all participants declined from 8.1 to 6.2 ($p < .001$) at the end of the study, with no significant differences among groups, indicating that depressive symptoms decrease when weight loss is achieved.

Body image dissatisfaction, an occasional comorbid psychiatric process, is also common in treatment seeking patients who are overweight or obese. In obese individuals, body image dissatisfaction is expected to have a negative clinical impact, influencing their quality of life, behavior, and psychological wellness. Women who are overweight or obese report a poor perceived health status and poorer quality of life in several psychological areas, specifically related to body image satisfaction (Cash, Jakatdar, & Williams, 2004). It would appear that a relationship has been observed among body image dissatisfaction,

depressive symptoms, and low self-esteem in treatment seeking obese women (Foster et al., 1997).

To enhance the understanding of elements associated with body image dissatisfaction in a clinical setting, Grave et al. (2007) investigated the effects of obesity management on body image in patients with obesity attending Italian medical centers for weight loss. A total of 473 obese men and women seeking treatment were evaluated on psychiatric distress, body uneasiness, and binge eating at baseline and then again at six months. At the conclusion of the study, both females and males had a significant reduction in weight, psychiatric distress, body uneasiness, and binge eating scores. This study highlights the effect of weight loss on aiding to the improvement of body image in both females and males.

Post-Weight Loss Considerations

Perhaps the most striking effect of weight loss on quality of life can be appreciated with a before and after study. Epiphaniou and Ogden (2010) completed a qualitative study in which they explored the experiences of dieters. Participants included those who successfully maintained their weight loss, while having a focus on the transition from their heaviest self to their current reduced weight. Participants described their experiences before losing weight and indicated how maintaining their weight facilitated a shift in identity towards a liberated, healthier, and more relaxed individual.

Prior to losing weight, most participants described a life centered on restriction (Epiphaniou & Ogden, 2010). This was influenced by the internalized social

discrimination that resulted in a tendency to restrict attention towards body shape, avoid social interactions, and adopt a restricted dietary routine to obtain a more socially acceptable body weight. Most participants described hiding from and avoiding social interactions due to being overweight. Participants described how their self-identity was defined by their body shape, which was influenced by society's concentration on their weight. They tended to perceive themselves as "big" or "fat," which led to a negative mood. Being overweight seemed to encourage dietary restriction. Participants would attempt to avoid certain foods.

Prior to weight loss, another theme identified by Epiphaniou and Ogden (2010) demonstrated how food was often an instrument for indulgence and emotional regulation for overweight individuals. The majority of participants in the study regulated their boredom, stress, or depressive feelings by consuming high caloric foods, but for many this resulted in feelings of guilt and self-criticism.

Following successful weight loss and maintenance, a theme was recognized where participants described a shift in identity from restriction towards liberation (Epiphaniou & Ogden, 2010). Participants were less socially detached following weight loss, more comfortable in their communication with others, and more likely to make new friends. Additionally, their dietary habits became more flexible. Previous restricted and controlled diets were replaced with a healthier balanced approach to eating which left them feeling satisfied rather than constrained. This sense of liberation was also reflected in broader sense of self-identity, and participants described how weight loss had directed attention

away from their physical appearance and reinforced a positive attitude towards their self. This enabled them to develop a sense of self that was no longer weight centered.

In summary, prior to weight loss participants' self-identity was characterized by restriction across a number of domains with their weight dominating their sense of who they were. After weight loss maintenance, participants described a process of liberation and reinvention whereby they recreated themselves. This reflects research that identifies the numerous psychological benefits of weight loss, regardless of how it is achieved.

Significance of the Study

This study is designed to focus entirely on women participants, as women are the predominant group to utilize prescription diet pills. In utilizing prescription diet pills, not only will women be appeasing their need to lose weight and enhance their body satisfaction, they should also feel that their quality of life is improving, which impacts their ability to attain social and economic resources.

At the conclusion of this study, participants should not only have lost weight, thus improving their physical health and level of body satisfaction, but the participants should notice that their psychosocial functioning has improved. Most studies suggest that weight loss improves health status with as little as 5% to 15% body weight loss (Sarlio-Lahteenkorva, 2001). This modest amount of weight loss leads to amelioration of hyperglycemia, hyperlipidemia, and hypertension. Weight loss will reduce shortness of breath and improve sleep quality, back pain, and lung function (World Health Organization [WHO], 1998).

Studies published in the 1950's and 1960's reported that adverse emotional reactions were associated with weight loss efforts. Stunkard (1957) reported that 54% of patients complained of nervousness, weakness, and other related problems while dieting. These findings contrast with research from the past 30 years. Studies from the mid-1990's suggest that losing weight is associated with positive changes in mood, and in particular, improvements in depression and anxiety (Foster & Wadden, 1995).

The discrepancy between early and later studies is due to a variety of factors, such as early attempts within psychodynamic therapy to aide in weight reduction. This discrepancy yields an unclear picture as to how prescription diet pills affect an individual's mental health and quality of life. This study will take an important step to investigate the impact of prescription diet pills on quality of life.

Sixty-seven percent of adults in the US are overweight and 33% are considered obese (Harring et al., 2010). The prevalence of those who are overweight had progressively increased to the point where the weight loss industry grosses close to $50 billion. Those attempting to shed pounds have numerous options to pursue in their goal of weight loss. Diets, such as Atkins or the Mediterranean, claim to help reduce weight, yet for some diets are difficult to follow or just fail. Bariatric surgery, such as gastric bypass or Lap-Band, involves a surgical procedure that can be frightening and expensive. According to Phelan (2001), prescription diet pills, although also costly, have a proven track record of significant weight loss (about 9% of initial body weight).

Aside from being important to overweight individuals who are looking for an effective way to lose weight, this study also has an important bearing on women.

According to Sarlio-Lahteenkorva (2001), obesity and being overweight is associated with social and economic problems in women. Specifically, obesity is associated with low personal or household income level, long-term unemployment, and a lack of close friends outside the family, but not with feelings of loneliness or living without a romantic partner (Sarlio-Lahteenkorva). In terms of dieting, Harring et al. (2010) report that female dieters have low body satisfaction scores when attempting to diet for the purpose of losing weight. This would appear to suggest that maintaining a proper weight and improving body image is a concern that many women face due to the ramifications should they become overweight.

The data on the impact of weight loss on socioeconomic factors and social relationships are inconsistent. Some studies report that weight loss improves employment situation (Rabner & Greenstein, 1991), income level (Naslund & Akgren, 1991), and social relationships, including dating and marriage (Tinker & Tucker, 1997). However, other studies have failed to find any improvement in the earnings or social relationships after weight loss (Sarlio-Lahteenkorva, 2001).

Social relationships may have a significant role in weight loss maintenance. Availability of social support is associated with weight loss maintenance (Brownell, 1992). It is likely that the perceived quality of these social relationships and of other forms of support is important, but these aspects are still being evaluated.

Studies on perceived well-being and psychosocial factors are limited and show contrasting results. Although weight loss may be associated with improved psychosocial consequences (Wadden & Steen, 1996), many studies have been relatively short-term and

do not reflect the effect of prescription diet pills. Grimaldi and Van Etten (2010) state that psychosocial functioning and quality of interpersonal relationships often improve with weight loss.

Psychiatric disorders are common in obese people. A study that investigated the psychiatric treatment history of 90 surgical candidates found that approximately 66% had a psychiatric diagnosis and almost 40% were involved in some form of psychiatric treatment (Sarwer et al., 2004). Major depressive disorder was reported as the most common Axis I diagnosis.

Kalarchian et al. (2007) investigated the lifetime history of psychopathology in 228 weight loss surgery candidates. Their findings indicated the lifetime prevalence of psychopathology for these candidates was 42% for depression, 37.5% for anxiety disorders, 32.6% for substance abuse disorders, 17% for avoidant personality disorder, and 11% for posttraumatic stress disorder (PTSD). This study and the one completed by Sarwer et al. (2004) indicate the high rate of mental illness among those who are overweight or obese.

Positively, following a reduction in weight, many patients experience improved mood, self-esteem, and psychosocial functioning (Grimaldi & Van Etten, 2010). This and other studies show that depression and anxiety will decrease following weight loss, typically because individuals have higher levels of anxiety and depression when starting a weight loss program, so that even a moderate amount of weight reduction will lead to significant improvement (Wadden, Steen, Wingate, & Foster, 1996).

Chapter 3: Methodology

Overview

The purpose of this study was to investigate the impact of prescription diet pills on quality of life, as well as to assess the effect of prescription diet pills on weight loss for adult women. The Quality of Life Index III (QLI), developed by Ferrans and Powers (1998), was used to assess overall quality of life changes, as well as allow for a consideration of four other domains (psychological/spiritual, health and functioning, social and economic, and family) that impact quality of life. Although the brunt of this study was to evaluate overall quality of life scores, these four domains can be considered as stand-alone scores that collectively influence overall quality of life. The research question this study sought to answer:

1. Do overall quality of life scores differ prior to and after study participants use prescription diet pills?

A quasi-experimental, within-groups design was utilized to help answer this question. Participants who volunteered to be in this study and who sought weight loss services from Alpha Health Care were utilized to help answer this question. Medical personnel from Alpha Health Care (i.e., the medical doctor, nurses, and medical assistants) had sole and direct contact with recruited participants. The independent variable in this study was the participants who utilized appetite suppressants to achieve weight loss. The dependent variable within this study was the score each participant yields on the Quality of

Life Index and the subscales (e.g., health and functioning, social and economic, psychological/spiritual, and family) that compose the overall total quality of life score.

Population and Sampling

The population for this study was defined as all adult female patients who decided to pursue medical weight loss via prescription diet pills during the sampling time frame and were allowed to do so by a medical doctor. These participants are individuals who have decided that they would like to lose weight and have sought the services of a medical weight loss doctor to help them do so. The participants in question received their services from Alpha Health Care, a medical weight loss provider serving the greater Los Angeles area. Alpha Health Care has five locations in the Los Angeles area: Encino, Woodland Hills, Westlake Village, West Los Angeles, and Pasadena.

Patients who decided to pursue medical weight loss from Alpha Health Care completed a thorough consultation with the medical doctor. This allowed the doctor to gather a detailed medical and personal history from the patient. This is traditionally done to ensure that the patient is an appropriate candidate to receive prescription diet pills. Patients who have extremely high blood pressure, a history of substance abuse, a pre-existing heart condition, take other medications that may conflict with appetite suppressants, or another ailment the doctor deems as unfit for services are prohibited from the program. Those patients who are deemed as good candidates then receive explanation of the importance of proper exercise and dieting while on the program. The patients are

then educated on the effectiveness of prescription diet pills and are forewarned of any side effects that may occur and what should be done if they occur.

Following patient consent, each patient was then prescribed a medication regimen, which includes vitamins, potassium, hydrochlorothiazide, vitamin B-12 injections, and the appetite suppressant/diet pill. The doctor typically prescribes patients either diethylpropion 25 mg 2x/day or phentermine 15mg/day when starting the program.

Patients were instructed by the doctor to take their medications as directed and were encouraged to come back to the office two to three times per week for vitamin B-12 injections. At each office visit, patients' blood pressure are monitored, and their weight is measured to observe progress. Patients meet with a licensed vocational nurse and are questioned regarding medication effectiveness, as well as if any medication concerns have arisen. Once patients complete their allotted weekly regimen of medications, they can request a refill. This protocol exists as appetite suppressants are US FDA regulated and must always be appropriately tracked.

For the benefits of this study, the participants included were adult (ages 18 to 65) female patients who have never attempted to take an appetite suppressant in the past. Participants with a severe medical condition and with past severe psychological history were excluded as they are prohibited from the program. Participants were screened using a past medical history form. The total number of participants in the treatment portion of the study was 30.

Participant Inclusion

Participants included in this study were adults (ages 18 to 65), female, and spoke a primary language of English. This was also a participant's first experience with appetite suppressants.

Participant Exclusion

Participants who have a current severe medical condition were excluded from this study, as the medical doctor from Alpha Health Care does not prescribe appetite suppressants to patients he deems to be medically unfit. This is also due to medical contraindications (Wadden & Letizia, 1992) for appetite suppressants and variables that affect weight and could therefore bias the findings (e.g., thyroid disease, Cushing's syndrome, current pregnancy). Exclusion criteria included:

1. A history of cardiovascular disease, including congestive heart failure, coronary artery disease, and unstable angina
2. Malignant arrhythmias
3. History of cerebrovascular, renal, or hepatic disease
4. Protein wasting diseases (i.e., Cushing's syndrome)
5. Uncontrolled hypertension (> 140/90 mm Hg)
6. Pregnancy
7. Medications affecting weight or energy expenditure
8. History of stroke or seizures
9. Use of any anti-depressants (i.e., Monoamine Oxidase Inhibitors, SSRI's)

Participants with a history of severe psychological illness which includes major depression, a psychotic disorder, eating disorder, substance abuse, and post-traumatic stress disorder were excluded from the study as these disorders have been found to adversely affect weight loss outcomes (Wadden, Foster, & Letizia, 1994).

Power of Analysis

Power calculations were performed using SPSS 20 (2011) for the principal dependent measures using a sample size of 30 on all measures. A power analysis is utilized to detect a true effect when the effect exists. A general rule of thumb suggests that most recommendations for power be at least .8 (80%) or higher. Based on the change of scores from pre-appetite suppressant to post-appetite suppressant use, power in detecting differential changes was well over the 80% recommendation. In fact, pre and post-test observed power scores in overall quality of life, health functioning, social and economic functioning, psychological/spiritual functioning, and family functioning were all > 90%.

Instrumentation

To determine if participants had a current severe medical condition to exclude them from this study, a demographic form (Appendix 1) was used to verify if each participant has a medical condition. Participants with a current or relatively recent (within the last year) history of severe psychological illness (e.g., major depression, a psychotic disorder, eating disorder, substance abuse, and post-traumatic stress disorder) were excluded from this study. Having a psychological condition, past or present, may negatively affect this

study by skewing responses to the quality of life measure (Wadden et al., 1994), as well as cause poor follow through of doctor's weight loss plan for each participant. The same demographic from was utilized to psychological history information. Participants who were excluded due to having a psychological condition were referred to continue treatment or were recommended to seek out treatment with a clinician. Those without a current clinician would be given, if necessary, a referral (e.g., Chicago School Counseling Center in Westwood, CA) upon request.

The Quality of Life Index III (QLI), developed by Ferrans and Powers (1998), was utilized to measure each participant's quality of life in terms of satisfaction with life. Quality of life is defined by Ferrans as "a person's sense of well-being that stems from satisfaction or dissatisfaction with the areas of life that are important to him/her" (Ferrans, 1990, p. 15). The QLI measures various aspects of life in terms of satisfaction and importance. To ensure that scores reflect the respondents' satisfaction with the aspects of life they value, importance ratings are used to weight the satisfaction responses. Items that are rated as more important have a greater impact on scores than those of less importance. The QLI consists of two parts. The first part measures satisfaction with various aspects of life, while the second part measures importance of those same aspects. Scores are then able to be calculated for overall quality of life and in four other domains: social and economic, health and functioning, psychological/spiritual, and family (Ferrans, 1996). The QLI is self-administered and takes approximately 10 minutes to complete. No special training is required, and individuals with a fourth grade English reading level or higher are able to take the QLI (Appendix D).

Internal consistency reliability of the QLI is supported by Cronbach's alphas (ranging from .73 to .99 across 48 studies), and the four subscales' Cronbach's alphas have been published in 24 studies, which have provided support for internal consistency of the subscales (Ferrans, 1996). Alphas ranged from .78 to .86 for the psychological/spiritual subscale, and from .70 to .94 for the health and functioning subscale. For the family subscale, alphas are acceptably high in 19 studies, ranging from .63 to .92. For the social and economic subscale, alphas are acceptably high in 23 studies, ranging from .71 to .92.

For the total scale, support for temporal reliability is provided by test-retest correlations of .87 with a two week interval and .81 with a one month interval (Ferrans & Powers, 1998). Temporal reliability is supported by test-retest correlations with a two week interval for all five scores: overall quality of life (r = .79), psychological/spiritual (r = .76), health and functioning (r = .72), family (r = .69), and social and economic (r = .68).

Although there are no figures, QLI content validity is supported by patient reports regarding the quality of their lives and by using an extensive literature review of issues related to quality of life to base question items on (Ferrans & Powers, 1998). Construct validity of the QLI is supported by strong correlations between total QLI score and Campbell, Converse, and Rodgers' (1976) measure of life satisfaction (Ferrans & Powers, 1985). Factor analysis provides further evidence for construct validity. Factor analysis revealed four dimensions underlying the QLI: social and economic, health and functioning, psychological/spiritual, and family. The factor analytic solution explained 91% of the total variance. Factor analysis of the four primary factors revealed one higher order factor, which represented quality of life (Ferrans & Powers, 1992).

Procedure

Data collection occurred during the summer of 2012. New patients who sought to lose weight at Alpha Health Care were able to view a research flyer (Appendix C) at the receptionist desk. Once a prospective participant expressed interest in the study, they were handed an envelope containing the study information sheet (Appendix B), demographic questionnaire, and the QLI. Participants reviewed and completed the documents in private. Following completion of the documents, participants sealed them in the envelope, which had an identification number on it, and handed the envelope to the receptionist.

Participants who agreed to take part in the study completed the QLI prior to seeing the doctor. After completing the research materials, patients had their consultation with the prescribing medical doctor, per usual as a new patient joining the Alpha Health Care program. It is during their consultation where patients/participants were trained to change their lifestyle by enhancing exercise and diet plans. Participants were also prescribed their medication and educated about effectiveness, side effects, and how/when to take the medication. Six weeks after initial completion of the QLI, each participant was asked to complete the QLI again. The participant was then handed a second QLI contained within an envelope with their identification number on it. Once the second QLI was completed it was then sealed within the envelope by the participant and handed back to the receptionist, so that it could be picked up by the lead experimenter. The rationale for having participants complete the second QLI six weeks after their first was to enhance the likelihood of

participants maintaining their current dosage and type of appetite suppressant. There was also the probability that dropout rates would be minimal.

Analysis

Following collection of each completed QLI, individual participant responses were entered into an SPSS data sheet, which was used to calculate each participants overall quality of life scores as well as the scores in each subscale. The results of each participant's QLI were compared before treatment began and then again at six weeks following the start of treatment to determine if a difference in quality of life existed. A comparison of QLI scores between pre-treatment and post-treatment were evaluated to determine if use of prescription diet pills was associated with improved quality of life. A within-groups design t-test was utilized to assess for a statistically significant difference in QOL scores for participants prior to receiving prescription diet pills and after receiving prescription diet pills. This type of design was utilized due to its ability to study the change of an outcome over time (e.g., pre- and post-test quality of life score) and due to its ability for studying multiple outcomes and allowing each subject to act as their own control, which allows for increased power of analysis (Hinkelmann & Kempthorne, 2008). Scores were calculated using SPSS software.

Ethical and Legal Considerations

Consideration was made for the potential emotional discomfort participants may feel in association with completing the QLI. After reviewing the questions of the QLI (e.g.,

"how satisfied are you with your sex life?"), it became apparent that some of the questions could cause discomfort, such as anger, sadness, or another combination of emotions. Although no reports of discomfort were made by any of the participants, the lead investigator was prepared to address any concerns made by the participants. Information was made available within the study information sheet (Appendix B) about where participants could contact the lead investigator should any concerns or questions arise. Participants were also provided with the contact information for the Institutional Review Board (IRB) to address any concerns or questions related to their individual rights as participants of this study. Lastly, participants maintained the right throughout the entirety of the study to drop out of the study at any time.

The Drug Enforcement Administration (DEA) is charged with the enforcement of the Controlled Substance Act (CSA) of 1970. Under this act, the appetite suppressants utilized during this study are carefully monitored by the DEA. In order to legally handle controlled substances, individuals and companies must be registered with the DEA, provide secure storage of drugs, and keep accurate records of all transactions. The DEA will monitor all controlled substance prescriptions a consumer utilizes, as well as the physicians these prescriptions are being dispensed from. Each Alpha Health Care location has its own DEA license, thus maintaining proper legal standard.

Appetite suppressants are classified as a schedule IV controlled substance under the CSA. Drugs under this classification are deemed to have a low abuse potential relative to other drugs or substances in schedules I, II, and III (the drug schedules with the highest potential for abuse) and these drugs are currently accepted for medical uses in the US.

Lastly, schedule IV drugs may lead to limited physical or psychological dependence, if abused, relative to other drugs in schedule III. The medical doctor of Alpha Health Care has both a legal and ethical obligation to maintain the safety of patients, as well as adhere to the law. As such, the doctor discloses to each patient, or participant in this case, the small chance for dependence and takes measures to ensure that patients and study participants do not exceed dosing by administering medications on short-term, weekly bases.

Chapter 4: Results

The current study sought to explore the impact of prescription diet pills on the quality of life in adult women and assess if quality of life scores significantly improve after six weeks following use of appetite suppressants. It was surmised that since weight loss is associated with psychosocial improvements in women (Faulconbridge et al., 2009; Friedman et al., 2005; Goldstein et al., 1996), it is likely that women who utilize prescription diet pills will show a significant pretest-posttest improvement in quality of life scale scores.

Description of the Sample

Of the 45 participants who initially volunteered and met study inclusion criteria, 40 completed the initial QLI and started their medical weight loss program with Alpha Health Care. Of those, 30 participants completed the entire six week study. Overall, the dropout rate was 25%. Reasons for dropout included: financial constraints related to high cost of medical weight loss program (three participants); concerns that the program was ineffective (one participant); and participant request to discontinue participation in this study (six participants). No participant required withdrawal of program and study due to negative sides effects associated with appetite suppressants. Of the 30 participants who completed this study, all participants expressed positive sentiments towards the use of appetite suppressants. For the one participant who dropped out due to concerns that the program was ineffective, this participant's drop-out may be due to perceived program

ineffectiveness, or it may be due to other external factors which were not divulged, such as bingeing or excessive use of alcohol (both strongly discouraged by Alpha Health Care).

Findings

Descriptive statistics. Prior to consideration of inferential statistics for this study, a respect for descriptive statistics was analyzed. Participants within this study were similar with respect to their current mental health status, language, current medical status, and age. All participants were aged 25 to 60. Participants had a mean age of $M = 44.63$, $SD = 9.35$. Nineteen participants identified as Caucasian (63.3%); three participants identified as Hispanic (10%); three participants identified as Biracial (10%); and five participants identified as African-American (16.7%). All 30 participants reported as English speaking. Two participants reported having anxiety disorders, which does not exclude them from the study's parameters. Two participants reported having high levels of cholesterol; two participants reported having hypothyroidism; and one participant each reported: hyperglycemia, diabetes (Type II), Hepatitis C, and arthritis. The medical doctor at Alpha Health Care declared all 30 participants as medically appropriate for the weight loss program, and thus they are all appropriate for this study.

Table 1

Age, Race, Psychological Presentation, and Medical Status of Participants

Variable	Frequency	*M*	*SD*
Age	30	44.63	9.35
Variable	*N*		Percent
Race	30		
Caucasian	19		63.3
Hispanic	3		10
Biracial	3		10
African-American	5		16.7
Psychological D/O	2		
Anxiety D/O	2		6.7
Medical D/O	8		
Cholesterol	2		6.7
Hypothyroidism	2		6.7
Hyperglycemia	1		3.3
Diabetes Type II	1		3.3
Hepatitis C	1		3.3
Arthritis	1		3.3

Further analysis suggests that mean QLI scores were lower prior to participant use of prescription diet pills. Table 2 indicates mean QLI scores for the five domains prior to prescription diet pill use and then again six weeks after beginning prescription diet pill use.

Table 2

Pre-Test and Post-Test Mean QLI Scores

Domain	Pre-Test	Post-Test
Overall	21.51	24.24
Health	21.49	24.29
Social/Economic	21.91	24.19
Psychological/Spiritual	19.71	23.30
Family	23.98	25.48

Inferential statistics. In order to test the study hypothesis, a paired-samples t-test analysis was utilized to determine if significant differences were found in overall quality of life, as well as in the other QLI domains: health and functioning, psychological/spiritual, social and economic, and family. A paired samples t-test revealed significant differences in all five QLI domains. Analysis revealed that participants' overall QLI scores significantly improved six weeks after initiating prescription diet pills $t(29) = 11.48$, $p < .05$). Other significant QLI improvements were noted in health and functioning $t(29) = 11.27$, $p < .05$), psychological/spiritual $t(29) = 9.92$, $p < .05$), social and economic $t(29) = 7.94$, $p < .05$), and family $t(29) = 4.31$, $p < .05$). Table 3 highlights this data.

Table 3

The Effect of Prescription Diet Pills on QLI Scores Following Treatment

Variable	*N*	*M*	*SD*	*t*(29)	*p*	95% CL	
						LL	UL
Overall Pre-Post	30	2.73	1.30	11.48	< .01	2.24	3.21
Health Pre-Post	30	2.81	1.36	11.27	< .01	2.30	3.32
Socio/Ec Pre-Post	30	2.29	1.58	7.94	< .01	1.70	2.88
Psych/Sp Pre-Post	30	3.59	1.98	9.92	< .01	2.85	4.33
Family Pre-Post	30	1.50	1.91	4.31	< .01	.79	2.21

Qualitative Considerations

Although a qualitative analysis was not part of this study's research design and question, it may be beneficial to consider some observational themes and differences within the data. Of great importance to consider during this discussion is the vast disparity in numbers between Caucasian participants (19 out of 30) and those participants of other races, as well as the low frequencies of identified medical conditions. Due to the disparity of races and low frequencies of medical conditions, this author cautions the reader to not make any unnecessary and false interpretations.

In terms of race and QLI scores, Caucasian participants scored highest in all five QLI domains. African-Americans scored lowest in psychological and spiritual functioning,

as well as lowest in health functioning, but seemed to show the greatest improvement in health functioning at post-test. Biracial participants scored lowest in social and economic functioning, as well as family functioning. Overall, Hispanic, Biracial, and African-American participants appeared to score lower at baseline, but showed the most improvement in all domains when compared to Caucasian participants.

In terms of medical conditions, participants with the seemingly more severe conditions (e.g., hypothyroidism, Type II diabetes, and Hepatitis C) scored worse in health functioning on the QLI, but appeared to improve the most in this domain at post-test. Furthermore, participants with hypothyroidism, Type II diabetes, and Hepatitis C, appeared to have lower QLI scores in all five domains than those participants with high cholesterol, hyperglycemia, or arthritis. It is important to be reminded once again that due to having few medical conditions identified and having low frequencies of these conditions, interpretation of qualitative results would be unfair.

Chapter 5: Discussion

As genetics, the environment, and biology create limitations to losing weight, a goal of weight loss is to help individuals regulate weight at the low end of the range of possible weights (even though they may remain overweight after treatment). As larger losses of weight are associated with greater health improvements (Wing, 1992), even a 10% weight loss is associated with improved blood pressure, cholesterol, blood glucose levels, and sleep apnea (NHLBI, 1998).

A problem that many individuals with weight concerns face is how to lose weight. In 2003, Americans spent close to $40 billion dollars to lose weight. Additionally, a report conducted by Marketdata Enterprises (a service sector market research specialist) in 2002 forecast a close to 6% annual growth in the US weight loss industry would produce a staggering $48.8 billion industry by 2006. One method that individuals have turned to in order to lose weight is through the use of diet pills (Rao, 2010).

Discussion

Presently, there is a minimal amount of research related to the effects of prescription diet pills on an individual's quality of life, as well as a lack of research on the consideration of pharmacologic treatments to minimize the negative effects associated with obesity and being overweight. This study provided an analysis of the effects of prescription diet pills on the quality of life in adult women to help fill in missing gaps. As hypothesized, use of prescription diet pills (e.g., phentermine & diethylpropion) was

associated with general improvement of overall quality of life scores. Following the six-week long study, means for overall quality of life, as well as the other four domains, all increased, which is a sign that the participants within this study likely identified improvements in their overall quality of life, as well as in health functioning, social and economic life, psychological and spiritual well-being, and within their family life.

The results of this study are consistent with the findings of current research. At initial baseline, participants' scores on the QLI indicated lower scores on overall quality of life, health functioning, social and economic life, psychological and spiritual well-being, and within their family life. Prior to the intended loss of weight, individuals with increased levels of weight are associated with poor occupational, physical, social, and home functioning (Puhl et al., 2007). Weight stigma is also associated with mistreatment from others in a variety of areas of functioning (e.g., occupational positions, wages, and desirability) which negatively impact quality of life (Freidman et al., 2005). In terms of psychological functioning, Wott and Carels (2010) found a strong association between weight stigma and increased levels of psychological distress. In particular, individuals with weight stigma display increased symptoms of depression (Wott & Carels), as well as increased levels of anxiety and maladaptive eating behaviors (Black et al., 1992).

Following a six-week long dosing of appetite suppressants for the purposes of weight loss, participants within this study significantly improved their overall quality of life, health functioning, social and economic life, psychological and spiritual well-being, and within their family life. Improvements in quality of life are supported by two studies which indicated a strong correlation between decreased weight loss and decreased

depression levels (Faulconbridge et al., 2009; Simon et al., 2010). As previously stated poor body image is associated with a negative perception of health status and reduced quality of life (Grave et al., 2007). Once weight loss occurs, individuals display improved body uneasiness, reduced psychiatric distress, and improved quality of life (Grave et al.). These previous findings support that the likely improvement of quality life is associated with weigh loss as a result of use of appetite suppressants.

Principal Findings

The present study is an indicator to the potential positive effects of prescription diet pills on weight loss, and subsequently, on overall quality of life. Perhaps the most influential indication to the effectiveness of prescription diet pills is that the participants scored higher in overall quality of life on their six-week follow-ups. Following a review of the results, all scores in overall quality of life, health functioning, social and economic, psychological/spiritual, and family either improved or remained the same for each participant.

A potential explanation as to why overall quality of life seems to improve following weight loss may be found with the Health Belief Model (HBM; Rosenstock, 1974). The HBM is based on the individual's perception of a medical condition. The psychology of a person's perception is tied to four factors: perceived susceptibility (i.e., an individual's assessment of their risk of getting the condition), perceived severity (i.e., an individual's assessment of the seriousness of the condition, and its potential consequences), perceived barriers (i.e., an individual's assessment of the influences that facilitate or discourage

adoption of the promoted behavior), and perceived benefits (i.e., an individual's assessment of the positive consequences of adopting the behavior).

The HBM explores the variables that contribute to health beliefs and treatment adherence. All 30 participants within this study had to first have a consultation with a licensed medical doctor who then provided them with a prescription and a guideline for how to best maximize their weight loss. As a reinforcer, each participant, as part of their program, returned to the medical office two to three times a week to receive medications and injections (to maintain consistency and efficacy throughout the program and study). During each visit, the participants were regularly monitored by a staff member who has prior medical education and training. It may be the case that the participants within this study recognized the perceived benefits of staying in the program. This is likely due to the positive effects of routine and frequent office visits made by each participant to monitor their weight loss. The impact of progressively losing weight, as well as recognizing positive physical and health changes associated with losing weight, may have acted as a reinforcer for staying in the program, thus potentially providing each participant with evidence to the benefits of staying on the program and following through with doctor's orders.

Relatedly, overweight individuals who maintain a perception that their weight will lead to negative consequences and think that losing weight will protect them from possible medical complications appear to be adherents of the HBM. Participants in this study were motivated to lose weight, and they were willing to pay high fees to achieve weight loss.

Another potential explanation for this study's findings may be due to the short duration of the study and due to the small sample size. As a six-week study, these participants were all new to appetite suppressants and have never previously ingested them. Past research, as reviewed in this study, provides evidence that appetite suppressants quickly help individuals to lose weight (Gadde et al., 2011; McKay, 1973; Weintraub et al., 1992). Participants improved state may be due to the body's initial reaction of appetite suppressants and that with increased time the body would soon develop a tolerance to the medication and slowly lose its effectiveness. Patients who utilize appetite suppressants typically plateau at some point and have difficulty in continuing to lose weight. The study was fortunate to have ended with 30 participants who completed the six weeks as directed. While this is a healthy number of participants that helped to achieve statistical power, perhaps had there been more participants statistical significance would not have been as high.

Something should be said regarding participant excitement with the program. As new patients to the Alpha Health Care program who were motivated to lose weight, participant excitement and expectation may have factored in by enhancing program follow-thru that may be less likely for patients who have been on the program for months at a time. The 30 participants also invested a great deal of money by joining the Alpha Health Care program. Over the course of six weeks, patients of Alpha Health Care were likely to spend an estimated $600 per person. This estimate includes fees for doctor consultation, blood test, and all medications and injections. This high cost may have motivated participants to increase their adherence to the program or may have psychologically

swayed them to believe that appetite suppressant use is effective and has improved their well-being.

Improved health functioning. Statistical improvement in this category may be due to improved self-perceptions. As previously addressed, obesity and increased weight are associated with numerous health impairments and problems (Puhl et al., 2007). Prior to starting the program the participants within this study scored significantly lower in the health functioning domain. This large improvement may be due to internalized perceptions that with weight loss, however large or small, must be translating into improved health. This may be a likely interpretation due to the small timeframe in which these participants were studied and the unlikelihood that an actual change in their health status occurred. Although, this finding may also relate to Epiphaniou and Ogden's (2010) qualitative study, in which they explored the experiences of dieters who successfully maintain their weight loss with a focus on the transition in perception of self from their heaviest to their current reduced weight. Participants described their experiences before losing weight and indicated how maintaining their weight facilitated a shift in identity towards a healthier, liberated, and more relaxed individual.

Most studies suggest that weight loss improves health status with as little as 5% to 15% body weight loss (Sarlio-Lahteenkorva, 2001). Improvements in health functioning on the QLI are not surprising, as not only have participants lost weight, thus improving their physical health, but participants should have noticed that their health functioning had improved. With modest amounts of weight loss, this will lead to the amelioration of

hyperglycemia, hyperlipidemia, and hypertension. Weight loss will also reduce shortness of breath, and improve quality of sleep, back pain, and lung function (WHO, 1998).

Improved social and economic functioning. As previously addressed, obesity and increased weight are associated with poor perceptions of sociability, mistreatment by others, and lower wages (Roe & Eickwort, 1976; Sobal & Stunkard, 1989). After completing this study, participants scored significantly higher in perceived social and economic functioning. This improvement may also be best explained by Epiphaniou and Ogden's 2010 study.

Prior to losing weight, most participants described a life centered on restriction (Epiphaniou & Ogden, 2010). This was influenced by the internalized social discrimination that resulted in a tendency to avoid social interactions, restrict attention towards body shape and adopt a restricted dietary routine to obtain a more socially acceptable body weight. Most participants described avoiding social interaction when they were overweight in an attempt to hide. As a result of society's concentration on their weight, participants described how their body shape became a central criterion for their self-identity. They tended to perceive themselves as "big" or "fat," which led to a negative mood. For the 30 participants within this study their improvement in social and economic functioning may be due to enhanced self-views of themselves. These participants may be expressing pride in themselves for losing weight and their change in opinion of themselves could be positively affecting their social lives.

Overtly, studies indicate that weight loss improves employment status (Rabner & Greenstein, 1991), income level (Nasland & Akgren, 1991), and social relationships, including dating and marriage (Tinker & Tucker, 1997). Related to Epiphaniou and Ogden's (2010) study, improvements in social and economic functioning on the QLI are likely due to enhanced self-esteem and confidence. Participants of this study likely no longer felt compelled to shy away from social gatherings and events, which may help to support the relationship between weight loss and improvements in psychosocial functioning and interpersonal relationships (Grimaldi & Van Etten, 2010).

Improved psychological and spiritual functioning. As previously addressed, obesity and increased weight are associated with increased mental illness, in particular depression and anxiety (Black et al., 1992; Sarwer et al., 2004). Participants within this study showed significant improvement in psychological and spiritual functioning on the QLI. This improvement may be the most beneficial to the participants, and for those who strive to lose weight. According to Epiphaniou and Ogden (2010), prior to weight loss food was often a tool for emotional regulation and indulgence for overweight individuals. Most participants in their study regulated their stress, boredom, or depressive feelings by consuming high caloric foods, but for many, this resulted in self-criticism and feelings of guilt. By utilizing appetite suppressants and curbing hunger, participants were less likely to engage in unhealthy eating. As such, and supported by past research, following a reduction in weight, many patients experience improved mood, self-esteem, and psychosocial functioning (Grimaldi & Van Etten, 2010). Furthermore, depression and anxiety will

decrease following weight loss, typically because individuals have higher levels of anxiety and depression when beginning a weight loss program. Thus even a moderate amount of weight loss will likely lead to significant reductions in depression and anxiety (Wadden et al., 1996)

Improved family functioning. As previously addressed, obesity and increased weight are associated with poor social outcomes, which transcend into a patient's familial life (Grogan, 2008). Obese individuals commonly report encountering physical barriers, being avoided, ignored or excluded because of weight, receiving hurtful comments from children, family, and medical professionals, and being the recipient of unflattering assumptions about obese persons (Friedman et al., 2005). Overweight individuals are also less likely to marry, or maintain romantic relationships, when compared to non-overweight individuals.

Significant score improvement in this domain may be due to a shift in identity from that of a previously restricted individual towards one who was liberated. According to Epiphaniou and Ogden (2010), it is likely that after weight loss participants were less socially detached, more likely to make new friends, and more comfortable in their communication with others, especially their family members. This sense of liberation was also reflected in broader sense of self-identity and participants described how weight loss had reinforced a positive attitude towards their self and directed attention away from their physical appearance. This enabled them to develop a sense of self that was no longer weight centered.

Conclusion

The results of this study suggest that adult women who have made the decision to lose weight via the use of appetite suppressants are likely to show improvements in their overall quality of life. Additionally, the QLI assessed for a variety of factors that affect quality of life, and at the conclusion of the study, adult women participants were found to have significant improvement in overall quality of life, health functioning, social and economic functioning, psychological and spiritual well-being, and within their family life.

Limitations

Design. This study has a number of limitations, which relate to the study's use of a quasi-experimental design. As a pre-posttest design, this allowed for the ability to make inferences on the effect of appetite suppressants on quality of life by looking at the difference in the pre-test and post-test results. However, interpreting the pre-test and post-test difference should be done with caution since it cannot be for certain that the differences in the pre-test and the post-test are causally related to the intervention (Hinkelmann & Kempthorne, 2008). Furthermore, this study did not have a control group. Instead, participants were tested prior to receiving appetite suppressants and then tested again once the treatment was administered. As a result, there may be confounding variables that threatened internal and external validity.

This study was also limited by its statistical procedures. For one, the study used the least conservative method in handling dropouts. That is, only data from individuals who

completed the study were analyzed. This assumes that those who dropped out did so for reasons unrelated to treatment, which appears unlikely due to one participant dropping out due to concerns of the program's effectiveness. Should baseline data from participants who dropped out of the study have been included in statistical analysis, perhaps mean baseline (pre-test) scores would have been different, thus altering pre and post-test comparison data, and potentially affecting statistical significance.

Due to the nature of this study, certain demographic (e.g., socioeconomic status and ethnicity) data was not collected and utilized during analysis. The brunt of this study sought to investigate the impact of prescription diet pills on overall quality of life in adult women, which did not require a consideration for demographic data, other than age and gender. It is unclear if socioeconomic status and ethnicity impacted results in any way, and if so, in what manner. Inclusion of more demographic data for future research may prove to be beneficial.

Measurement. With regards to threats to internal validity, one cannot be completely certain that a change in the dependent variable (QLI scores) was caused solely by the use of appetite suppressants. There is a strong possibility that some other event (e.g., healthier eating, increased exercise) may have influenced improved QLI scores. Second, as a pre-posttest design, there may be some negative effect due to participant re-taking the QLI six weeks after the first. Lastly, participants who either volunteered or completed the study all chose to do so willingly, without provocation. As a result their strong interest to be part of the study may have affected the results. In terms of external validity, there is the

chance that effects of selection, setting, participant history, and testing may have caused threats to external validity and the study, but following the completion of this study none of these effects were noted.

Concerns were also noted within the assessment of the QLI's sub-domains. For example, within the psychological and spiritual subscale, there are only two items (#27 and #28, Appendix D) that inquire about a participant's spirituality. It would seem imbalanced to assume that two questions would suffice as a proper assessment of spiritual functioning. Relatedly, some of the items within the QLI may not apply to some of the participants. For example, questions pertaining to a participant's satisfaction with their children, sex life, or job, may cause unwanted discomfort and distress, should a participant not have negative associations with these questions. Fortunately, during the course of the study none of the participants reported distressing remarks associated with taking QLI. In the event participants had concerns or questions, information was provided for them in the study information sheet (Appendix B) to help solve any issues.

Procedural. This study was limited by its short-term duration, and its focus on adult women residing in Southern California. Longer-term evaluations of the effects of appetite suppressants could reveal different results. It is unclear whether participants engaged in response bias, which assumes their responses on the QLI were based on assumptions of what they believed the study was attempting to investigate, thus inappropriately influencing results. Another topic for consideration revolves around timing of QLI assessment. It is unclear if participants were overly happy or distressed prior to

completing the QLI. In the event either occurred, participant responses on the QLI would likely be unfairly influenced. In consideration of this concern, participants were asked (Appendix A) if any life event of magnitude had recently occurred.

Strengths of the Study

Although there were several study limitations, there were several strengths that should be recognized. These strengths include: evaluation of an understudied topic, use of a pre-posttest design, high power of analysis, and the generation of study participants by random assignment. Throughout this study the lead investigator was kept blind from the participants, which protected confidentiality and prevented unnecessary testing effects due to investigator presence. A sample size of 30 participants was found to have a high power of analysis (> .8), which aided in the statistical analysis process. Use of a pre-posttest design (within groups) was beneficial due to its ability to study the change of an outcome over time (e.g., pre and post-test quality of life score) and due to its ability for studying multiple outcomes and allowing each subject to act as their own control (Hinkelmann & Kempthorne, 2008).

Clinical Implications

This study provided potential evidence that use of appetite suppressants for weight loss purposes has the probability of improving an adult woman's quality of life. Findings suggested that use of appetite suppressants was associated with improved quality of life. This finding has several implications for practice. This data affirms medical

recommendation that healthy weight status leads to healthier and happier lives (NHLBI, 1998). As such, psychologists and their patients would benefit from a consideration, if necessary, of improving their weight status. This study's information could be considered as a positive reminder for therapist self-care, as well as a consideration for the impact of weight on clientele quality of life.

As it has been established throughout this study, increased weight and obesity are associated with an increased risk of mental illness, psychological distress, and physical/ medical complications (Black et al., 1992; Epiphaniou & Ogden, 2010; Grimaldi & Van Etten, 2010; Puhl et al., 2007; Sarwer et al., 2004). This study helps to offer tentative support on the impact of increased weight on an individual's life, as well as emphasize the need for medical and mental health professionals to consider the effects of increased weight during conceptualization and treatment planning.

Short of recommending appetite suppressants as a treatment alternative to psychotropic medication, bariatric procedures, or strict dieting strategies, clinicians may choose to consider on a case by case basis to refer patients to a medical weight loss doctor who prescribes appetite suppressants to yield fast and effective results in weight reduction and enhanced quality of life.

Directions for Future Research

Future research on the inclusion of psychotherapy combined with appetite suppressant use would be beneficial for the scientific community. While combining psychotherapy with appetite suppressants is likely to improve weight loss and quality of

life, little data is available to confirm this. Furthermore, although females are more likely to seek weight loss services over males, studies that either primarily focus of male weight loss, or that study both genders simultaneously, would serve to better educate and support the effects of appetite suppressants on quality of life. Use of male participants and broadening the geographical reach of the study would allow for the introduction of viable information and effects that may alter the significance of the study.

Further research is needed in evaluating the biological and behavioral effects of appetite suppressants. Such studies will guide researchers and clinicians in selecting appropriate treatments for specific patients and help in the discovery of ways to alter current interventions to maximize effects. For example, appetite suppressants combined with psychotherapy may help to reduce food cravings and unhealthy eating.

Whether various sub-types of obese or overweight patients do better with different interventions is understudied. For example, patients who have significant increases in hunger might find medication most useful. Patients for whom exercise adherence is challenging might find appetite suppressants to be beneficial. Future research on the effects of appetite suppressants in other patient populations, such as diabetics, males, specific minority groups, is needed.

Pharmacotherapy is considered an effective avenue of care primarily because of its potential to promote long term weight maintenance. However, at present, researchers know little about how to best sequence medication and lifestyle interventions in order to improve long-term weight management. Moreover, medication may be best utilized as a maintenance tool or rescue strategy after weight-regain or weight loss plateau. Studies

evaluating long-term behavioral change after appetite suppressant use are warranted.

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Appendix A: Participant Questionnaire

Participant Instructions

Thank you for agreeing to participate in this study. Please take a moment to answer the questions below:

Date: _____
Gender: _____
Age: _____
Ethnicity: _____
Primary Language: _____

Have you ever used appetite suppressants in the past? Yes No

Do you have a medical condition? Yes No

If yes, what condition(s): _____

Have you ever been diagnosed with a mental health condition? Yes No

If yes, what condition(s):_____

Have you ever been hospitalized with a mental health concern? Yes No

If yes, what concern(s):_____

Do you presently take medication for a mental health concern? Yes No

Have you ever taken medication for a mental health concern? Yes No

Have you been treated for a mental health condition within the last year? Yes No

If yes, what condition(s):_____

Has a major life event (e.g., a death, job loss, a birth, winning the lottery) occurred in the last month? Yes No

Appendix B: Study Information Sheet

Study Information Sheet

Title: The Effects of Prescription Diet Pills on the Quality of Life in Adult Women

Investigator: Peter Panagakis, MA

I am asking you to participate in a research study. Please take your time to read the information below and feel free to ask any questions before signing this document.

Purpose:

The purpose of this study is to investigate the impact of prescription diet pills on an individual's quality of life. Adult female participants who have made the decision to lose/maintain weight via the use of prescription diet pills will have their quality of life scores compared at the onset of treatment and then again six weeks into treatment.

Procedures:

Should you decide to participate in this study, you will be asked to complete a brief questionnaire that asks for your age, gender, and past medical and psychological history. After completing this questionnaire, you will be asked to complete the Quality of Life

Index (QLI), which is a brief measure of quality of life in terms of satisfaction with life. In six weeks after completing the QLI, you will be asked to complete this measure once more. Your participation is completely voluntary, and you will not be compensated for your participation.

Risks to Participants:

For those participants who are utilzing prescription diet pills, minor side effects may include: bad taste in mouth; changes in sex drive; constipation; diarrhea; difficulty sleeping; dizziness; dry mouth; exaggerated sense of well-being; headache; impotence; nervousness; overstimulation; restlessness; sleeplessness; upset stomach.

For those participants who are in the control group, in other words, for those who are not acively engaging in methods to lose weight, there are no immediate risks.

Benefits to Participants:

You will not directly benefit from this study. However, we hope the information learned from this study may benefit society in our understanding of how prescription diet pills impact the quality of life of individuals.

Alternatives to Participation:

Participation in this study is voluntary. You may withdraw from study participation at any time without any penalty. A resource packet will be given to those participants who request it.

Confidentiality:

Participant confidentiality will be protected by keeping the lead investigator blind to your identifying information, and the research assistants blind to your responses. Meaning, if you agree to participate in this study, the medical assistant/LVN will hand you an envelope which contains the QLI, and short questionnaire. After completing these documents, you will place them back into the envelope, and seal it, thus not allowing the medical assistant/LVN access to your answers. The envelope will have a number on it, which will also be written in your chart. The sealed envelope will be sent to the lead investigator, Peter Panagakis, so that he may analyze the data. After six weeks pass, Peter Panagakis will inform the medical assistant/LVN, that participant 1 or participant 2, for example, is to be asked to complete the QLI once more. After completion of the second QLI, you will once more seal it in the given envelope, after which it will be given to the lead investigator. Research materials will be kept for a minimum of five years per American Psychological Association (APA) guidelines.

Questions/Concerns:

Should you have any concerns or questions, please do not hesitiate to contact the lead investigator, Peter Panagakis. He can be reached via telephone by calling 603-398-9229, or via email at ppp0458@ego.thechicagoschool.edu. If you have questions concerning your rights in this research study you may contact the Institutional Review Board (IRB), which is concerned with the protection of subjects in research project. You may reach the IRB office Monday-Friday by calling 312.467.2343 or writing: Institutional Review

Board, The Chicago School of Professional Psychology, 325 N. Wells, Chicago, Illinois, 60654.

Consent

Subject

The research project and the procedures have been explained to me. I agree to participate in this study. My participation is voluntary and I do not have to sign this form if I do not want to be part of this research project. I will receive a copy of this consent form for my records.

Appendix C: Recruitment Flyer

PARTICIPANTS NEEDED!

Volunteer to participate in a research study about quality of life in women who utilize prescription diet pills.

Raise your own awareness, enhance your quality of life, and help benefit society!

Where and when can you participate you ask?

Location: Alpha Health Care
Time Required: 10 Minutes
MUST BE A NEW PATIENT

Appendix D: Quality of Life Index

Ferrans and Powers
QUALITY OF LIFE INDEX©
GENERIC VERSION - III

PART 1. For each of the following, please choose the answer that best describes how ***satisfied*** you are with that area of your life. Please mark your answer by circling the number. There are no right or wrong answers.

HOW *SATISFIED* ARE YOU WITH:	Very Dissatisfied	Moderately Dissatisfied	Slightly Dissatisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied
1. Your health?	1	2	3	4	5	6
2. Your health care?	1	2	3	4	5	6
3. The amount of pain that you have?	1	2	3	4	5	6
4. The amount of energy you have for everyday activities?	1	2	3	4	5	6
5. Your ability to take care of yourself without help?	1	2	3	4	5	6
6. The amount of control you have over your life?	1	2	3	4	5	6
7. Your chances of living as long as you would like?	1	2	3	4	5	6
8. Your family's health?	1	2	3	4	5	6
9. Your children?	1	2	3	4	5	6
10. Your family's happiness?	1	2	3	4	5	6
11. Your sex life?	1	2	3	4	5	6
12. Your spouse, lover, or partner?	1	2	3	4	5	6
13. Your friends?	1	2	3	4	5	6
14. The emotional support you get from your family?	1	2	3	4	5	6
15. The emotional support you get from people other than your family?	1	2	3	4	5	6

(Please Go To Next Page)

HOW *SATISFIED* ARE YOU WITH:	Very Dissatisfied	Moderately Dissatisfied	Slightly Dissatisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied
16. Your ability to take care of family responsibilities?	1	2	3	4	5	6
17. How useful you are to others?	1	2	3	4	5	6
18. The amount of worries in your life?	1	2	3	4	5	6
19. Your neighborhood?	1	2	3	4	5	6
20. Your home, apartment, or place where you live?	1	2	3	4	5	6
21. Your job (if employed)?	1	2	3	4	5	6
22. Not having a job (if unemployed, retired, or disabled)?	1	2	3	4	5	6
23. Your education?	1	2	3	4	5	6
24. How well you can take care of your financial needs?	1	2	3	4	5	6
25. The things you do for fun?	1	2	3	4	5	6
26. Your chances for a happy future?	1	2	3	4	5	6
27. Your peace of mind?	1	2	3	4	5	6
28. Your faith in God?	1	2	3	4	5	6
29. Your achievement of personal goals?	1	2	3	4	5	6
30. Your happiness in general?	1	2	3	4	5	6
31. Your life in general?	1	2	3	4	5	6
32. Your personal appearance?	1	2	3	4	5	6
33. Yourself in general?	1	2	3	4	5	6

(Please Go To Next Page)

PART 2. For each of the following, please choose the answer that best describes how ***important*** that area of your life is to you. Please mark your answer by circling the number. There are no right or wrong answers.

HOW *IMPORTANT* TO YOU IS:	Very Unimportant	Moderately Unimportant	Slightly Unimportant	Slightly Important	Moderately Important	Very Important
1. Your health?	1	2	3	4	5	6
2. Your health care?	1	2	3	4	5	6
3. Having no pain?	1	2	3	4	5	6
4. Having enough energy for everyday activities?	1	2	3	4	5	6
5. Taking care of yourself without help?	1	2	3	4	5	6
6. Having control over your life?	1	2	3	4	5	6
7. Living as long as you would like?	1	2	3	4	5	6
8. Your family's health?	1	2	3	4	5	6
9. Your children?	1	2	3	4	5	6
10. Your family's happiness?	1	2	3	4	5	6
11. Your sex life?	1	2	3	4	5	6
12. Your spouse, lover, or partner?	1	2	3	4	5	6
13. Your friends?	1	2	3	4	5	6
14. The emotional support you get from your family?	1	2	3	4	5	6
15. The emotional support you get from people other than your family?	1	2	3	4	5	6

(Please Go To Next Page)

HOW *IMPORTANT* TO YOU IS:	Very Unimportant	Moderately Unimportant	Slightly Unimportant	Slightly Important	Moderately Important	Very Important
16. Taking care of family responsibilities?	1	2	3	4	5	6
17. Being useful to others?	1	2	3	4	5	6
18. Having no worries?	1	2	3	4	5	6
19. Your neighborhood?	1	2	3	4	5	6
20. Your home, apartment, or place where you live?	1	2	3	4	5	6
21. Your job (if employed)?	1	2	3	4	5	6
22. Having a job (if unemployed, retired, or disabled)?	1	2	3	4	5	6
23. Your education?	1	2	3	4	5	6
24. Being able to take care of your financial needs?	1	2	3	4	5	6
25. Doing things for fun?	1	2	3	4	5	6
26. Having a happy future?	1	2	3	4	5	6
27. Peace of mind?	1	2	3	4	5	6
28. Your faith in God?	1	2	3	4	5	6
29. Achieving your personal goals?	1	2	3	4	5	6
30. Your happiness in general?	1	2	3	4	5	6
31. Being satisfied with life?	1	2	3	4	5	6
32. Your personal appearance?	1	2	3	4	5	6
33. Are you to yourself?	1	2	3	4	5	6

Appendix E: Letter of Permission

Permission to utilize the QLI was granted by Dr. Carol Ferrans for the purpose of non-profit research and non-profit clinical practice, for which there is no charge for use of the QLI. Below is a copy of the email granting this author permission to utilize the QLI.

Dear Mr. Panagakis,
Thank you for your email. I am pleased to grant you permission to use the Quality of Life Index for your research. There is no charge for this permission. I also grant you permission to include the instrument in your appendix of your dissertation. Please see our website at www.uic.edu/orgs/qli for more information and copies of the instrument.

Good luck with your study.

Sincerely,

Carol Estwing Ferrans, PhD, RN, FAAN
Professor and Associate Dean for Research
Co-Director, UIC Center of Excellence in Eliminating Health Disparities
Director, Community Engagement and Research Core, UIC Center for Clinical and Translational Science
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