Weight loss outcomes and health locus of control following gastric stapling surgery
by Colleen Beth Hook

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Nursing
Montana State University

Abstract:
Post-surgical weight loss is important for morbidly obese gastric stapling patients; however, some patients fail to lose the desired amount or are unable to maintain the weight loss. No investigations have been reported which examine factors associated with changes in weight for these patients. Therefore, this descriptive/exploratory study was designed to examine demographic factors and health locus of control variables for gastric stapling patients who were or are members of gastric stapling support groups. The health locus of control conceptual framework provided the association between health-related behavior and its reinforcement.

Twenty-five gastric stapling patients from two different locations responded to the Multidimensional Health Locus of Control Questionnaire. Specifically, internal, external/chance and external/powerful-others variables were determined by the 36 item Likert format questionnaire which has demonstrated reliability and validity. The two samples were considered separately based on the lack of homogeneity determined by the Mann-Whitney U and F-ratio statistics. Both descriptive and inferential statistics including means, S.D., ranges, analysis of variance and pearson correlations were used for data analysis.

Based on their responses, the two samples had less belief in powerful-others controlling their health than the normative population; however, both samples had higher beliefs that health is internally regulated than the normative population. Both study samples had similar beliefs as the normative population that chance has an average influence on health. No relationships were identified between selected demographic factors and health locus of control variables except a slight inverse relationship between reason for selecting surgery and the belief in chance. This study's results provided no clear evidence that any specific health locus of control orientation is associated with weight outcomes following surgery. External validity was limited by a convenience selection of accessible groups and it was not determined how representative the samples were of the target population; therefore, the findings cannot be broadly generalized. An important implication for nursing is not to make general assumptions relative to these patients, but rather develop an individual assessment of each client. Nursing care must be planned to enhance compliance based on an understanding of each patient's source of reinforcement for health-related behaviors. The results of this investigation indicate the need for additional research to better understand factors associated with weight outcomes following gastric stapling surgery.

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A thesis submitted in partial fulfillment

of the requirements for the degree

of

Master of Nursing

MONTANA STATE UNIVERSITY

Bozeman, Montana

August 1984

APPROVAL

of a thesis submitted by

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This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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ACKNOWLEDGEMENT

The writer would like to recognize key individuals who unselfishly gave of their time to assist in the completion of this thesis. Without their needed encouragement and cooperation this project could not have been undertaken.

Most of all deepest appreciation is expressed to Dr. Barbara Rogers who has provided knowledgeable contributions in a most competent and exemplary manner. Throughout this project and all of graduate school her knowledge, enthusiasm, creativity and many other skills have been of singular excellence. With invaluable support as a role model and mentor she has fostered this writers professional development.

Gratitude is expressed to Chris Howard, R.D. whose special interest and professional demeanor heeded data returns. Committee member Dr. Sharon Dinkel provided expert research advisement and prompt feedback. Committee members Kari Peterson and Teresa Snyder are thanked for their careful consideration of the many drafts and continual encouragement. Michael LaValle provided prompt and expert statistical analysis when time was valuable to him. Special thanks to Jan Liesz for her expert editorial efforts despite many other time demands.

The writer is grateful to all gastric stapling patients who willingly shared their private personal information in this study.

Last of all a special thanks to my loving husband Tom, who has been an inspiration to me.

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ABSTRACT

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CHAPTER 1

INTRODUCTION

Identification of the Problem

Stapling of the upper portion of the stomach into a 30 to 50 cc pouch, gastric stapling or gastroplasty, has recently become a popular method used to induce weight loss for morbidly obese individuals, persons 100 pounds or 100% greater than their ideal body weight (Hallberg, 1980). The surgical procedures are new and still considered experimental in nature (Bondi, 1979; Hallberg, 1980). Some of the morbidly obese patients who have elected gastric stapling surgery as a 'last resort method' to lose weight have continued to struggle with unwanted weight gain despite the dramatic decrease in gastric volume created by the surgery (Buckwalter, 1981). Numerous studies examining the psychosocial and physiological components associated with obesity have been reported; however, none of these studies attempt to identify the factors that may contribute to the inability of some gastric stapling patients to maintain weight loss.

These patients suffer from both psychosocial difficulties and chronic health problems secondary to their morbidly obese state. It is at this point that these patients fall within the interest of nurses and the practice of nursing. Nursing is defined by Barnard (1982) as "diagnosis and treatment of human responses to health problems" (p. 1). She expands the definition to explain that nurses most frequently deal

with patients in transitional stages. Nursing intervention with gastric stapling patients focuses on both pre-surgical and post-surgical transitional stages. There is a need to know more about these patients in order to better assist in the stages of transition. To date, the most systematic measuring or recording of data regarding these patients has been weight change and surgical complications (Boehmer & Turk, 1981; Félder & Amaral, 1981; Gomez, 1980). Just recording weight change does not tell us what factors may influence or be associated with the weight changes. There is a need for research that identifies the factors associated with the changes in weight (Buckwalter, 1981; Hartz, Kalkhoff, Rimm & McCall, 1979; MacArthur, Jewell, Hardin & Smith, 1981; Stellar & Rodin, 1980).

Discussion of the Problem Through a Case Study

The investigator became interested in morbidly obese patients electing surgical weight control as a result of work done with these patients in several graduate class assignments. In one assignment the investigator subjectively examined the impact of chronic illness, morbid obesity, on family coping and adaptation. In another assignment the investigator implemented a gastric stapling support group for the local area patients.

To assist in understanding the evolution of the research question which developed while working with these patients, a description of the process is provided in the following paragraphs. As will be seen from the description, common problems shared by a young mother and later support group members served as the basis for the research idea.

During the process of weekly interviews with a young mother who had been morbidly obese since childhood, the investigator was impressed by the monumental impact that morbid obesity had upon this mother and her family. The mother suffered from psychosocial and chronic health problems which are associated with morbid obesity. These problems were characterized by depression, social isolation and unemployment due to unwillingness to seek employment. In addition, the mother suffered from hypertension and required medication to keep it under control. Because of these problems, she described seriously considering suicide as an alternative to rid herself of the hopelessness she felt regarding her inability to lose weight. At this point, the young mother chose gastric stapling surgery.

Over the next twelve months following surgery this woman lost 144 pounds and the hypertension associated with her previous massive weight disappeared. After the tremendous weight loss the mother gradually increased the volume of food she ate to include more high caloric fatty foods, and also ate more frequently. Although the mother described early satiety from eating only small amounts of food along with a lack of appetite since surgery, she continued to eat excessively and described feeling unable to control herself. As the mother's former eating habits returned she watched her weight regain approach 80 pounds and once again the hypertension associated with severe obesity returned.

The investigator became acquainted with other morbidly obese gastric stapling patients in the area through introductions provided by

the young mother. In response to requests from these patients, a support group was organized by the investigator.

In discussion with members of the support group a similar weight regain pattern began to emerge. Despite expressing an earnest desire to lose weight, and having undergone major surgery to have their stomachs stapled, some patients were unable to maintain a significant weight loss or continue losing to their target weights. Some of the patients in the group expressed interest in developing a weight control program but were unwilling to attempt any weight reduction method that had previously failed. As a result, there were few new avenues left to try. Strategies for modification of individual problem eating behaviors were suggested but were thwarted by repeated failures. Consequently, the investigator began to question what method(s) would help patients whose behaviors included an inability to control eating habits while verbalizing a strong desire to lose weight and who verbally acknowledged that making the needed eating behavior changes was a matter of personal responsibility.

To the investigator, the answer was simple -- to have the patients stop putting excessive amounts of food into their mouths. However, that simple answer had proven to be multidimensional in nature. The patients expressed desire to lose weight but generally had difficulty avoiding overeating. A question arose as to what mechanisms might be operating and influencing their behaviors. A search for answers led to the possibility that the patient's personality characteristics of

health locus of control, personal belief about degree of control over health, could be a possible factor influencing the weight control problem.

Purpose

Therefore, the purpose of this study is to describe the demographic characteristics, patterns of weight change, locus of control characteristics and principle reasons for chosing surgery for post-gastric stapling patients who were or are members of gastric stapling support groups.

Operational Definitions

To facilitate understanding of the remainder of this paper operational definitions of important terms are provided.

Morbid Obesity	An individual who is 100 pounds overweight or 100% greater than their ideal body weight (Bukoff & Carlson, 1981).
Health Locus of Control	A stable personality characteristic indicating events related to health to be either within or outside a person's control regardless of the situation (Wallston & Wallston, 1982).

External Health Locus of Control — The view that factors over which one has little control such as fate, chance and luck determine ones health (Wallston, Wallston & DeVellis, 1978).

Internal Health Locus of Control — The view that becoming healthy, staying healthy or becoming sick results from actions over which one has control (Wallston et al. 1978).

Gastric Stapling — Gastroplasty or gastric partitioning surgery in which the upper portion of the stomach is stapled into a 30 to 50 cc pouch to limit the volume of food intake (Gomez, 1980).

Overfat — Weighing over ideal body weight due to excess fat (S. Dinkel, personal communication, October 17, 1983).

Weight Patterns — Trends describing weight changes following gastric stapling surgery.

Gastric Stapling Support Group — A group of gastric stapling patients assembled by a health professional or patient for the purpose of providing education, coping skills, peer encouragement and other supporting activities for assistance in recovery from gastric stapling surgery.

Assumptions

The following assumptions are pertinent to this study:

1. Determination of health locus of control personality characteristic is appropriate for the morbidly obese gastric stapling patient.

2. The patients will be honest when recording their present weight, pre-surgical weight and weight pattern following surgery on the demographic data form.

Significance of the Study

The findings of this study will provide a foundation of knowledge for the nursing profession regarding demographics, health locus of control, patterns of weight change and reasons patients choose to have gastric stapling surgery. This foundation of knowledge can be used to educate current as well as future practitioners so they will be better informed when dealing with the transitional stages of the patients.

This knowledge can be utilized for making nursing assessments of the gastric stapling patient and planning for needed interventions. The intervention can involve such areas as pre-operative counseling, patient education, providing individualized nursing care to hospitalized patients and assistance in the support group setting.

As was previously defined, nursing involves the "diagnosis and treatment of human responses to health problems" (Barnard, 1982, p. 1). Nurses most frequently diagnosis, treat and provide care for patients in transitional stages (Barnard, 1982). A key factor in providing individualized nursing care to the patient in transition is knowing the patient. Nurses can provide better care if they understand the patient and the difficulties associated with recovery for that patient. Nursing interventions that are individualized foster better nurse-patient rapport and enhance recovery through improved nursing care.

Since some patients selecting this surgery do not achieve satisfactory weight loss or stabilization, it is of considerable importance to continue to explore factors which may influence or be associated with this phenomena. This study will provide nurses with preliminary insight about the gastric stapling patient and identify the need for further research in this area. Through a more complete understanding of the patient selecting gastric surgery it is possible that health professionals may be able to determine those patients who may or may not benefit from this surgery.

CHAPTER 2

LITERATURE REVIEW

Introduction

Morbid obesity, weight loss and health locus of control have appeared in the literature over several decades, but there has been little research relating these topics. Most of the research on obesity has been of the descriptive/exploratory type and has involved individuals who were not classified as morbidly obese. The key to better understanding of the morbidly obese may be to directly involve them in research related to identification of factors influencing or associated with weight changes.

Some morbidly obese patients having had gastric stapling surgery have been unable to reach a desired weight loss or maintain a reduced weight. There is a need to more systematically study this group of patients to provide insight into factors that may be associated with their changes in weight. Professional nurses can better assist these patients in stages of recovery through a more complete understanding of the individual and factors influencing their weight. Topics to be discussed in the literature review include morbid obesity, health problems associated with obesity, metabolic changes, mortality, effects of weight loss and psychosocial corollaries associated with obesity. Current theories concerning the etiology of obesity and treatment failure for obesity are also discussed. Gastric stapling surgical procedures are explained in the text and illustrations provide further

clarification. Patient selection and surgical outcomes follow the explanation of the surgery. The last section of the literature review discusses the health locus of control conceptual framework, compliance behaviors and locus of control in weight loss programs.

Morbid Obesity

Prevalence

Morbid obesity, defined as 100 pounds or 100% over ideal body weight, is becoming a major health problem in most developed countries (Buckwalter, 1981; MacArthur et al. 1981; Stark, Atkins, Wolff & Douglas, 1981; Sundberg, 1978). Reporting the statistical prevalence of morbid obesity is difficult due to an inadequate number of surveys. Although, some studies report the prevalence of obesity termed 'severe' (Abraham & Johnson, 1980) no reports of the prevalence of morbid obesity are available. The Health and Nutrition Examination Survey (HANES) of 1971 - 1974 reports the following: (a) "among men ages 20 to 74 years, 4.9% or an estimated 2.8 million were 'severely' obese (30% above relative desirable weight)", and (b) "among women the corresponding figure was 7.2%, or estimated 4.5 million were 'severely obese' (50% above relative desirable weight)" (Abraham & Johnson, 1980, p. 366).

Some authors have attempted to estimate the prevalence of differing degrees of obesity. Sundberg (1978) estimated the prevalence of obesity to be 30% of the population or 60 to 70 million Americans. However, obesity was not qualified by percentage overfat.

Boehmer and Turk (1981) estimated that 29% of middle aged men and 40% of middle aged women were obese. Adler and Gosnell (1982) estimated 7 million American were severely obese, 13 million moderately obese and 80 million were just overweight. Their obese descriptors were not qualified by percentage overfat. Pender (1982) estimated that two out of every five Americans are 30% or more overweight and 60 to 70 million weigh more than they should to maintain optimum health. Finally, Miller (1983) estimated that one-third of middle aged Americans are 20% overweight and the overwhelming majority are women.

Health Problems Associated with Obesity

Morbid obesity is not only a disease in itself but acts as a catalyst to a host of other health disorders and is responsible for a reduction in life expectancy (Boehmer & Turk, 1981; O'Leary, 1980; Wooley, Wooley & Dyrenforth, 1980). The role that obesity plays in the development of cardiovascular disease has been well documented (Buckwalter, 1981; Gordon & Kannel, 1976; MacArthur et al. 1981; Mahan, 1979). The increased fat deposits in obese individuals lead to greater perfusion needs of the vascular system which results in an increased cardiac output with both greater pulse rate and stroke volume (Boehmer & Turk, 1981). This situation may bring about a variety of cardiac disorders (Boehmer & Turk, 1981). Consequently, as the percentage of overfat increases so does the risk of developing cardiovascular disease (Mahan, 1979).

A variety of other health disorders have also been associated with morbid obesity. As overfat increases so does the incidence of

diabetes mellitus (Buckwalter, 1981; Leon, 1980; MacArthur et al., 1981; Mahan, 1979; Sundberg, 1978). The incidence of hypertension increases with percentage overfat (Buckwalter, 1981; MacArthur et al., 1981; Mahan, 1979; Sundberg, 1978). In fact, in men, for each 10% gain in weight a corresponding 6.6 mm Hg rise in blood pressure has been reported by Mahan (1979). The corresponding figure for women was half the rise seen in men (Mahan, 1979). Respiratory problems and a greater incidence of gallstones have been associated with the increased morbidity for the morbidly obese (Boehmer & Turk, 1981; MacArthur et al., 1981; Mason, Printen, Blommers, Lewis & Scott, 1980). The morbidly obese condition is correlated with an increased incidence of menstrual irregularities (Buckwalter, 1981; Mahan, 1979). Intertriginous dermatitis (chafing skin) and musculoskeletal disorders are associated with the condition (Buckwalter, 1981). Garrow (1980) adds degenerative disease of the weight bearing joints to the list of liabilities associated with morbid obesity. Ovarian dysfunction and endometrial cancer are additional maladies impairing the health of the morbidly obese (Mahan, 1979). Lastly, arthritis, hernias and vascular insufficiency (stasis ulcers) are reported with morbid obesity (Boehmer & Turk, 1981).

Metabolic Changes

A variety of metabolic changes have been reported to accompany being overfat. Mahan (1979) reported high blood levels of insulin, lipids and uric acid occurring with weight gain. Impaired glucose tolerance has been reported by both Boehmer and Turk (1981) and

Mahan (1979). Mahan (1979) found that in men for each 10% gain in weight an average "2 mg/dl rise in blood glucose and 11 mg/dl rise in blood cholesterol occurred" (p. 233). In women, the corresponding figures were half those recorded for the men (Mahan, 1979).

Mortality

Epidemiologic data strongly suggests that mortality accelerates as the percentage of overfat becomes more severe (Festing, 1979; Van Itallie, 1980). Mild obesity (less than 227 lbs.) is associated with a reduction in life expectancy by two years (Festing, 1979). Severe obesity (315 - 333 lbs.) leads to a decrease in life expectancy between 9 and 12 years (Festing, 1979). The morbidly obese have a 12% higher mortality rate than their non obese counterparts (Van Itallie & Burton, 1980). The literature also reports that the mortality rate for overweight males is considerably higher than for overweight females (Van Itallie, 1980). Principally, the severely obese die from heart disease, stroke, diabetes mellitus and digestive disorders (Abraham & Johnson, 1980). The literature indicates that mortality figures are reversible. Garrow (1980) has reported that reduction of weight to the desirable range greatly decreases the mortality rate.

Effects of Weight Loss

Weight loss has led to significant reductions in the medical problems associated with morbid obesity. Drastic loss of weight has been associated with both reduced insulin requirements in diabetes and marked decrease in hypertension (Felder & Amaral, 1981;

Mason et al., 1980). In addition, cardiorespiratory function improves with weight loss (Felder & Amaral, 1981; Mason et al., 1980). Musculoskeletal symptoms and joint diseases also improve as weight is reduced (Felder & Amaral, 1981; Mason et al., 1980). Lastly, improvements in skin disease and varicose ulcers are seen with weight reduction (Felder & Amaral, 1981; Mason et al., 1980).

Psychosocial Corollaries Associated with Obesity

In attempts to compile psychosocial knowledge related to obesity, researchers have looked for variables that suggest obese individuals share common personality characteristics. Generally, the results from these studies have been disappointing (Mitchell, 1980). Common personality factors have not been identified for obese individuals (Plutchik, 1976). In fact, anyone who works with the obese will be aware of the wide range of variation in the psychological makeup of these individuals (Garrow, 1980). While psychosocial factors play an important role in obesity, it has not been possible to identify a psychological profile which typifies all obese individuals (Sundberg, 1978). Hutzler, Keen, Molinari and Carey (1981) caution that obesity is not a unitary syndrome and that it would be advantageous to study specific types of obese individuals. They further caution that results obtained from studies of slightly overweight college students cannot be generalized to the clinically obese, or particularily to the chronic morbidly obese.

The majority of research examining personality factors of the overweight has been with obese subjects and little research has been

conducted specifically on morbidly obese populations. Consequently, the literature review consists mostly of results relating to the obese but one cannot assume this is generalizable to the morbidly obese.

Discussing psychological factors in relation to obese individuals is not meant to imply that the obese are any more or less psychologically disturbed than the general population (Sundberg, 1978). In fact, reports on mental health and obesity indicate the obese are surprisingly well adjusted despite their massive size (Adler & Gosnell, 1982). Most authors agree that the obese do suffer psychologically from their massive size (Leon, 1980; MacArthur et al., 1981; Sundberg, 1978; Wooley et al., 1980). Wooley et al. (1980) and Hiller (1981) suggest that the obese have personality characteristics similar to minority group members. McCall (1973) in reviewing personality traits of the obese, raised the important unanswered question: "are the psychological differences that distinguish the obese from thin individuals antecedent or consequential to obesity?" (p. 36).

Compiling results from studies of the obese has not provided a consensus of information helpful for increased understanding and efficacy in treatment. According to Mitchell (1980) there is a lack of agreement regarding the effect of emotional arousal on eating behavior. Pudel (cited in Mitchell, 1980) reported increased eating behavior from moderate arousal. Schachter (cited in Mitchell, 1980) reported that the obese are more influenced by environmental (external) cues than by the state of their emotions (internal cues). The researcher advocating the latter view, postulated that excessive eating resulted

from increased responsiveness to time of day, availability of food, effort required to obtain food and its palatability.

Although debate exists as to whether or not obese individuals eat more than their nonobese counterparts, they do eat more than their caloric nutritional requirements. Recent observational studies have failed to identify the existence of an eating style specific to the obese which substantiates the stereotypic description of the obese as gluttons (Wooley et al., 1980). Stunkard and Koch (1964) studied kyrograph tracings (gastric pressure tracing recording gastric motility) along with subject reported hunger for 17 obese and 18 nonobese women. Most of the obese women failed to correlate gastric motility and hunger ($p > .05$). The authors concluded that obese women have a strong bias for denying hunger.

The stereotypic misconception that the obese are psychologically disturbed has not been substantiated by research. Hallstrom and Noppa (1981) studied personality traits, social factors and incidence of mental illness in obese women ($N = 800$). The subjects aged 38, 46, 50 and 54 had a weight index calculated (range 119 - 210) which demonstrated a high correlation to body fat mass ($r = .85$). Personality traits were measured by the Eysenck Personality Inventory and Cesarec - Marke Personality Schedule test batteries. Mental illness information and social data were gathered through personal interviews. There were no significant differences between obese and nonobese women in the presence of mental illness. The demographic factors of low social class and low performance in school were

significantly correlated with obesity ($p < .05$). The authors concluded that obesity was not a strong predictor of psychiatric illness in middle aged women.

In a second study of the same obese women (N = 712) Noppa and Hallstrom (1981) examined the relationship between body weight change and various psychosocial variables during a six year follow-up period. In mental health measures, women who gained 5 kg or more were higher in degree of psychiatric disability ($p < .05$) and depth of depression ($p < .05$). The personality characteristic of order on the Cesarec - Marke Personality Schedule was significantly higher ($p < .01$) for women who had gained 5 kg or more. Extraversion and sociability were not significant in predicting weight gain.

Research involving morbidly obese patients scheduled for gastric bypass surgery has revealed information specific to that population and situation. Mitchell (1980) in discussing data from his unpublished research reported that these morbidly obese subjects (no age, sex or number documented) showed no response, no change in heart rate or skin conductance, when shown high and low anxiety pre-surgical films. However, these same subjects experiences with previous hospitalization and surgery did influence their anxiety level and eating behaviors.

Hutzler et al. (1981) administered the Minnesota Multiphasic Personality Inventory (MMPI) to 84 gastric stapling patients preoperatively. Both male (N = 16) and female (N = 68) patients scored low on control and conformity scales. The male patients scored high on impulsivity, ego strength and were interested in arousal seeking.

Female patients were more passive, immature, lacked psychological sophistication and were less likely to express hostility in a direct manner. Generally, the MMPI scores were similar to addictive populations. However, gastric stapling patients scored lower on depression and did not indicate the cyclic nature associated with alcoholics (Hutzler et al., 1981).

Several social and familial factors have been identified as correlates of obesity. The lower socioeconomic class is more likely to develop obesity than the upper class (Hallstrom & Noppa, 1981; Khosla, 1981; Plutchik, 1976). The caloric intake of husbands and wives tend to be correlated (Plutchik, 1976). And, the presence of familial obesity influences the occurrence of obesity in children. Plutchik (1976) in reviewing the literature reporting incidence of obesity in children reported that 9% of children from nonobese parents were obese while a marked 40% of children from obese parents were obese. Even more remarkable was the figure indicating that 80% of obese children had two obese parents (Plutchik, 1976).

An additional factor that appears in the literature on obesity is gender. Stark, Atkins, Wolff and Douglas (1981) found the prevalence of overweight in females was greater than that in males during childhood and adolescence. In a longitudinal study of 5362 children they reported prevalence of overweight (greater than 20% ideal body weight) as: (a) 1.7% and 2.9% in boys and girls respectively at age 6, (b) 2.0% and 3.8% at age 7, (c) 6.4% and 9.6% at 11 years, (d) 6.5% and 9.6% at 14 years, (e) 5.4% and 6.5% at 20 years, and (f) 12.3% and

11.2% at 26 years. The risk of being overweight as an adult related positively to the degree of obesity as a child.

As previously stated, Abraham and Johnson (1980) reported an estimated 4.5 million women are severely obese compared to an estimated 2.8 million men, aged 20 - 74 years. The overwhelming majority of obese individuals seeking help with weight reduction through gastric stapling surgery are women. The following figures describe the percentage of women reported in groups of individuals electing gastric stapling surgery: (a) 87% of 80 patients (Halmi, Stunkard & Mason, 1980), (b) 86% of 200 patients (Smith, 1981), (c) 100% of 20 patients (Saltzstein & Gutmann, 1980), and (d) 81% of 330 patients (Gomez, 1980).

New to the literature identifying determinants of obesity are smoking habits. Khosla and Lowe (1971) reported that nonsmokers weighed more than smokers. The investigators also found that as age increased the weight of the nonsmokers also increased (Khosla & Lowe, 1971). From a sample of 10,482 men, nonsmokers were 5 pounds heavier than smokers at age 25. Between the ages 45 to 64 the weight difference had increased to 15 pounds (Khosla & Lowe, 1971). In addition, smokers were generally 15 pounds greater than ideal body weight and nonsmokers were 30 pounds greater than ideal body weight (Khosla & Lowe, 1971). The investigators postulated that smoking habits could be an important predictor of future obesity.

Some studies have attempted to identify factors associated with the ability to maintain weight loss.

Hartz, Kalkhoff, Rimm and McCall (1979) in a study of 175 severely obese women, 78% greater than ideal body weight, found three factors correlated with weight maintenance. Those factors were control and social responsibility as measured by the Minnesota Multiphasic Personality Inventory and combining timing of strong appetite with meals. Individuals with these three factors were able to maintain a 15 pound weight loss for 15 to 24 months after completing a weight reduction program. McCall (1973) in a study of 250 obese women in a Take Off Pounds Sensibly Program (TOPS) used the Minnesota Multiphase Personality Inventory to identify differences between subjects who were able to lose weight and those who were not. The women having difficulty with maintaining weight loss within 5% of ideal body weight for six months showed more "body overconcern, psychic hurting, somatization, rebelliousness, compulsive and rumative tendencies and bizarre or confused thinking" (McCall, 1973, p. 35). In addition, these women scored higher on "feminine dependence, touchiness and psychological restlessness" when compared to scores of the women who were able to maintain weight loss (McCall, 1973, p. 35). Finally, Stein, Hassanein and Lukert (1981) in a study of obese subjects 20% to 132% over ideal body weight participating in a hospital sponsored weight loss program identified demographic factors associated with predicting success with weight loss. Subjects (N = 63, 81% female) who were "caucasian, male, young, single and older at the onset of obesity" had the greatest weight loss (Stein et al., 1981, p. 2034).

It is important to note that obesity becomes a social problem for the individual (Hiller, 1981; MacArthur et al., 1981; Sundberg, 1978; Wooley et al., 1980). With the prevailing negative stereotype attached to obesity, the stigma of being overfat is stringent and associated more with women than men (Hiller, 1981). Most people view the obese as deviant and the obese condition as caused by self indulgence and laziness (Hiller, 1981). In addition, most thin people view the obese, especially the morbidly obese as eating much more than other people (Wooley et al., 1980). Even children view obese children as ugly, sloppy, naughty and lonely (Wooley et al., 1980). The obese, as a result, are subject to discrimination by the thin population (Wooley et al., 1980). The discrimination can permeate interpersonal relationships such as companionship, dating, marriage, hiring practices affecting employment and acceptance into college programs (Wooley et al., 1980). Some authors suggest these factors result in the obese having personality characteristics similar to minority group members (Hiller, 1981; Wooley et al., 1980).

Etiology of Obesity

Until recently obesity was dealt with almost exclusively as a psychological problem (Goodhart & Shils, 1976). The treatment rationale was based on one simple assumption: obesity is due to overeating. And, overeating is due to lack of self-control or to serious personality abnormalities. Recent literature describes obesity

as a complex disorder incompatable with oversimplification (Goodhart & Shils, 1976). In fact, current theories suggest a range of factors involved in the etiology of obesity.

Genetic and Cultural Factors

There may be a genetic component in familial obesity. It is a well established fact that obesity tends to recur in families. Goodhart and Shils (1976) in a study of 1000 obese patients reported 73% had one or both parents obese and most were second or third generation born Americans lending strong support for the genetic influence. Goodhart and Shils (1976) caution that this fact is difficult to substantiate because ethnicity interacts with genetics.

Psychological Factors

Two psychological theories exist concerning the etiology of obesity. The first theory suggests the relationship between mother and child to be connected with the development of obesity. In this theory, mother gives food to relieve distress and give support. Consequently, the child becomes unable to distinguish between emotional stress and hunger (Mitchell, 1980). The second theory is called the psychosomatic theory of obesity. This theory suggests that hunger is a learned drive, subject to a variety of external stimuli and provoked by feelings of fear, loneliness and unworthiness (Mitchell, 1980).

The onset of obesity in some individuals can be associated with emotional trauma (Hibscher & Herman, 1977). It is usually associated

with some particular stress period and can be either self limiting or lingering in nature.

Lifestyle Factors

The nature of ones diet, along with frequency and type of exercise have an impact on obesity. Most daily diets tend to be a concentrated source of calories and most lifestyles too sedentary to burn off the excessive calories (Miller, 1983).

Physiological Factors

Physiological theories addressing the cellularity of adipose tissue have attempted to explain the etiology of obesity. Mahan (1979) suggests that in some individuals obesity is characterized by hyperplasia or the presence of a greater number of adipose cells than their nonobese counterparts. According to this theory, obesity that has an adult onset usually involves enlargement of fat cells and the fat distribution centralizes on the trunk (Mahan, 1979). For women, adult onset obesity frequently occurs with pregnancy (Mahan, 1979).

Two types of obesity, regulatory and metabolic have been identified in the literature. Regulatory obesity refers to an impairment of the mechanism regulating food intake (Goodhart & Shils, 1976). In this type of obesity there may be a malfunction associated with the hypothalamus. The hypothalamus is the area of the brain responsible for interpretation of signals indicating if hunger or satiety should prevail (Kolata, 1982; Levine & Morley, 1983). In contrast to regulatory obesity, metabolic obesity refers to an

abnormality in the metabolism of fats and carbohydrates (Goodhart & Shils, 1976). An individual may become fat even though overeating is not present.

Brown adipose tissue, fat tissue with an important role in metabolic efficiency in obesity, has been theorized to influence the development of obesity (Bray, 1982). In this theory, the amount of brown tissue may be less or defective in the obese, thus creating a decrease in energy expenditure (Bray, 1982).

Bennett and Gurin (1982) have suggested that starving fat cells may cause hunger. According to the authors, during weight loss the adipose cell size decrease but the number of cells does not and the starving cells cause extreme hunger. This hypothesis is supported by the 'Set Point Theory'. Set Point is described as a metabolic effort to keep ones weight at a predetermined point (Bennett & Gurin, 1982). Set Point will keep some individuals very overfat and others within or below ideal limits. Any deviation from Set Point will result in the body's attempt to get back to the previous weight, which could help explain why many individuals experience weight gain after dieting (Bennett & Gurin, 1982).

Obesity Treatment Failure

Generally, obesity has failed to respond to a variety of treatment methods. Diets, hypnosis, behavior modification, drugs, group therapy and even jaw wiring have failed to produce long term weight maintenance for the obese (Kark, 1980). Stein et al. (1981) have summed up the state of the art in treatment by saying "the treatment of obesity has

been and still remains one of the most challenging areas of concern" for health care professionals (p. 2041). Stein et al. (1981) further suggest that most obese people do not enter treatment and of those who do, most will not stay. And, of those who do remain, most will not lose much weight. Finally, Wooley et al. (1980) found that losses maintained for a number of months are not well maintained over the long run.

Morbid obesity has responded with even less success to treatment modalities. The prospect for successful weight loss from medical treatments (non-surgical) is not very encouraging. Some authors have attempted to estimate the medical treatment failure rate since no statistics exist for morbid obesity. Wooley et al. (1980) reported that most morbidly obese individuals are successful at losing all or most of their excessive weight at one point in their lives, however, are not able to maintain the loss and frequently regain back to their original weight or even above. Van Itallie and Burton (1980) report that only one-third of morbidly obese individuals remain in traditional medical treatment programs long enough to lose a significant portion of their excess weight, up to two-thirds present weight. Of those who remain in treatment long enough to lose weight only one in five will be able to maintain the loss for a significant length of time (Stunkard, 1981). Eckhout (1979) estimates that medical treatment for morbid obesity fails for 80% of the patients. Howard & Mendeloff (1980) suggest that the failure rate may be nearer to 90%. Most authors agree that the medical management of morbid obesity has been unsatisfactory

(Eckhout, 1979; Howard & Mendeloff, 1980; MacArthur et al., 1981; Van Itallie & Burton, 1980; Wooley et al., 1980). The inadequacy of medical treatment has resulted in the development of gastric surgical procedures designed to assist the morbidly obese in what is hoped to be permanent weight loss (Van Itallie & Burton, 1980).

Gastric Stapling Surgery

Gastric stapling surgery refers to two procedures, gastric partitioning and gastroplasty. Both surgeries facilitate weight loss by reducing the volume capacity of the stomach and by enhancing satiety (Felder & Amaral, 1981). Normal digestion and absorption are maintained with both procedures (Felder & Amaral, 1981).

Surgical Procedures

Gastric stapling surgery divides the stomach into a small upper segment and a larger lower segment (Eckhout, 1979; Felder & Amaral, 1981). The upper segment is stapled into a 30 to 50 cc pouch limiting the amount of food that can be consumed. Food digestion takes place in the small upper stomach while the larger lower stomach remains viable but is no longer used in the digestion process (Felder & Amaral, 1981).

The stapling process leaves a small stoma (opening) between the upper and lower stomachs in gastric partitioning (Figure 1) (Eckhout, 1979). The stoma between stomachs is 12 mm (or 1.2 cm) in diameter and is usually reinforced with polypropylene thread to prevent stretching (Eckhout, 1979). The small stoma slows the rate at which food enters