WEIGHT LOSS, STRESS LEVELS, AND COMPLIANCE IN A WEIGHT REDUCTION PROGRAM

by

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ABSTRACT

Baptist Memorial Hospital, in Kansas City, Missouri, was the setting for this study of 54 overweight or obese women who were participating in an established weight reduction program conducted over a period of ten weeks. The purpose was to investigate factors that influenced weight loss of the subjects by determining if relationships existed between (a) demographic data, (b) short-term weight loss in pounds, (c) stress scores on the Schedule of Recent Experience developed by Holmes and Rahe (SRE) (8), and (d) compliance of subjects as determined by attendance, completion of Special Weekly Assignment Projects, and of Eating Diaries. The instructional method utilized a behavior modification approach with specially designed nutrition education techniques including the use of calorie points.

Mean weight loss for the participants was 5.63 pounds at the end of the ten-week program. Stress scores ranged from 0 to 1761 with 50% of the subjects scoring under 300; 26% between 301 and 600; and 24% over 601. Older (over 45) and married participants had proportionately fewer high stress scores than younger and unmarried subjects. Possible success or failure in achieving weight loss could not be predicted from stress scores. Persons who showed a greater degree of compliance with the various aspects of the program were more successful in achieving weight loss than were subjects who were less compliant. Persons who attended the greatest

number of sessions, who obtained higher scores on the Weekly Assignment Projects, and who completed Eating Diaries lost more weight than those who did not comply with these program procedures.

The importance of client compliance with weight reduction program requirements was demonstrated by the results of this study.

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CHAPTER I

INTRODUCTION

Attainment and maintenance of desirable body weight is a perplexing health problem for many individuals. According to Reed, definitions of obesity and overweight are in terms of ideal body weight, with overweight defined as exceeding ideal weight by 10 to 20 percent and obesity exceeding the ideal by more than 20 percent. (1) Morbid obesity has been defined as 100 pounds above ideal body weight. (2)

Obesity results when there is an intake of kilocalories in excess of energy needs of the body. An energy imbalance is created, and reasons for such an imbalance are often complex. While the principles of limiting caloric intake may be simple, actual control of overeating is an extremely complex problem having many behavioral ramifications.

Excessive weight presents a primary health hazard and is closely associated with cardiovascular and renal disease, Type II diabetes mellitus (non-insulin dependent), degenerative arthritis, gout, and gallbladder disease. Obesity greatly increases respiratory stress in persons suffering from chronic pulmonary disorders such as asthma and emphysema. Psychosocial problems such as loss of self-esteem, social humiliation, and depression are resultant disadvantages of being overweight.

Countless numbers of overweight and obese individuals

have tried without success to lose weight. For many of the few who are successful in achieving the desired weight loss, the pounds lost will shortly be regained. McNutt and McNutt stated that "Unlike many other diseases, the cure of obesity is rarely permanent. It is much more likely to recur than other diseases because the predisposition to this condition involves a way of life. The best that can be hoped for is to control the condition through improved behavior, activity, and diet patterns that last a lifetime". (3)

Although many solutions or cures have been proposed, utilization of a holistic approach is indicated which should include a complete physical examination, dietary history, and modification of eating habits. An appropriate dietary regimen will include diet and exercise with emphasis on reeducation of the patient to achieve maintenance of weight loss when desired weight is attained.

The role of stress also requires investigation. Selye, in a comprehensive treatise on stress in health and disease, stated that stress usually causes people to lose weight. The author also pointed out that, paradoxically, some people under stress have a tendency to eat more, causing them to become overweight. (4) Researchers have suggested that adults may go on eating binges to compensate for stress, but rather than reducing tension the overeating causes guilt. (5)

Various types of behavior modification techniques have been used in recent years to try to help overweight and obese

persons achieve the desired weight loss and to maintain weight at the appropriate level. Such attempts have met with varying degrees of success. The extent of compliance of the patient with the protocol established for a given weight control program may be an important determinant of success. In the medical setting, compliance may be defined as the extent to which the patient follows instructions given by the health professional. Many factors influence the way in which the client responds to instruction. Glanz, in a review of the literature on diet compliance, reported that generally less than half of the patients enrolled in treatment programs for obesity remain in the programs and, of those, only 20 percent are able to maintain weight loss over the years. (6) Jeffrey has suggested the need for additional studies of patients in weight control programs to investigate factors that contribute to patient dropout and to resistance to changing behaviors. (7)

Purpose

The purpose of this study was to investigate factors that influenced weight loss of participants in a planned weight-reduction program by determining if relationships existed between: (a) demographic data, (b) short-term weight loss in pounds, (c) stress scores on the Schedule of Recent Experience (SRE) developed by Holmes and Rahe (8), and (d) compliance of subjects as determined by attendance, completion of special Weekly Assignment Projects and Eating Diaries.

Definitions

Compliance is defined as adherence or concordance with a medical professional's recommendations for a treatment regimen. (6)

Behavior modification is described as treatment based on the work of Pavlov and Skinner using self-monitoring, stimulus control, modification of eating behavior, self-reinforcement, cognitive restructuring, and exercise management. (9)

Eating diary is defined as a record of time, kinds and amounts of food eaten, location where food was eaten, stimuli present, and calorie points. (10)

Stress refers to measurable response of the physiologic reaction in the adrenal cortical-pituitary axis ("fight or flight" mechanism), and/or the effect an event has on a person in terms of the amount of adjustment required to maintain the status quo or return to a state of equilibrium. (4,11)

Calorie points are equivalents used in a simplified method of counting kilocalories in which one point equal 75 kilocalories. (12)

CHAPTER II

REVIEW OF LITERATURE

Obesity is a major form of malnutrition in the United States. The HANES survey found proportionally more obese women than men with the greatest differences occurring between the ages of 35 and 64. (13) Between 40-80 million individuals in the United States are considered to be obese. (14) Although several methods can be used to assess excess body fat, comparison with values in standard tables remains the practical method for everyday use in clinical situations. Obesity can be diagnosed using body density, total body water, total body potassium, skinfold thickness, life insurance height-weight tables, and height-weight indexes. (15-20) By any method, visual inspection of the general public supports the data that many Americans are obese and need to lose excess weight.

Risks Associated with Obesity

Although not all obese individuals suffer from health complications, many chronic diseases are affected by or precipitated by excess weight. In obesity the heart operates at a higher level of cardiac output than in normal weight individuals, necessitated by the higher oxygen and nutrient demands of a larger body mass. Alexander et al. stated that if the heart does not increase in size sufficiently to maintain output, congestive heart

failure results. (21) Risk factors for coronary heart disease are affected by obesity, but obesity has not been found to be an independent risk factor. According to Keys, the influence of obesity on hyperglycemia, hypertension, hypercholesteremia and hypertriglyceridemia is important with respect to cardiac disease. (22) The lack of routine exercise in many obese individuals may also contribute to heart disease. (23)

According to Chiang et al., not all obese individuals are hypertensive, and the cause of increased incidence of hypertension in the obese is not known. (24) Weight reduction in the obese patient results in lowering blood pressure even without sodium restriction. (25)

While obesity is less common in Type I (insulin-dependent) diabetes mellitus, Type II (noninsulin-dependent) diabetes mellitus occurs frequently in obese individuals. Smith and Levine observed that over 50 percent of obese individuals displayed abnormal glucose tolerance as compared with two percent of the general population. (26) Weight reduction often improves glucose tolerance to within normal limits when ideal body weight is reached. (27)

Stern and Kane-Nussen stated that the incidence of renal disease in the obese person may be increased due to complications of diabetes and hypertension. (14) Rimm et al. reported that gallbladder disease is increased, with any age group, when obesity is present, although the cause is not clear. (28)

Obesity increases the work of breathing. The increased weight of the chest wall requires greater muscular effort to

achieve a given negative intrathoracic pressure with inspiration. This also leads to decreased exercise tolerance. (14) Bray stated that the increased surface area of the obese may cause increased sweating, and areas of adjacent skin folds can lead to dermatologic conditions. (19)

Anesthesia and surgical procedures are a greater risk for obese individuals than ideal body weight individuals according to Warner and Garrett, because dosages of drugs given cannot be accurately monitored. (29) Allon reported that the obese person also may be ostracized in our society because he or she is considered to be gluttonous, slothful, and self-indulgent. (30)

Treatment of Obesity

According to Hollenburg, the success of the medical profession in treating obesity may be compared to a football team that has lost every game played. This investigator suggested that perhaps the remedy used by most losing teams should be adopted -- fire the coach and bring in a new quarterback. (31)

Many different treatments have been tried but with few reports of long-term success. In some cases, there have been complications arising from various treatment methods. Obesity has been treated with several surgical procedures, pharmacological treatment, jaw wiring, protein-sparing modified fasting, psychoanalytical treatment, exercise, a multitude of diet modifications, behavior modification, and an endless offering of logical and illogical diet regimens, apparatus, and/or potions to accomplish

a "miracle" cure in a few weeks.

Surgical

Surgical procedures used to treat obesity include gastric bypass, gastroplasty, and jejunoileal bypass. (14) (Figure 1) Both gastric bypass and gastroplasty limit the total amount of food consumed and leave the patient with a full feeling for a longer period of time. Jejunoileal bypass is designed to cause malabsorption of nutrients resulting in weight loss. Mason et al. reported that gastric bypass surgery started as a modification of the Bilroth II gastrectomy used to treat acid peptic disease. The stomach size is reduced to 50 ml. with a 12 mm. diameter outlet into the upper jejunum. Patients must learn after surgery to be satisfied with less than a half cup of food per meal. Over-indulgence results in vomiting and/or rupture of the staples or stitches in the early post-operative course. Patients are screened thoroughly to determine motivation and willingness to comply with restrictions. In 138 patients who had undergone this procedure at the University of Iowa Hospitals, weight loss at one year followup was 40 $\pm$ 15.5 kg. and after two years 44 $\pm$ 19.4 kg. in 66 patients available for followup. (32)

According to Gomez, gastroplasty was developed to circumvent some of the disturbing side effects of gastric bypass which include iron deficiency anemia, peripheral neuritis, occasional severe dumping syndrome, symptomatic bile reflux gastritis, and a significant incidence of anastomosis enlargement accompanied by weight

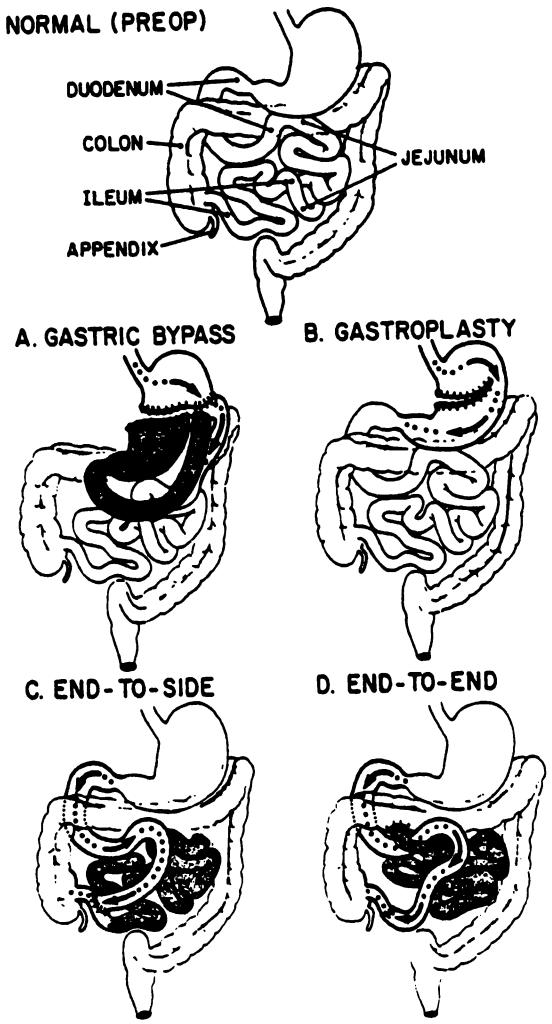

Figure 1 Schematic of Four Different Surgical Procedures for the Treatment of Morbid Obesity.

From: Stern, J.S. and Kane-Nussen, B. Obesity: Its Assessment, Risks, and Treatment. In: Nutrition-Metabolic and Clinical Applications. eds. Hodges, R.E., New York: Plenum Press, 1979.

gain. (33) Bukoff and Carlson stated that the gastric bypass surgery was modified to form a 60 cc. fundic pouch and 12 mm. channel, at the greater curvature of the stomach, which are formed as the surgical stapler is applied across the upper fundus. The pouch empties into the lower stomach. (34) In clinical practice, Gomez reported mean weight loss from this procedure, at the end of 12 months for 48 patients, was 73.8 pounds with a range of 21 to 170 pounds. (33) Proper screening and education of patients was emphasized as necessary for compliance. (34)

Faloon et al. stated that jejunoileal bypasses result in weight loss by producing malabsorption and reducing food intake due to adverse consequences (i.e. diarrhea and excessive flatus). (35) Two procedures have been used. The end-to-side jejunoileostomy was developed by Payne and DeWind. (36) The end-to-end anastomosis was pioneered by Scott and others. (37) In the jejunoileal bypass, the distal end of the jejunum is closed and attached to the omentum. According to Faloon et al., numerous problems have been observed in patients undergoing this type of surgery. (35) Increased incidences of fatty liver, cholesterol gallstones, and calcium oxalate stones have occurred, but these conditions have been amenable to drug or appropriate dietary treatment. Arthritis, dermatitis, and inappropriate psychological reactions have been difficult to manage in these patients. Bypass enteritis and potassium and/or magnesium deficiencies were treatable with antibiotics or supplements. Several nutritional problems including zinc, copper, vitamin A, and vitamin D deficiencies and protein

wasting syndromes were common. This investigator pointed out that some patients suffered from renal damage as a result of the electrolyte and vitamin D deficiency. Following this procedure, weight loss begins to stabilize after 12 to 24 months. Forty-four patients averaged a loss of 78 pounds at the end of 12 months with the end-to-side procedure, and forty-one patients averaged a loss of 108 pounds after 12 months with the end-to-end procedure. (35)

Pharmacological

Straw outlined some of the common drug misconceptions in the treatment of obesity. Thyroid hormone is inappropriate as treatment for the condition unless the patient has abnormal thyroid function. Use of thyroid hormone causes the patient to lose lean body mass rather than adipose tissue and has adverse side effects on the cardiovascular system. Human Chorionic Gonadatropin (HCG) injections plus a 500 kilocalorie diet have produced dramatic weight losses. Success from this treatment results from the combination of the 500 kilocalorie diet, financial incentive, and frequent support from the physician. (38) Mann reported that anorexigenics, which are primarily amphetamines or amphetamine-like drugs, have produced significantly more weight loss than diet alone in short-term studies. (34) Long-term use of these products has not been shown to be effective, and many of them have potential for abuse and addiction. Over-the-counter diet pills and candies usually contain phenylpropanolamine and/or caffeine and also have very limited long-term effectiveness. (38)

Dental Procedure of Jaw Wiring

Kark proposed jaw wiring or maxillo-mandibular fixation as an approach to the treatment of obesity. Although 13 out of 14 patients studied failed to maintain their initial weight loss, Kark considered this method appropriate for some persons. The average weight loss during treatment was 29.8 kg. with a range of 19 to 51 kg. This investigator recommended gastric bypass after the jaw wiring to maintain the weight loss, with the advantage of lesser surgical risk at the new lower weight. (40) Garrow used jaw wiring to assess the motivation of the patient. If the jaw wiring proved to be unsuccessful, the investigator felt that other surgical procedures would also be deliberately thwarted. (41)

Protein-Sparing Modified Fast

Yang et al. conducted a study in which a protein-sparing modified fast was used to treat grossly obese patients with associated medical problems. Forty-five patients were placed on a diet regimen based on 12 grams of protein per kilogram of ideal body weight. Compliance with the regimen was good while the patients were hospitalized. Length of time on the diet varied from three days to two years and weight loss ranged from 1 to 205 pounds before discharge. Thirty-two patients lost 25 pounds or less, 10 lost 26 to 50 pounds, 2 lost 101 to 150 pounds, and 1 lost 205 pounds. Success rates dropped greatly after discharge. Only one patient had reached his ideal body weight at the time of publication. Fifty out-patients instructed on the regimen had

unremarkable weight loss. (42)

Psychoanalytical

Based on the results of a study conducted by Rand and Stunkard, psychoanalytical approaches to weight loss were as effective as traditional methods. Forty-four percent of the 84 patients investigated suffered from severe body image disparagement which was alleviated by the psychoanalysis. Of the 84 subjects, 28 percent lost 20 pounds and 9 percent lost 40 pounds. Sixty-three percent did not lose a significant amount of weight. (43)

Exercise

Caloric expenditure through exercise is often ignored in obesity treatment programs, according to Franklin and Rubenfire, who emphasized the need for appropriate aerobic exercise to increase caloric expenditure and decrease appetite. The authors recommended continuous exercise of at least 20-30 minutes duration, with an intensity sufficient to expend 300 or more kilocalories per session, based on a minimum three sessions per week. (44)

Diet Modification

Various methods of diet modification have been used to motivate overweight and obese individuals to achieve and maintain weight loss. Diet modification is based on decreasing daily caloric intake below daily caloric expenditure to produce weight loss. "Weight Watchers" uses program meetings conducted by a successful loser, and a printed diet of approximately 1200 calories for women,

with specific foods designated as legal and illegal. (45) Registered dietitians may recommend a prudent regimen of decreased caloric intake for weight loss of 1 to 2 pounds per week. Boardley and Erman at a St. Louis, Missouri, hospital formed weekly "Skinny Bunch" clubs to support hospital employee weight loss efforts. Weekly fifteen-minute meetings were used to educate employees about calorie values of food and ways to decrease intake. After 16 weeks 17 of the 125 participants had lost the number of pounds they contracted to lose. Another 23 individuals, while not attaining the weight loss agreed to by contract, did lose more than 15 pounds each. (46)

Behavior Modification

Behavior modification, a method that has gained favor with health professionals as effective treatment for obesity, is based on the assumption that the obese individual is an overeater who can be trained to change his eating style. The goal is an appropriate lower caloric intake. Records of food intake and associated activity, feelings, and hunger have been used to identify areas where changes are needed. (47)

Stuart demonstrated the effectiveness of behavior modification in a 1967 study of 10 patients. Eight remained in treatment for over one year and lost more than 20 pounds, and three of the eight lost more than 40 pounds. (48)

Stress

Stress is defined in two ways in current medical literature.

In the first definition, provided by Selye, stress is identified as something that is measurable in terms of a physiologic response, specifically in the adrenal cortical-pituitary axis. The term General Adaptation Syndrome was coined to describe this phenomenon. (4) The work of Holmes and Rahe generated the major impetus responsible for the development of the second definition. According to these investigators, stress is the effect an event has on a person in terms of the amount of adjustment needed to maintain the status quo or return to a state of equilibrium. The event may be considered "negative" or "positive", but, in all cases, change is required by the individual experiencing the situation. (11) Shaffer has combined the two definitions to propose that a score over 300 on the Schedule of Recent Experience by Holmes and Rahe indicates that the person may have entered the exhaustion phase of the general adaptation syndrome. In the exhaustion phase, resistance to the physical and psychological indications of stress are low unless effective means of coping are used. (49)

Billings and Moos explored coping strategies used by individuals to deal with life stresses. (50) A random sampling technique was utilized to contact 360 families. Two hundred ninety-four families responded and completed the survey instrument which was an adaptation of the Schedule of Recent Experience by Holmes and Rahe. (8) Coping measures were classified as active-cognitive, as exemplified by taking things one step at a time; active-behavioral, as exemplified by talking to a professional person; or avoidance, as exemplified by trying to reduce tension by

eating more. Active-behavioral and active-cognitive were the most frequently used coping measures by 60 percent and 63 percent of the sample respectively. Avoidance strategies were used 24 percent of the time by the sample. Most participants used more than one type of coping mechanism. The incidence of depression, anxiety, and physical symptoms was increased with the use of avoidance strategies. (50)

King and Parham discussed the connection between stress and diet. The specific responses that occur under stress include the "fight or flight" mechanism that increases the secretion of catecholamines, glucocorticoids, and mineral corticoids. This response is greatest in situations where people feel they have no control. When stress builds up, many people may eat on the run or decrease intake. An opposite reaction that also occurs is overeating to relieve stress. (5)

Compliance

Health professionals, including dietitians, continually face the problem of noncompliance when they work with clients. Dietitians must routinely cope with facilitating and educating patients to achieve alterations in eating lifestyles to comply with prescribed diet therapy. Noncompliance creates obstacles in the path of effective treatment and prevention of disease. Obesity, tuberculosis, hypertension, and rheumatic heart disease have all been reported as problem conditions characterized by low rates of compliance with the prescribed regimen. (51)

Reports of compliance with weight reduction programs are not encouraging with success rates varying from 20 to 80 percent. (19) Among the factors influencing reported results were method of instruction, participation time, classification of dropouts, and entrance requirements. A list of factors associated with noncompliance has been compiled by Weibert and Dee. The information is presented in Table 1. (52)

Table 1

FACTORS ASSOCIATED WITH NONCOMPLIANCE

1. Type of illness
    a. Chronic disease requiring lengthy therapy
    b. Prophylactic or suppressive therapy
    c. Patient does not perceive illness as serious or fear it

2. Patient characteristics
    a. Psychological
        (1) Admits doubt about ability to comply
        (2) Hostile, demanding, very aggressive
        (3) Very high or low fear or anxiety
        (4) Poor ability to cope with stress
    b. Environmental-social
        (1) Low socioeconomic status
        (2) Little or no family support

3. Physician-patient relationship
    a. Unfamiliar physician
    b. Lack of patient satisfaction

4. Medical regimen
    a. Multiple medications
    b. Frequent doses
    c. Side effects
    d. High cost
    e. Undesirable formulation
    f. Profound change in basic lifestyle

From: Weibert, R.T. and Dee, D.A. Improving Patient Medication Compliance. Litton Industries. Oradell, New Jersey. 1980.

Currey et al. reported the results of a weight reduction program during the first 18 months of operation. Of the 165 women patients treated with a behavioral modification weight-reduction regimen, 43 percent lost less than 5 kg., 28 percent lost 5 to 9 kg., 23 percent lost more than 9 kg., and 6 percent lost more than 18 kg. The low success rate was attributed to the fact that the sample was medically referred to the program, rather than being volunteers, and the clients were older than clients in other programs. There were no clear demographic markers to delineate the group that did lose weight and to separate those individuals from the rest of the sample. (53)

Williams and Duncan reported on the success rate of The Weight Watchers International Program in Australia. Records of 5,466 members were analyzed, and participants were divided into three groups consisting of dropouts, current members, and lifetime members. Lifetime members were those who had reached their goal weight. Dropouts lasted a mean time of 8 weeks in the program and lost 5 kg. Current members averaged 31 weeks on the regimen and lost an average of 8.6 kg. Lifetime members had lost an average of 12.3 kg. in a 19 week period. This high success rate was attributed to the high cost of entry which deterred those who were not reasonably motivated. If the program did not appear to be working for persons seeking weight loss, the high cost discouraged continuance by those individuals and prompted quick dropout. Palatable diet, weekly supportive meetings, positive reinforcement by group and lecturer, absence of punishment techniques, stipulated goal, and

financial incentive were factors that contributed to positive results. Dropouts cited cost, unpalatability of diet, and inability to follow the diet as major problems with the program. (54)

A review assessing the effectiveness of TOPS (Take Off Pounds Sensibly) was undertaken by Garb and Stunkard who surveyed 28 chapters of the organization. Support and weekly meetings were provided, and each participant followed the diet restrictions of his/her choice. The attrition rate was very high with 47 percent dropping out after one year and 70 percent after two years. Total weight loss averaged 14.2 pounds with a standard deviation of 16.6 pounds for all chapters studied. The authors concluded that the vast majority of participants found TOPS to be a relatively ineffective method of weight reduction. (53)

An investigation conducted by Miller and Sims dealt with the effectiveness of a four week comprehensive dietary and behavioral control program. Sixty-two patients participated in the intensive program which emphasized diet, nutrition education, medical and health education, behavior modification, and physical exercise and activity. Patients lost a mean of 17.2 pounds with a range of 7 to 40 pounds during the four week period. Fifty percent of the patients attained goal weight after twelve months. Females accomplished weight change with a mean of 26.7 pounds, with a range of +13 to -75 pounds over the year. Results indicated that a majority of the successful patients benefited from (1) cognitive restructuring techniques, (2) exercise, (3) social skills training, and (4) eating style changes. The incorporation of these techniques

and lessons into the program appeared to have increased compliance and to have created a favorable success rate. (56)

The findings of Teshev and Balabanski underscored the importance of regular contacts of persons on weight reduction regimens with health professionals. One thousand obese patients were involved at the onset of this study. As the investigation progressed, 680 were followed on a regular basis and these persons maintained and improved the results of their initial weight reduction accomplished earlier in the program. Weight loss for two months averaged 13.5 kg. The diet contained approximately 1,400 kilocalories. An exercise regimen that increased the caloric expenditure by 3,500 to 4,300 kilocalories per session was carried out one to three times weekly. Greater compliance was found in the patients who visited the clinic at less than 30 day intervals. (57)

Gormally, Rudin, and Black studied 40 participants in a weight reduction program at the University of Maryland in an attempt to identify types of persons who are successful at weight loss. Psychological function tests before the program indicated no extreme distress. The group lost an average of 12.1 pounds over 4 months in weekly behavioral classes. Successful weight loss correlated with decreases in problem eating habits and high calorie snacking but not with increased daily activity levels. Successful maintenance required frequent exercise. Persons who relapsed reported high levels of stress during relapse. A life-events questionnaire was used in followup, with unsuccessful participants reporting more

life changes with a negative impact and successful participants reporting more life changes with a positive impact. (58)

Glanz reviewed the literature on diet compliance and reached the following conclusions:

> "(a) Patient noncompliance with dietary regimens is at least as frequent as noncompliance with medication regimens. In addition to those who adhere poorly, many abandon treatment completely.
>
> (b) Better documentation and development of sound measures of dietary compliance would facilitate comparisons across treatment settings and regimens, aid health care providers in monitoring their own effectiveness, and provide useful clinical teaching tools.
>
> (c) Health professionals' effectiveness might be increased by attention to sociobehavioral correlates of compliance and the recognition that: (i) nonhealth motivations may lead individuals to take appropriate actions: (ii) individuals requiring diet modification may not view themselves as ill in the usual sense: (iii) social and familial influence may affect patients' willingness, desire, and ability to adhere to diets."

These conclusions emphasize the need for additional research on compliance to increase the success in the treatment of nutritional problems. (6)

In summary, although no approach has been totally effective in the cure of obesity many patients routinely present themselves for treatment. Depending on the amount of weight to be lost, practitioners must recommend a treatment or combination of treatments for the individual.

CHAPTER III

METHODS AND MATERIALS

Effective, long-lasting treatment of obesity presents a challenge to health professionals. The Weight Reduction Program at Baptist Memorial Hospital, Kansas City, Missouri, was implemented in 1977 for the benefit of employees and patients referred from Goppert Family Care Center (Family Practice Residency Clinic). Fifty-four females ranging in age from 20 to 73 years, and participating in the program for the first time in the fall of 1982, served as subjects. The program, which utilized an established behavior modification approach coupled with specially designed nutrition education techniques, was identified by the acronym GROUP (Get Rid of Unwanted Pounds).

Data were collected to identify factors that might influence and/or be related to weight loss. Instruments utilized for this purpose were the Demographic Data Check Sheet, Nutrition History, Client Card, Schedule of Recent Experience developed by Holmes and Rahe (8), Weekly Assignment Project, and Eating Diary. (Appendices A-F) Attendance records were maintained on the Client Card. The Nutrition History, Client Card, Weekly Assignment Project, and Eating Diary were all components of the ongoing GROUP program. The only use made of data collected from the Nutrition History form was for evaluation of intake and activity level of the client for determination of kilocalorie level for weight loss.

Setting

The research was conducted at Baptist Memorial Hospital where the subjects were attending classes taught by the investigator for the Weight Reduction Program. The format of the sessions, at the time of the study, included revisions made by the investigator based on the use of various types of instruction materials especially designed for planning and carrying out such programs. (59-63) Permission was granted by the hospital administration to conduct this investigation on the hospital premises. (Appendix G)

Sample

The sample was composed of 54 clients. Referrals were obtained from previous participants, staff physicians, and dietitians. Newspaper advertising was also employed to solicit participants. All subjects received medical clearance from a physician prior to taking part in the program. (Appendix H)

Criteria for participating, as established by the investigator, were based on the subject being:

1) at least 10 percent overweight as defined in the 1980 Recommended Dietary Allowances, (64) (Appendix I)
2) 18 years of age or older,
3) not pregnant or breastfeeding,
4) a participant in the program for the first time.

Although men have taken part in the weight reduction program in the past, women were the only participants at the time this research was conducted. Informed consent was obtained from each person who

agreed to participate. (Appendix J).

Data Collection Instruments

Demographic Data Check Sheet

Answers to items on the check sheet provided information related to the demographic variables of occupation, income, and source of referral to the program. The Schedule of Recent Experience (Appendix D) provided additional demographic information.

Nutrition History

Dietary intake information was obtained from the 24-hour recall method and a food frequency survey both of which were developed by clinical dietitians at Baptist Memorial Hospital.

Client Card

This two-sided card was used to record information pertaining to the attendance, kilocalorie (energy) level during participation in the program, weight loss goal in terms of weight the subject wished to attain, grades earned on Weekly Assignments, scores on Eating Diaries, and weight as determined at weekly intervals. Progress was charted on the graph which is on the reverse side of the Client Card. (Appendix C)

Schedule of Recent Experience

This schedule, developed by Holmes and Rahe, was designed to measure levels of stress in humans. The instrument was copyrighted in 1981 by Thomas H. Holmes, M.D., Department of Psychiatry and Behavioral Sciences at the University of Washington School of

Medicine. Life event items are listed and persons filling out the schedule are asked to "Think back on the event and decide if it happened during the last 12 months. If the event did happen, indicate the number of times it happened by placing a number in the column labeled 0-12 months ago." Forty-two life events are included. (8) Permission was obtained from Dr. Holmes to use the SRE and a manual was provided containing instructions for administering and scoring the instrument. Copies of the SRE, the letter from Dr. Holmes, and excerpts from the Manual are presented in Appendices D, K, and L respectively. The SRE also contains a demographic data section relevant to the variables of age, sex, marital status, and education, so this information supplemented that obtained from the Demographic Data Check Sheet described earlier. The Schedule of Recent Experiences has been used in several other studies of stress in humans. (65-67)

Weekly Assignment Project

Specific assignments, given on a weekly basis, were designed to increase the awareness of the client concerning food, exercise, and eating habits. Minimum learning outcomes were listed with point values specified on completion.

Eating Diary

In this booklet the client recorded kinds and amounts of foods eaten, time at which the foods were consumed, stimuli present in the environment as related to eating habits, the location where eating episodes took place, and calorie (energy) points.

A space was also provided for date, weight, and pertinent comments.

Data Collection

Data were collected from September 14, 1982, to November 18, 1982, at Baptist Memorial Hospital from women participating in the GROUP program who agreed to serve as subjects for this study. Three sessions were held each week for a period of 10 weeks.

Week 1

The purpose and duration of the investigation, and criteria to be satisfied in order to be eligible for participation, were explained to those attending the weight reduction class. Questions were answered and intended learning outcomes were identified. (Appendix H) Copies of the Fall Schedule, listing topics to be addressed, were distributed. (Appendix N) The women were weighed on a balance beam scale to establish baseline data. The investigator provided the subjects with instructions for proper completion of the Demographic Data Check Sheet, Nutrition History, and Client Card. Eating diaries were distributed to those in attendance and instructions were given for use of the instrument. Clients were advised that weekly assignments would be made and that the completed assignments were to be handed in for evaluation by the instructor. After the class sessions during the first week, the investigator examined the completed forms to determine the appropriate kilocalorie level for each client, and to ascertain if potential subjects satisfied eligibility criteria for participation in the

study. Client information from those not eligible was discarded. An initial registration fee of ten dollars was collected on the first night of class and clients also paid one dollar at each session they attended during the remaining nine weeks.

Week 2

Attendance and weights were recorded on the Client Card for each subject. The women were shown a videotape produced by Baptist Memorial Hospital explaining calorie points, and each client was given a booklet titled "You Are What You Eat Eat Eat," published by Baptist Memorial Hospital. (66) The booklet was one of the instructional materials available for use in the GROUP program at the time this study was conducted. After receiving instructions, the subjects filled out the Schedule of Recent Experience (SRE) copyrighted by Holmes to measure stress levels. (8) Directions for use of the instrument were provided by the investigator based on the information contained in the Manual for the SRE. (67) (Appendix L)

Weeks 3 through 10

Attendance and weights were recorded each week for all participants who came to the sessions. Weekly Assignments were handed in to the investigator for review and evaluation. Completed assignments were checked by the investigator and a numerical score was recorded for each subject who completed the assignment for that week. The procedure was followed throughout the program. Scoring was done in accordance with the predetermined point values indicated

on the forms. (Appendix E)

Eating Diary Evaluation

The scoring system produced a total of 100 points if the individual consumed a balanced diet using the Four Food Groups (69) as a guide, ate three or more meals per day, adhered to the assigned calorie level with a ten percent deviation, and recorded appropriate point values for the portions of food consumed. The procedure is described in the following paragraphs and illustrated in Figure 2.

After collecting the four week diary from the patients, the investigator tallied the number of servings in each food group consumed per day. In the example, the patient consumed one glass of milk on 27 out of 28 days for a score of 6 based on the chart on the evaluation form. If on 7 out of 28 days (25 percent) the patient consumed an additional serving of milk, the score would be 2 points for the second serving under the milk group classification. If the patient consumed two servings of meat every day, or 100 percent of the time, 6 points would be given for each serving of meat or a total of 12 points. Serving sizes were based on the Guide to Good Eating from the National Dairy Council. (69) The other food groups were evaluated in the same way.

Points were based on the percentage of days at least three meals were consumed. Points and appropriate percentages are shown on the form. One point was taken off for each day the calorie point level was more than 10 percent below or above the recommended level.

Figure 2

EATING DIARY EVALUATION

BALANCED DIET:

	Milk and Milk Products		
6	1st serving	27/28 = 95%	
2	2nd serving	7/28 = 25%	
			75-100% = 6 pts.
	Meat or Protein Food		50-74% = 4 pts.
6	1st serving	28/28 = 100%	25-49% = 2 pts.
6	2nd serving	28/28 = 100%	0-24% = 0 pts.
	Fruits and Vegetables		
6	1st serving	28/28 = 100%	
6	2nd serving	28/28 = 100%	
6	3rd serving	28/28 = 100%	
6	4th serving	28/28 = 100%	
	Grains		
6	1st serving	28/28 = 100%	
6	2nd serving	28/28 = 100%	
6	3rd serving	28/28 = 100%	
6	4th serving	28/28 = 100%	

MEAL FREQUENCY:

8	3 or more eating times	75-100% = 8 pts. 50-74% = 6 pts. 25-49% = 4 pts. 0-24% = 0 pts.

APPROPRIATE POINT LEVEL:

10	10 points for no errors	1 point off for each error up to 10 errors

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ACCURACY OF POINTS:

10	10 points for no errors	1 point off for each error up to 10 errors

---

96 TOTAL (100 possible points)

Observed errors in recording calorie points, as compared to the portion of food recorded, were deducted up to a total of ten points.

Analysis of Data

All of the completed data collection forms handed in by the participants were checked for accuracy and completeness by the investigator. Coding followed, and frequency distributions were calculated manually from the raw data. Percent and number information was used to describe the sample demographically.

Determination of total weight change for each subject was made by subtracting final weight from initial weight.

The Schedule of Recent Experience (SRE), used to measure stress levels, was scored by the investigator in accordance with the procedure developed by Holmes. (Appendix L) A designated numerical value was assigned to each event that occurred up to four times during the 12 months just prior to administration of the stress test. Additional occurrences did not increase the score. Values were then totaled to arrive at the composite score for each participant.

Compliance of subjects was determined on the basis of attendance records (maintained on Client Cards), scores assigned for work done on Weekly Assignment Projects, and grades earned on information reported in Eating Diaries.

Appropriate statistical treatments, as indicated, were utilized to determine: (1) if differences existed between the mean total weight change of the subjects who filled out and handed

in Eating Diaries and those who did not (Student's t test); (2) if relationships existed among the independent variables of attendance (number of classes attended), score on the SRE, total score on the Weekly Assignment Projects and the dependent variable of total weight change (correlation and regression analysis); and (3) if differences between average total weight change existed between SRE score groups classified according to three levels: low (0 to 300), medium (301 to 600), and high (601 and over) (One way analysis of variance or ANOVA). (4) Two-way frequency tables were used to compute chi-square values. In these tables the variables were categorized as follows:

Age-- below 45 years or 45 years and above

Marital Status-- married, or not married (including single, divorced, separated and widowed)

Education-- high school graduate, or post high school education

Weight Change-- less than 2 pounds loss, 2.1 to 8.0 pounds loss, or 8.1 to 16.0 pounds loss

SRE Scores-- 0 to 300, 301 to 600, 601 and over

Eating Diaries-- completion or noncompletion of information requested

All of the previously described variables of age, marital status, education, total weight change, SRE scores, and Eating Diary completion were evaluated in chi-square tables for significant associations (chi-square).

The Student's t test may be used for comparing the mean

scores of two samples. Correlation of two variables indicates a linear relationship between measured values (correlation analysis). Multiple regression employs the technique of simultaneously using several variables to predict one variable (multiple linear regression). The analysis of variance (ANOVA) technique may be used to analyze differences among any number of samples or differences among three or more groups within samples. The chi-square test is an appropriate statistical technique to use for data in the form of frequencies in order to evaluate for associations. A .05 level of significance was used in analyzing the data.

Computer Program Used

Statistical Analysis System (SAS) Version 79.3, a package computer program, was used to perform the statistical tests. A statistician provided assistance in the interpretation and evaluation of the data.

Limitations of the Study

The study was of short duration (10 weeks); SRE scores were obtained only at the onset of the GROUP program, so that stress-producing events that may have occurred as the program progressed were not monitored; and reasons for noncompliance were not determined.

CHAPTER IV

RESULTS AND DISCUSSION

Fifty-four overweight women participating in an established weight-reduction program identified by the acronym GROUP, at Baptist Memorial Hospital, were evaluated for weight loss over a ten-week period.

Findings are presented for (1) demographic data; (2) initial weight and short-term weight loss; (3) stress levels as determined from scores attained on the Schedule of Recent Experience developed by Holmes and Rahe (8), and relationships between stress levels and other pertinent variables; and (4) scores/grades derived from instruments and materials to measure compliance, and relationships between pertinent variables and total weight change.

Demographic Data

The following variables were used to describe the sample: (1) occupation, (2) income, (3) source of referral to the weight-reduction program, (4) age, (5) marital status, and (6) education.

Subjects were classified into six groups according to age: (1) 20 to 29, (2) 30 to 39, (3) 40 to 49, (4) 50 to 59, (5) 60 to 69, and (6) 70 and older.

Eight general classifications were used to categorize occupations: (1) professional/managerial, (2) technical,

(3) clerical/sales/secretarial, (4) service, (5) skilled laborer, (6) semi-skilled laborer, (7) homemaker, and (8) other.

Findings were expressed in terms of number and percent in Table 2.

Occupation

Homemaker was identified as occupation by 43% (23) of the respondents.

Income

Income levels varied, spanning the range from less than $9,999 to $60,000 and over. The majority of the women, 63% (34), indicated incomes in the $20,000 to $39,999 bracket.

Source of Referral to Weight-Reduction Program

The majority of the subjects, 55% (30) were referred to the GROUP program by others who had previously participated in the program. Another 26% (14) specified advertising as the referral source.

Age

Subjects ranged in age from 20 to 70+ years. Forty-eight percent were in the 40 to 59 year category and 40 percent were 20 to 39 years old.

Marital Status

The majority of the participants 78% (42) were married.

Table 2

SAMPLE CHARACTERISTICS ACCORDING TO OCCUPATION, INCOME, SOURCE OF REFERRAL TO WEIGHT-REDUCTION PROGRAM, AGE, MARITAL STATUS, AND EDUCATION

Classification	Number	Percent
OCCUPATION		
Professional/Managerial	10	18
Technical	2	4
Clerical/Sales/Secretarial	13	24
Service	1	2
Skilled Laborer	0	0
Semi-skilled Laborer	1	2
Homemaker	23	43
Other	4	7
TOTAL	54	100
INCOME		
Less than $9,999	1	2
$10,000 to $19,999	12	22
$20,000 to $39,999	34	63
$40,000 to $59,999	6	11
$60,000 and over	1	2
TOTAL	54	100
SOURCE OF REFERRAL TO WEIGHT REDUCTION PROGRAM		
Physician	8	15
Dietitian	2	4
Other program participant	30	55
Advertising	14	26
TOTAL	54	100
AGE		
20-29	11	20
30-39	11	20
40-49	7	13
50-59	19	35
60-69	5	9
70+	1	2
TOTAL	54	99*

- continued -

Table 2 - continued

Classification	Number	Percent
	MARITAL STATUS	
Married	42	78
Divorced	2	4
Separated	2	4
Widowed	1	2
Never Married	7	13
TOTAL	54	101*
	EDUCATION	
Grade School	0	0
High School	28	52
Trade School	1	2
College	24	44
Advanced Degree	1	2
TOTAL	54	100

*Percentages sometimes do not total 100 due to effects of rounding.

Education

On the basis of level of educational attainment, 52% (28) had completed high school, 44% (24) had attended college, 2% (1) had an advanced degree, and 2% (1) had obtained educational training at a trade school.

Initial Weight and Short-term Weight Loss

Based on information obtained from Table 2, "Suggested Desirable Weights for Heights and Ranges for Adult Males and Females," published in the Recommended Dietary Allowances, Ninth Edition, 1980 (64), initial weights of subjects varied from 10% to 136% over ideal body weights at the time of entry into the program. Fifty percent of the women were between 20% and 50% over ideal body weight; 30% exceeded ideal body weight by 50% to 90%; and 5% exceeded ideal body weight by 100% or more. RDA table is shown in Appendix I.

In terms of short-term weight loss, mean weight loss for the subjects was 5.63 pounds during the ten week period. Total weight change ranged from a gain of 1.75 pounds to a loss of 15.25 pounds.

Stress Levels and Relationships Between Pertinent Variables

Stress scores on the Schedule of Recent Experience (8) ranged from 0 to 1761. Scores over 300 are considered to indicate significant amounts of stress present in the life of the subject. (68)

Fifty percent (27) of the women had stress scores under 300;

26% (14) had scores between 301 and 600; and 24% (13) had scores of over 601 corresponding to extremely high levels of stress on the SRE scale. The scores indicated that 50% (27) of the subjects were under enough stress in their lives that they should have been using some effective coping method in order to manage. (68) Possible changes in stress levels, due to life events occurring during the course of the program while subjects were trying to comply with diet restrictions, were not measured. Stress scores are presented in Table 3.

Table 3

SCORES ON SRE

Classification	Number	Percent
0 - 100	9	17
101 - 200	10	19
201 - 300	8	15
301 - 400	6	11
401 - 500	8	15
501 - 600	0	0
601 - 700	3	5
701 - 800	2	4
801 - 900	2	4
901 - 1000	3	5
1000+	3	5
TOTAL	54	100

One way analysis of variance (ANOVA) was performed to determine if significant differences in weight change existed among the three groups of subjects categorized according to stress

level scores of 0 to 300, 301 to 600, and 601 and higher. No statistically significant differences were found. Average weight loss for each of three stress score level groups -- low (0 to 300), medium (301 to 600), and high (601 and over) were 6.26, 5.70, and 4.52 pounds respectively.

Chi-square analysis was employed to determine if significant differences existed with reference to associations between variables of age, marital status, education, weight change, stress scores on the SRE, and completion of Eating Diaries. Statistically significant differences were found between age and stress level ($p = .0046$) and marital status and stress level ($p = .0159$). Older (over 45) and married participants had proportionately fewer high stress scores than younger and unmarried subjects. (Tables 4 and 5)

Scores/Grades and Measurement of Compliance--Relationship Between Pertinent Variables and Total Weight Change

Frequency of attendance records, completion of Weekly Assignment Projects, and completion of Eating Diaries were taken into consideration as program procedures, associated with compliance, which might influence the success of the subjects in achieving weight loss.

Attendance

Fifty-five percent (30) attended 8 or more sessions, 30% (16) attended all of them, while only 13% (7) attended less than half of the sessions.

Table 4

CHI-SQUARE TABLE OF AGE AND STRESS SCORE

		Stress Score			
		0-300	301-600	601+	
Age	Under 45	8	6	11	25
	Over 45	19	8	2	29
		27	14	13	54

$x^2 = 10.761$

$p = .0046$

Table 5

CHI-SQUARE TABLE OF MARITAL STATUS AND STRESS SCORE

		Stress Score			
		0-300	301-600	601+	
Marital Status	Married	25	8	8	41
	Not Married	2	6	5	13
		27	14	13	54

$x^2 = 8.278$

$p = .0159$

Weekly Assignment Project

Total points earned on the assignment projects varied from 0 to 291, with 300 as the maximum number of points. Nineteen percent of the participants (10) did not hand in any assignments, however 28% (15) earned over 201 points.

Eating Diaries

Fifty-two percent (28) of the subjects completed at least one Eating Diary. Of the 28, only 7 handed in the second. Forty-eight percent did not comply with this part of the program and did not complete any Eating Diaries. Grades on the Diaries ranged from 50 to 170, with 200 as the total maximum score.

Correlation analysis was used to determine if a relationship existed between stress scores, number of sessions attended, Weekly Assignment Project scores, and total weight change. The probability values for each of the variables showed that each variable was related to total weight change to a different degree. Stress had a negligible correlation ($p = .9558$). The similarity of the mean total weight changes for each of the stress score groups, presented earlier, supported this analysis further. Attendance had a moderate correlation with weight change ($p = .0824$). Scores on the Weekly Assignment Projects were the most related to total weight change ($p = .0006$).

A regression equation combining all these factors had an R-square value of .5622. The p value for this was .0001 indicating that the R-square value was different from zero. All of the factors

together were only moderately predictive of weight change because of the large variation in each variable's correlation to total weight change.

Weight Change and Diary Completion

The Student's t test was used to compare mean weight change of the group of subjects who handed in Eating Diaries with those who did not. Persons who handed in the Diaries lost a mean of 7.34 pounds, and those who did not lost a mean of 3.80 pounds. This was statistically significant ($p = .003$).

Subjects were classified into three groups based on weight changes, and the possibility of a relationship with the completion or noncompletion of Eating Diaries was examined through the chi-square text. Subjects who complied with the program by filling out their Eating Diaries showed a greater amount of total weight change. This was statistically significant with $p = .0068$. (Table 6)

No studies were found in the literature in which stress levels were investigated as a variable that might influence outcomes of weight reduction programs. For that reason, results of this investigation, relevant to stress, could not be compared with those of other studies. The scarcity of information about possible relationships between stress and weight change suggests that this area warrants additional research.

Obesity has been reported as one of the problem conditions characterized by a low rate of compliance with the prescribed regimen. (53) Extent (or rate) of compliance for the subjects

Table 6

CHI-SQUARE TABLE OF WEIGHT CHANGE AND EATING DIARY COMPLETION

		Did not Complete Diary	Completed Diary	
Weight Change	-8.1 to -16 pounds	6	11	17
	-2.1 to -8 pounds	7	14	21
	+2.0 to - 2 pounds	13	3	16
$x^2 = 9.994$		26	28	54

$p = .0068$

in the Baptist Memorial Hospital Weight Reduction Program (GROUP) was determined on the basis of attendance and the extent to which the prescribed regimen was followed with respect to completion of assignments that were components of the program (Weekly Assignment Projects and Eating Diaries). In this study the following criteria were established as the minimum accomplishments to be satisfied in order for a subject to be described as compliant:

Attendance- 7 or more sessions attended.

Weekly Assignment Projects- Attainment of a score of 200 or more of the possible 300 points.

Eating Diaries- Completion of at least one Eating Diary. No attempt was made to calculate a total score for compliance from the data collected.

No direct comparisons could be made with the results of other investigations with respect to compliance due to differences in research design. Reference was made in several studies to techniques that may have affected compliance. (56,58,59) Low rates of compliance with prescribed regimens were reported by Currey et al. for obesity and other problem conditions. (53) According to Bray, compliance with weight reduction programs varied from 20 to 80 percent. (19) Extent of compliance in this study (Hosmann) was evaluated on the basis of previously identified criteria associated with the prescribed weight reduction regimen. Sixty-eight percent (37) of the participants attended 70% or more of the sessions offered. A grade of 200 points or more was earned by 28% (15) of the program participants. One Eating Diary was completed by 52% (28) of the clients. Using these criteria for determining compliance, rates varied from 28% to 68% depending on the aspect of the program measured. Findings from other studies have suggested that certain factors may influence results or outcomes of weight reduction programs; among those listed were participation time, method of instruction, palatability of diet, weekly supportive meetings, positive reinforcement, absence of punishment techniques, financial incentive, eating style changes, exercise, and frequency of follow-up. (54,56,58,59) Although some of these factors may have been operative during the course of this investigation, and may have influenced compliance, no attempt was made to ascertain reasons for adhering to the prescribed GROUP regimen. That was not the purpose of this study.

CHAPTER V

SUMMARY AND CONCLUSIONS

Fifty-four overweight or obese women who were participating in a Weight Reduction Program at Baptist Memorial Hospital in Kansas City, Missouri, served as subjects for this investigation. The program, which utilized a combination of nutrition education and behavior modification, was identified by the acronym GROUP (Get Rid Of Unwanted Pounds). The purpose of this study was to investigate factors that influenced weight loss of participants by determining if relationships existed between (1) demographic data, (2) short-term weight loss in pounds, (3) stress scores on the Schedule of Recent Experience developed by Holmes and Rahe (8), and (4) compliance of subjects as determined by attendance, completion of Weekly Assignment Projects, and of Eating Diaries.

Informed consent was obtained from all participants and data were collected over a period of ten weeks at regular sessions of the class. The instruments used to collect data were the Demographic Data Check Sheet, Nutrition History, Client Card, Schedule of Recent Experience (SRE), Weekly Assignment Projects, and Eating Diary. The SRE was designed to measure stress levels in humans. Subjects were weighed at regular intervals throughout the program. Weekly Assignment Projects and Eating Diaries were collected for evaluation by the investigator.

Variables identified with the demographic data were sub-

jected to analysis through calculation of frequency distributions. Percent and number information generated in this manner was used to describe the sample. Percentage over ideal body weight at the initial class session and total weight change were ascertained for each subject. A numerical score was obtained from the SRE to assess stress level. Compliance was determined by number of sessions attended, scores on Weekly Assignment Projects, and grades resulting from evaluation of Eating Diaries.

Appropriate statistical tests were used to examine possible relationships among the data. The Student's t test was performed to determine if differences existed between mean total weight change in the group of subjects who filled out and handed in Eating Diaries and those who did not. Correlation and regression analysis was used to learn if relationships existed among the independent variables of attendance, score on the SRE, total score on the Weekly Assignment Project and the dependent variable, total weight change. Chi-square analysis was employed to determine if differences existed with respect to age, marital status, education, total weight change, and scores on the SRE and completion of Eating Diaries. A one way Analysis of Variance (ANOVA) was performed to determine if differences existed between SRE scores of subjects when they were grouped into three categories according to low, medium, or high levels of stress, and average total weight change achieved by each of the three groups.

Results of this study showed that mean weight loss for the subjects was 5.63 pounds. Fifty percent of the women had

stress scores under 300; 26% had scores between 301 and 600; and 24% had scores over 601, the latter corresponding to extremely high levels of stress on the SRE scale. Those who were older than 45 years had proportionately fewer high stress scores, and the married women had proportionately fewer high stress scores than those who were not married. An evaluation of compliance of subjects, with respect to program procedures which might contribute to success in achieving weight loss, revealed significant relationships between total weight change as a dependent variable, and attendance, Weekly Assignment Project Scores, and completion of Eating Diaries as independent variables. Subjects who attended the greatest number of sessions, who obtained higher scores on the Weekly Assignment Projects, and who completed Eating Diaries lost more weight than those who did not comply with these program procedures.

Stress scores of the women who participated in this research did not predict success or failure in the Weight Reduction Program. Compliance, as defined in this study, was found to be a factor, since degree of compliance tended to influence the extent to which subjects were successful in achieving weight loss.

Additional research is needed to add to existing knowledge concerning possible relationships between stress and weight change, and to identify more precisely the role of compliance, and effects of compliance or non-compliance, on the outcome of weight reduction programs.

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APPENDICES

APPENDIX A

DEMOGRAPHIC DATA CHECK SHEET

DEMOGRAPHIC DATA CHECK SHEET

Name_____

1. What is your occupational classification?

_____Professional/Managerial

_____Technical

_____Clerical, Sales, and/or Secretarial

_____Services

_____Skilled Laborer

_____Semi-skilled Laborer

_____Homemaker

_____Other Please specify._____

2. What is the total income for all the members of your household?

_____Less than $9,999

_____$10,000 to $19,999

_____$20,000 to $39,999

_____$40,000 to $59,999

_____$60,000 or more

3. Who referred you to this program?

_____Physician

_____Dietitian

_____Other Program Participant

_____Other Please specify._____

APPENDIX B

NUTRITION HISTORY

BAPTIST MEMORIAL HOSPITAL
NUTRITION HISTORY

Name_____ Age_____ Date_____

Occupation_____ Height_____ Weight_____

Have you recently lost or gained weight? _____Yes _____No

If yes, _____pounds gain or _____pounds loss in _____months

Have you had a recent change in appetite? _____

Do you follow any restrictions in your diet? _____Yes _____No

If yes, list what they are: _____

Do you have any food intolerances or allergies? _____Yes _____No

If yes, list what they are: _____

Do you take any vitamins or other nutritional supplements?

_____Yes _____No

If yes, what kind and how often? _____

_____

Do you have any problems chewing, swallowing, or digesting food?

_____Yes _____No

Please explain. _____

Where are most of your meals prepared? _____Home _____Restaurant

_____Other. Please explain. _____

Please list the foods and amounts you would consume in one day. If you have regular meal times, list them.

Morning Afternoon Evening

Snacks

DO YOU INCLUDE ANY OF THE FOLLOWING FOODS IN YOUR DAILY DIET? INDICATE THE NUMBER OF SERVINGS YOU NORMALLY CONSUME. CROSS OUT ANY FOODS YOU RARELY CONSUME.

MILK: whole milk, 2% milk, skim milk, buttermilk, chocolate milk.	___Servings daily or weekly (Circle one.)
DAIRY PRODUCTS: cheese, cottage cheese, yogurt, pudding, ice cream, custard.	___Servings daily or weekly (Circle one.)
PROTEIN FOODS: meat, poultry, fish, eggs, peanut butter, dried beans or peas.	___Servings daily or weekly (Circle one.)
STARCHES: bread, potatoes, rice, macaroni, spaghetti, noodles, cereal.	___Servings daily or weekly (Circle one.)
FRUIT AND JUICES: oranges and juice, grapefruit and juice, melon, apple, banana, plum, peaches, grapes, pears, and other.	___Servings daily or weekly (Circle one.)
VEGETABLES: carrots, spinach, broccoli, cabbage, peas, green beans, squash, corn, cauliflower, peppers, beets, tomatoes, tomato juice, lettuce and other.	___Servings daily or weekly (Circle one.)
FATS: margarine, butter, bacon, gravy, salad dressing, cooking oil, cream.	___Servings daily or weekly (Circle one.)
SWEET ADDITIONS: jam, jelly, honey, syrups, sugar.	___Servings daily or weekly (Circle one.)
SWEET DESSERTS: cake, pie, cookies, candy bars, chewing gum.	___Servings daily or weekly (Circle one.)
SWEETENED BEVERAGES: carbonated beverages, Kool-Aid, lemonade.	___Servings daily or weekly (Circle one.)
UNSWEETENED BEVERAGES: diet carbonated beverages, sugar substitute sweetened beverages.	___Servings daily or weekly (Circle one.)
SALTY FOODS: chips, pretzels, salted nuts, table salt, canned soup, canned vegetables, pickles, steak sauce, TV dinners.	___Servings daily or weekly (Circle one.)

- continued -

- continued -

CAFFEINE CONTAINING BEVERAGES: coffee, tea, cola, cocoa. ___Servings daily or weekly (Circle one.)

ALCOHOLIC BEVERAGES: beer, wine, liquor. ___Servings daily or weekly (Circle one.)

Do you think your diet is nutritionally well-balanced? _____

Would you like any nutritional information? _____Yes _____No

If yes, describe _____

Describe your activity level: _____low _____moderate _____high.

What do you do for exercise? _____

_____

APPENDIX C

CLIENT CARD

Name_____ Calorie Level_____

Address_____ Calorie Points_____

_____ Weight Goal_____

Phone_____

Birthdate_____Height_____

Doctor_____ Personal Goals and Diary Comments

_____ _____

_____ _____

Assignments Class Beginning_____ _____

1_____ 6_____ _____

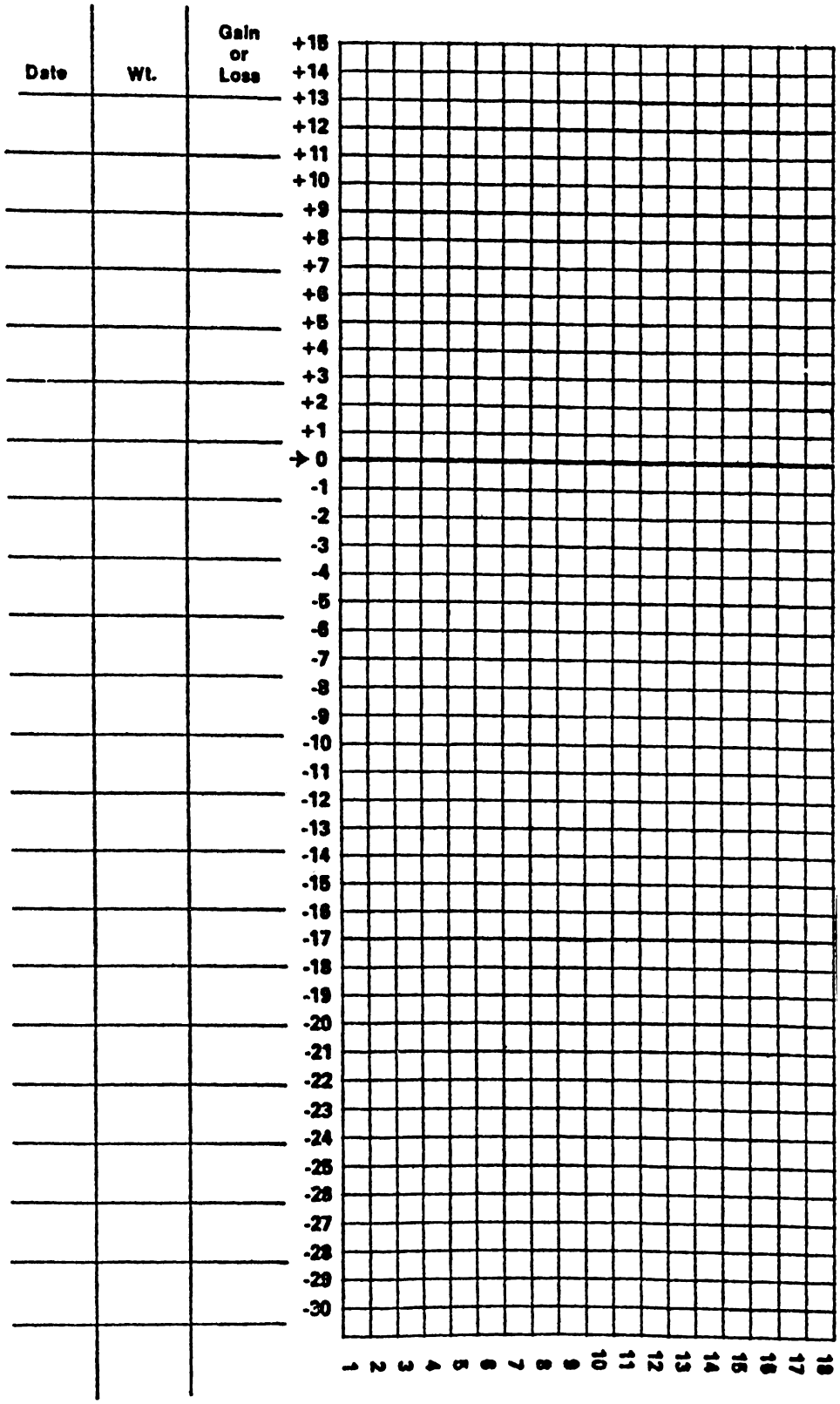
2_____ 7_____ _____

3_____ 8_____ _____

4_____ 9_____ _____

5_____ 10_____ _____

FS-85


Date
Wt.
Gain or Loss
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+13
+12
+11
+10
+9
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APPENDIX D

SCHEDULE OF RECENT EXPERIENCE

SCHEDULE OF RECENT EXPERIENCE (SRE)

CARD NO. 1 (1) DATE _____ (4) (5)

GROUP NO. (2) (3) ID NO. (6) (7) (8) (9) (10)

NAME_____ ADDRESS_____

AGE_____ (11, 12) SEX: Male____Female____ (13) _____

MARITAL STATUS: (14) Married _____Divorced _____Separated _____Widowed _____Never married _____

EDUCATION: (15) Grade school_____High school ____Trade school ____College ____Advanced degree ____

INSTRUCTIONS:

For each life event item listed below please do the following:

Think back on the event and decide if it happened during the last 12 months. If the event did happen, indicate the *number of times* it happened by placing a number in the column labeled 0–12 months ago.

	0–12 months ago
1. A lot more or a lot less trouble with the boss.	(16)
2. A major change in sleeping habits (sleeping a lot more or a lot less, or change in part of day when asleep).	(17)
3. A major change in eating habits (a lot more or a lot less food intake, or very different meal hours or surroundings).	(18)
4. A revision of personal habits (dress, manners, associations, etc.).	(19)
5. A major change in your usual type and/or amount of recreation.	(20)
6. A major change in your social activities (e.g., clubs, dancing, movies, visiting, etc.).	(21)
7. A major change in church activities (e.g., a lot more or a lot less than usual).	(22)
8. A major change in number of family-get-togethers (e.g., a lot more or a lot less than usual).	(23)
9. A major change in financial state (e.g., a lot worse off or a lot better off than usual).	(24)
10. In-law troubles.	(25)
11. A major change in the number of arguments with spouse (e.g., either a lot more or a lot less than usual regarding child-rearing, personal habits, etc.).	(26)
12. Sexual difficulties.	(27)
13. Major personal injury or illness.	(28)
14. Death of a close family member (other than spouse).	(29)
15. Death of spouse.	(30)
16. Death of a close friend.	(31)
17. Gaining a new family member (e.g., through birth, adoption, oldster moving in, etc.).	(32)

	0–12 months ago
18. Major change in the health or behavior of a family member.	33
19. Change in residence.	34
20. Detention in jail or other institution.	35
21. Minor violations of the law (e.g., traffic tickets, jaywalking, disturbing the peace, etc.).	36
22. Major business readjustment (e.g., merger, reorganization, bankruptcy, etc.).	37
23. Marriage.	38
24. Divorce.	39
25. Marital separation from spouse.	40
26. Outstanding personal achievement.	41
27. Son or daughter leaving home (e.g., marriage, attending college, etc.).	42
28. Retirement from work.	43
29. Major change in working hours or conditions.	44
30. Major change in responsibilities at work (e.g., promotion, demotion, lateral transfer).	45
31. Being fired from work.	46
32. Major change in living conditions (e.g., building a new home, remodeling, deterioration of home or neighborhood).	47
33. Wife beginning or ceasing work outside the home.	48
34. Taking out a mortgage or loan for a major purchase (e.g., purchasing a home, business, etc.).	49
35. Taking out a mortgage or loan for a lesser purchase (e.g., purchasing a car, TV, freezer, etc.).	50
36. Foreclosure on a mortgage or loan.	51
37. Vacation.	52
38. Changing to a new school.	53
39. Changing to a different line of work.	54
40. Beginning or ceasing formal schooling.	55
41. Marital reconciliation with mate.	56
42. Pregnancy.	57

Department of Psychiatry and Behavioral Sciences
University of Washington School of Medicine
Seattle, Washington 98195

APPENDIX E

WEEKLY ASSIGNMENT PROJECT

WEEK I

FROM _____ TO _____ I _____ AGREE TO
(DATE) (DATE) (NAME)

	ASSIGNMENT	MINIMUM OBJECTIVE	POSSIBLE POINTS	EARNED POINTS
I.	List advantages of being at your ideal weight and disadvantages of being overweight.	Bring list to next meeting.	2	
II.	Weigh once at next meeting.	Attend meeting and be weighed.	2	
III.	Record my food intake and factors relating to it.			
	1. Write down all food and drinks I consume.	1 pt. for each day recorded.	7	
	2. Record where you eat.	1 pt. for each day recorded.	7	
IV.	Take your measurements. Chest_____ Neck_____ Waist_____ Upper Arm_____ Hips_____ Thigh_____	12 pt. for recording all measurements and sizes.	2	
	List your current clothes sizes Blouse or shirt_____ Slacks or trousers_____ Dress or suit			
			20	

WEEK II

FROM _____ TO _____ I _____ AGREE TO
(DATE) (DATE) (NAME)

	ASSIGNMENT	MINIMUM OBJECTIVE	POSSIBLE POINTS	EARNED POINTS
I.	Determine your ideal body weight and pick a goal weight.	5 points for writing goal weight on weight card.	5	
II.	Weigh once at next meeting.	Attend meeting and be weighed.	2	
III.	Record my food intake and factors relating to it.			
	1 Meet my calorie point goal.	1 pt. for each day goal is reached.	7	
	2. Write down all food and drink I eat.	1 pt. for each day food is recorded.	7	
	3. Record any activity while eating.			
	4. Record person or persons with whom I eat.			
	5. Record my feelings before and during meals or snacks.	1 pt. for each day recorded.	7	
	6. Record where I eat.			
IV.	Using a food label, determine the number of calorie points in a food.	7 pts. for determining the calorie points in a food.	7	
			35	

WEEK III

FROM _____ (DATE) TO _____ (DATE) I _____ (NAME) AGREE TO

	ASSIGNMENT	MINIMUM OBJECTIVE	POSSIBLE POINTS	EARNED POINTS
I.	List enjoyable activities or rewards I can use as incentive for weight loss.	Bring list of activities to next meeting.	5	
II.	Weigh once at next meeting.	Attend meeting and be weighed.	2	
III.	Record my food intake and factors relating to it.			
	1. Meet my calorie point goal.	1 pt. for each day goal is reached.	7	
	2. Write down all food and drink I eat.	1 pt. for each day food is recorded.	7	
	3. Record any activity while eating.			
	4. Record person or persons with whom I eat.			
	5. Record my feelings before and during meals or snacks.	1 pt. for each day recorded.	7	
	6. Record where I eat.			
IV.	Evaluate my intake using food groups (separate sheet).	7 pts. for finishing 4 days.	7	
			35	

WEEK IV

FROM _____ TO _____ I _____ AGREE TO
(DATE) (DATE) (NAME)

	ASSIGNMENT	MINIMUM OBJECTIVE	POSSIBLE POINTS	EARNED POINTS
I.	Make a list of problems I have with eating habits from analysis of my diary.	At least two identified problems listed.	6	
II.	Weigh once at next meeting.	Attend meeting and be weighed.	2	
III.	Record my food intake and factors relating to it.			
	1. Meet my calorie point goal.	1 pt. for each day goal is reached.	7	
	2. Write down all food and drink I eat.	1 pt. for each day food is recorded.	7	
	3. Record any activity while eating.			
	4. Record person or persons with whom I eat.			
	5. Record my feelings before and during meals or snacks.	1 pt. for each day recorded.	7	
	6. Record where I eat.			
IV.	Write a list of situations where you used control this week.	At least two situations explained.	6	
			35	

WEEK V

FROM _____ TO _____ I _____ AGREE TO
(DATE) (DATE) (NAME)

	ASSIGNMENT	MINIMUM OBJECTIVE	POSSIBLE POINTS	EARNED POINTS
I.	Start an exercise program within the limits of my physical health.	An increase in activity this week.	5	
II.	Weigh once at next meeting.	Attend meeting and be weighed.	2	
III.	Record my food intake and factors relating to it.			
	1. Meet my calorie point goal.	1 pt. for each day goal is reached.	7	
	2. Write down all food and drink I eat.	1 pt. for each day food is recorded.	7	
	3. Record any activity while eating.	1 pt for each day recorded	7	
	4. Record person or persons with whom I eat.			
	5. Record my feelings before and during meals or snacks.			
IV.	List two ways you can increase your daily activity.	Record on back of this sheet.	7	
			35	

WEEK VI

FROM _____ (DATE) TO _____ (DATE) I _____ (NAME) AGREE TO

	ASSIGNMENT	MINIMUM OBJECTIVE	POSSIBLE POINTS	EARNED POINTS
I.	Have two people agree to support me in my efforts to lose weight.	Bring copy of support agreement to next class.	5	
II.	Weigh once at next meeting.	Attend meeting and be weighed.	2	
III.	Record my food intake and factors relating to it.			
	1. Meet my calorie point goal.	1 pt. for each day goal is reached.	7	
	2. Write down all food and drink I eat.	1 pt. for each day food is recorded.	7	
	3. Record activity while eating, person or persons with whom I eat, and feelings during or before eating.	1 pt for each day recorded	7	
IV.	Continue the increase in activity established last week.	3 pt. for increased activity level maintained.	3	
V.	Evaluate my intake for vitamin C and vitamin A.	2 pt. for adequate level of vit. C. 2 pt. for adequate level of vit. A.	4	
			35	

WEEK VII

FROM _____ (DATE) TO _____ (DATE) I _____ (NAME) AGREE TO

	ASSIGNMENT	MINIMUM OBJECTIVE	POSSIBLE POINTS	EARNED POINTS
I.	Try one recipe that will lower calorie level of product.	Prepare or assist with at least one lower calorie recipe this week.	4	
II.	Weigh once at next meeting.	Attend meeting and be weighed.	2	
III.	Record my food intake and factors relating to it.			
	1. Meet my calorie point goal.	1 pt. for each day goal is reached.	7	
	2. Write down all food and drink I eat.	1 pt. for each day food is recorded.	7	
	3. Record activity while eating, person or persons with whom I eat, and feelings during or before eating.	1 pt for each day recorded	7	
IV.	Continue the increase in activity established last week.	3 pt. for increased activity level maintained.	3	
V.	Create a plan to handle one situation where I overeat.	Write out plan to handle situation.	5	
			35	

WEEK VIII

FROM _____ TO _____ I _____ AGREE TO
(DATE) (DATE) (NAME)

	ASSIGNMENT	MINIMUM OBJECTIVE	POSSIBLE POINTS	EARNED POINTS
I.	Identify at least one situation in which an emotion affected what I ate. Pick a substitute activity.	One situation and one activity listed.	4	
II.	Weigh once at next meeting.	Attend meeting and be weighed.	2	
III.	Record my food intake and factors relating to it.			
	1. Meet my calorie point goal.	1 pt. for each day goal is reached.	7	
	2. Write down all food and drink I eat.	1 pt. for each day food is recorded.	7	
	3. Record activity while eating, person or persons with whom I eat, and feelings during or before eating.	1 pt for each day recorded	7	
IV.	Continue increase in activity.	3 pt. for maintaining exercise or increasing level.	3	
V.	Bring an article or copy of a diet to class next week for analysis.	5 pt. for bringing copy of diet.	5	
			35	

WEEK IX*

FROM _____ TO _____ I _____ AGREE TO
(DATE) (DATE) (NAME)

	ASSIGNMENT	MINIMUM OBJECTIVE	POSSIBLE POINTS	EARNED POINTS
I.	Prepare an assignment sheet for my use on the follow-up program.	Fill in assignment sheet.	4	
II.	Weigh once at next meeting.	Attend meeting and be weighed.	2	
III.	Record my food intake and factors relating to it.			
	1. Meet my calorie point goal.	1 pt. for each day goal is reached.	7	
	2. Write down all food I eat or drink.	1 pt. for each day food is recorded.	7	
	3. Record activity while eating, person or persons with whom I eat, and feelings during or before eating.	1 pt for each day recorded.	7	
IV.	Continue increase in activity.	3 pt. for maintaining exercise or increasing level.	3	
V.	Bring copy of restaurant menu or list of foods from a fast food restaurant. Select one appropriate meal.	3 pt. for menu. 2 pt. for appropriate meal.	5	
			35	

*Assignment Turned in During Week X.

APPENDIX F

EATING DIARY

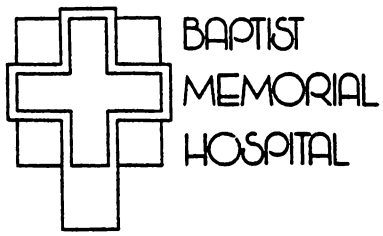
EATING DIARY

Date _____ Weight _____ Comments:

Time	Food	Amount	Location	Stimuli	

APPENDIX G

BAPTIST MEMORIAL HOSPITAL LETTER OF APPROVAL



THE EYE INSTITUTE OF MID-AMERICA
GOPPERT FAMILY CARE CENTER
CHARLES F. CURRY CENTER FOR HEALTH EDUCATION
MIDWEST DIABETES REFERRAL CENTER

MICHAEL W. CHAPPELOW
ASSISTANT EXECUTIVE DIRECTOR

August 4, 1982

Annette Worley Hosmann, R.D.
Clinical Nutritionist
Food Service Department

Dear Annette:

I have reviewed your Summary of Proposed Study to investigate factors that influence weight loss in men and women participating in Baptist Memorial Hospital GROUP (Get Rid of Unwanted Pounds).

This is to notify you that you have permission to conduct your study and collect data during the September to November classes. I would ask that informed consent be obtained from all clients before they participate in the study.

If I can be of further assistance, please let me know.

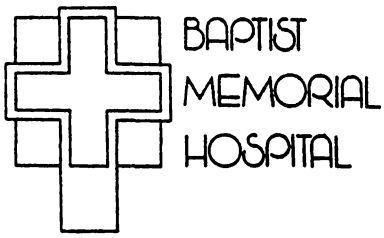
Sincerely,

Michael W. Chappelow,
Assistant Executive Director

mw:

APPENDIX H

LETTER FROM CLIENT'S PERSONAL PHYSICIAN



DAN H. ANDERSON
EXECUTIVE DIRECTOR

THE EYE INSTITUTE OF MID-AMERICA
GOPPERT FAMILY CARE CENTER
CHARLES F. CURRY CENTER FOR HEALTH EDUCATION
MIDWEST DIABETES REFERRAL CENTER

Dear Doctor,

Permission is requested for_____to participate in the GROUP (Get Rid of Unwanted Pounds) program at Baptist Memorial Hospital. The program is conducted by a registered dietitian and involves nutrition education and behavior modification to accomplish sensible weight loss. Please note any necessary restrictions in diet or exercise.

Sincerely yours,

Annette W. Hosmann R.D.
Clinical Nutritionist
Food Service Department
361-3500 Ext. 7435

- -

Date_____

Permission is granted for_____ to participate in the GROUP program with the following restrictions:

_____
Physician

APPENDIX I

RECOMMENDED DIETARY ALLOWANCES SUGGESTED DESIRABLE WEIGHTS FOR HEIGHTS AND RANGES FOR ADULT MALES AND FEMALES

SUGGESTED DESIRABLE WEIGHTS FOR HEIGHTS AND RANGES

FOR ADULT MALES AND FEMALES

Height[a]		Weight[b]			
		Men		Women	
in.	cm	lb	kg	lb	kg
58	147	-	-	102 (92-119)	46 (42-54)
60	152	-	-	107 (96-125)	49 (44-57)
62	158	123 (112-141)	56 (51-64)	113 (102-131)	51 (46-59)
64	163	130 (118-148)	59 (54-67)	120 (108-138)	55 (49-63)
66	168	136 (124-156)	62 (56.71)	128 (114-146)	58 (52-66)
68	173	145 (132-166)	66 (60-75)	136 (122-154)	62 (55-70)
70	178	154 (140-174)	70 (64-79)	144 (130-163)	65 (59-74)
72	183	162 (148-184)	74 (67-84)	152 (138-173)	69 (63-79)
74	188	171 (156-194)	78 (71-88)	-	-
76	193	181 (164-204)	82 (74-93)	-	-

From: Bray, G.A. Obesity in Perspective. Fogarty International Center Series on Preventive Medicine. DHEW Publ. 75-708, 1975. In: Recommended Dietary Allowances. Ninth Revised Edition. Washington, D.C.: Office of Publications, National Academy of Sciences, 1980.

[a] Without Shoes.

[b] Without Clothes. Average weight ranges in parentheses.

APPENDIX J

INFORMED CONSENT FORM

CONSENT FORM

I agree to participate in a study under the direction of Annette Hosmann, R.D. at Baptist Memorial Hospital to determine factors including stress levels that effect compliance with a weight reduction program. I have been informed of the nature, duration, and means by which the study is to be administered. No laboratory work or x-rays will be involved. All data will be collected on interview forms or the client card which records attendance and weights. All data reported will be for the entire group. No individual data will be reported.

In giving my consent, I acknowledge that my participation is voluntary and that I may withdraw at any time. I understand that all information will be kept confidential.

_____
Patient's Signature

_____
Date

The above named information has been explained to _____ and it appears that he/she understands it.

_____
Student

_____
Primary Investigator

_____
Date

APPENDIX K

LETTER OF APPROVAL FROM DR. HOLMES

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195

School of Medicine
Department of Psychiatry and Behavioral Sciences, RP-10

July 20, 1982

Annette W. Hosman, R.D.
Clinical Nutritionist
Food Service Department
Baptist Memorial Hospital
6601 Rockhill Road
Kansas City, Missouri 64131

Dear Ms. Hosman:

Thank you for your interest in our research. I am pleased to give you permission to use the Schedule of Recent Experience (SRE) in your research for your master's degree.

I am enclosing the Manual for the SRE which includes specimen copies of both the 1-year and 3-year SRE, plus a price list for purchasing it.

If we can be of further assistance please let us know.

Sincerely yours,

Thomas H. Holmes, M.D.
Professor of Psychiatry and
Behavioral Sciences

THH:ma
Encl.

APPENDIX L

EXCERPT FROM SRE MANUAL

ADMINISTERING AND SCORING THE SCHEDULE OF RECENT EXPERIENCE (SRE)

Subjects complete the SRE questionnaire beginning with NAME. They may date it also.

To keypunch directly from the form, use the CODING INFORMATION and complete GROUP NO. and ID NO., circle last two digits of the year under DATE, and code the items on SEX, MARITAL STATUS, and EDUCATION.

To hand score the SRE, multiply the number of times each event occurred by the value listed for each event from the following ordered list. Then total the results for a score for *each* time period. A template is available for hand scoring.

Please note, responses of 4+ are scored as 4.

VALUES FOR THE ITEMS ON THE SCHEDULE OF RECENT EXPERIENCE (SRE)*

No.	SRE Event	Mean Value
1.	Trouble with boss	23
2.	Change in sleeping habits	16
3.	Change in eating habits	15
4.	Revision of personal habits	24
5.	Change in recreation	19
6.	Change in social activities	18
7.	Change in church activities	19
8.	Change in number of family get-togethers	15
9.	Change in financial state	38
10.	Trouble with in-laws	29
11.	Change in number of arguments with spouse	35
12.	Sex difficulties	39
13.	Personal injury or illness	53
14.	Death of close family member	63
15.	Death of spouse	100
16.	Death of close friend	37
17.	Gain of new family member	39
18.	Change in health of family member	44
19.	Change in residence	20
20.	Jail term	63
21.	Minor violations of the law	11
22.	Business readjustment	39
23.	Marriage	50
24.	Divorce	73
25.	Marital separation	65
26.	Outstanding personal achievement	28
27.	Son or daughter leaving home	29
28.	Retirement	45
29.	Change in work hours or conditions	20
30.	Change in responsibilities at work	29
31.	Fired at work	47
32.	Change in living conditions	25
33.	Wife begin or stop work	26
34.	Mortgage or loan for major purchase (home, business, etc.)	31
35.	Mortgage or loan for lesser purchase (car, TV, etc.)	17
36.	Foreclosure of mortgage or loan	30
37.	Vacation	13
38.	Change in schools	20
39.	Change to different line of work	36
40.	Begin or end school	26
41.	Marital reconciliation	45
42.	Pregnancy	40

*From Holmes, T. H. and Rahe, R.H.: The Social Readjustment Rating Scale. *Journal of Psychosomatic Research 11*:213–218, 1967.

APPENDIX M

CURRICULUM DESIGN FOR GROUP

Curriculum Design for GROUP
Baptist Memorial Hospital Weight Reduction Program

I. Rationale

This course is designed to provide information which will assist the student in losing one to two pounds per week. An emphasis is placed on proper nutrition and behavioral change. Long term change rather than short term fad diets are advocated.

II. The Structure of the Program

Students are given specific assignments based on material presented in class. Nine assignments are turned in to the instructor with point values for assigned activities filled in by the student. Assignment grades are recorded on the student's card along with attendance and weekly weights.

III. Units of Instruction

Unit One-

Intended Learning Outcomes-

The participant will be able to fill out a food diary listing foods eaten, amounts, and place where consumed.

The participant will list advantages of being at his/her ideal body weight and disadvantages of being overweight.

Instructional Foci-

Film- "For Tomorrow We Shall Diet"
Eating Diary

Unit Two-

Intended Learning Outcomes-

The participant will be able to state his/her ideal body weight.

The participant will be able to calculate his/her calorie intake in calorie points using the booklet "You Are What You Eat, Eat, Eat" as a reference.

The participant will be able to calculate calorie points in a food using the information on the food label.

Instructional Foci-

Videotape- "You Are What you Eat" produced by Baptist Memorial Hospital
Large and small calorie point booklet
Fast Food Calorie Counter
Handout on reading labels and calculating recipes

Unit Three-

Intended Learning Outcomes-

The participant will be able to list foods in each of the four food groups.

The participant will be able to list activities or rewards he has chosen for himself when he loses weight.

Instructional Foci-

Handout- "Guide to Good Eating"
Use of food models to construct balanced diet at appropriate calorie levels

Unit Four-

Intended Learning Outcomes-

The participant will identify at least two problem eating habits.

The participant will list at least two situations where self control was used in regard to eating.

The participant will be able to verbalize external cues in his environment that affect his eating patterns.

Instructional Foci-

Handouts- Self Control by E.B. Fisher and C. Griedling, Washington University, St. Louis, MO
A Summary of Behavioral Modification Techniques

Unit Five-

Intended Learning Outcomes-

The participant will start (if physically able) an appropriate exercise program.

The participant will be able to identify activities that increase daily caloric expenditure.

Instructional Foci-

Handout- Calories Expended for 10 Minutes of Physical Activity
Booklet- Exercise for Fitness by Baptist Memorial Hospital Physical Therapy Department
Lecture by Registered Physical Therapist

Unit Six-

Intended Learning Outcomes-

The participant will be able to explain positive feedback.

The participant will be able to list sources of vitamin A and vitamin C.

Instructional Foci-

Handouts- Suggestions for Managers
Vitamin A Evaluation
Vitamin C Evaluation

Unit Seven-

Intended Learning Outcomes-

The participant will be able to prepare at least one recipe modified to lower caloric content.

The participant will be able to identify a plan to change a situation in which he overeats.

Instructional Foci-

Film Series- "Eat Right to Your Heart's Delight"
1. "Low Fat Meat Preparation"
2. "New Ways with Chicken"

Unit Eight-

Intended Learning Outcomes-

The participant will be able to identify one situation in which an emotion affected what he ate.

Instructional Foci-

Quiz- Emotional Investment in Food (Reprinted from Psychology Today)

Unit Nine-

Intended Learning Outcomes-

The participant will be able to list advantages and disadvantages of other available diet programs.

The participant will determine his personal goals and objectives for the follow-up program.

Instructional Foci-

Copies of current published diets and literature from other programs.

Unit Ten-

Intended Learning Outcomes-

The participant will be able to select a meal from a restaurant menu that is appropriate for his calorie level.

Instructional Foci-

Restaurant Menus

APPENDIX N

FALL SCHEDULE OF CLASSES

FALL CLASS SCHEDULE

Week I September 14 & 16	Completion of Nutrition History Signing of Contract Collection of Physician's Permission Letter
Week II September 21 & 23	Now to Use Calorie Points Videotape "You Are What You Eat" Discussion of Ideal Body Weight
Week III September 28 & 30	Review of Guide to Good Eating What is a Balanced Diet?
Week IV October 5 & 7	Review of Self Control Strategy Discussion of Behavior Modification
Week V October 12 & 14	Discussion of Appropriate Exercise Programs and Ways to Increase Caloric Expenditure by a Registered Physicial Therapist Evaluation of First Five Weeks
Week VI October 19 & 20	Appropriate Ways for Others to Support the Dieter Vitamins
Week VII October 26 & 28	Ways to Cut Calories with Cooking Methods Film Series "Eat Right to Your Heart's Delight"
Week VIII November 2 & 4	Emotions and Overeating Binges
Week IX November 9 & 11	Fad Diet Analysis Follow up Assignments
Week X November 16 & 18	Restaurant Tips How to Maintain Weight Loss Evaluation of Second Five Weeks

APPENDIX O

EATING DIARY EVALUATION FORM

EATING DIARY EVALUATION

BALANCED DIET:

Milk and Milk Products
_____1st serving
_____2nd serving

Meat or Protein Food
_____1st serving
_____2nd serving

Fruits and Vegetables
_____1st serving
_____2nd serving
_____3rd serving
_____4th serving

Grains
_____1st serving
_____2nd serving
_____3rd serving
_____4th serving

75-100% = 6 pts.
50-74% = 4 pts.
25-49% = 2 pts.
0-24% = 0 pts.

MEAL FREQUENCY:

_____3 or more eating times

75-100% = 8 pts.
50-74% = 6 pts.
25-49% = 4 pts.
0-24% = 0 pts.

APPROPRIATE POINT LEVEL:

_____10 points for no errors

1 point off for each error up to 10 errors

ACCURACY OF POINTS:

_____10 points for no errors

1 point off for each error up to 10 errors

_____ TOTAL (100 possible points)