

AN ABSTRACT OF THE THESIS OF

Ronald Wayne Leland for the degree of Master of Arts in Interdisciplinary Studies in Exercise & Sport Science/Public Health/Psychology presented on February 21, 1990.

Title: A Comparison of Client Follow-up and Selected Components of Weight Control Programs Managed by Dietitians and Nondietitians in Oregon.

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Abstract Approved:

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Obesity affects one out of every four Americans and represents a serious health hazard in the United States. Serious chronic diseases associated with obesity include heart disease, cancer, and adult-onset diabetes mellitus. There has been a rapid expansion in the number of weight control centers since the 1970s, yet there has been no significant improvement in the success rate for controlling obesity: 95 percent of those who enter weight control programs fail to maintain their weight loss for more than 2 years. It is questionable whether the weight loss industry observes effective program guidelines, including consistent client follow-up contact to determine weight loss maintenance success rates. Without follow-up data, it is impossible to measure potential program effectiveness.

The purpose of the study was to compare Oregon weight control centers managed by registered dietitians (RDs) and nondietitians

(NDs) on the basis of client follow-up information and program components. An 80-item questionnaire was used to obtain the data. All of the 45 programs surveyed were listed in the Oregon Dietetic Association Weight Management Resource Directory. There were no statistically significant differences between the two groups in: client follow-up performance; primary reason why clients were successful; dietary programming scores and total program attribute scores ($p \leq .05$). Client follow-up contact 2 years after program completion did not occur in the programs surveyed.

Even though statistically significant differences were not found between the groups, more NDs than RDs reported doing client follow-up, performing follow-up regularly, performing follow-up at shorter intervals, and taking several measures of health status. Since the results were from self-reported responses of administrators, there was no basis for quality assessment of the programs.

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A Comparison of Client Follow-up and Selected
Components of Weight Control Programs Managed by
Dietitians and Nondietitians in Oregon

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A COMPARISON OF CLIENT FOLLOW-UP AND SELECTED
COMPONENTS OF WEIGHT CONTROL PROGRAMS MANAGED BY
DIETITIANS AND NONDIETITIANS IN OREGON

CHAPTER 1

INTRODUCTION

Obesity is a serious health problem in the United States. There are over 26 different diseases that are associated with obesity, including the three major lifestyle-related killers in America-- cardiovascular disease, cancer, and adult-onset diabetes (Martin & Mullen, 1987; Van Itallie, 1985). In 1987 there were approximately 759,400 deaths from heart disease, 476,000 deaths from cancer, and 37,800 deaths from diabetes (U.S. Public Health Service, p. 4). The health care costs and the effects of diminished productivity associated with these three diseases for 1985 were estimated to be \$60 billion, \$72 billion, and \$13.8 billion, respectively (U.S. Public Health Service, 1988, pp. 4-5).

Obesity contributes to serious emotional problems. The psychosocial consequences for being obese are numerous. For instance, the social stigma of "fatness" has been experienced by 6-year-old children (Staffieri, 1967) regardless of gender, socioeconomic status, or racial background (Richardson, Hastorf, Goodman, & Dornbusch, 1961; Staffieri, 1967). A survey of college women found that "obese people were stigmatized to the same degree as prostitutes and embezzlers. The students said they would prefer to marry cocaine users, ex-mental patients, and divorcees rather than obese individuals" (Brownell & Foreyt 1986, p. 36). The psychosocial

problems of obesity may be as serious as the medical ones (Brownell, 1982).

Despite an increased number of treatment programs, more dollars spent on treatment, and two decades of increased interest in aerobic fitness and preventative health care, the incidence of obesity has increased. From 1971 through 1974, the National Health and Nutrition Examination Survey (NHANES I) indicated that 28.8 million adult Americans were obese, and 8.4 million of this group were severely obese. The NHANES II for the years 1976 through 1980 showed an increase of 20 percent in the prevalence of obesity as 34 million adults were categorized as obese (Van Itallie, 1985). In 1988, the Surgeon General reported that approximately 34 million adults between the ages of 20 and 74, or one out of four adult Americans, were obese (U. S. Public Health Service, 1988). Weaver (1988) estimated that up to 110 million adults were overweight, and Katch and McArdle (1983) estimated that about 12 million teenagers were obese.

Although it is generally recognized that diet, exercise, behavior therapy, and social support are important in the treatment of obesity, little is known as to whether or not these principles are used in various weight loss programs. Few studies have examined the status of existing weight loss programs and the nature of follow-up contact by weight control professionals. Research needs to be focused on these areas to determine if the treatment programs reported by researchers are being used in treatment centers.

Statement of the Problem

Follow-up information is a necessity if weight control centers want to know what is and what is not effective in overall weight maintenance. Even if clients are successful in maintaining a 50-pound weight loss over a 10-year period, it is difficult to know whether the client lost and regained the weight several times during this period or whether success is due to the treatment or to client intervention (Brownell, 1982). Data is scarce concerning the overall efficacy of weight loss centers. Few studies have examined the factors associated with long-term weight maintenance or focused on obtaining client follow-up information after clients leave weight loss programs. Research is needed to determine the status of existing weight-loss programs including qualifications of personnel, selected dietary, exercise and behavioral components, the self-perceived measures of success, the frequency and method of follow-up contact.

Purpose of the Study

The purpose of the study was to (a) determine the frequency and nature of client follow-up contact and (b) compare selected components (i.e., diet, exercise, behavior modification) of weight control programs managed by registered dietitians (RDs) and nondietitians (NDs).

Need for the Study

To treat obesity successfully, dietary, exercise, behavioral and social strategies must be employed (Stunkard, 1984). Studies have demonstrated that the longer clients remain in treatment programs, the greater the weight-loss maintenance (Brownell, 1982; Jeffery, Thompson, & Wing, 1978; Stern & Lowney, 1986). Social support has been shown to favorably influence adherence rates to treatment regimens (Janis, 1983), and follow-up contact among clients may be an important adjunct to social support (Perri, McAllister, Gange, Jordan, McAdoo, and Nezu, 1988). Follow-up contact, or the nature of therapist/client interaction after face-to-face treatment terminates, has a significant impact on how well the client maintains healthy behaviors (Janis, 1983; Perri et al., 1988).

The definitions and standards of success for weight loss maintenance have not been developed for universal application. At present, there are more unanswered than answered questions in the realm of long-term weight loss maintenance. Weight control clinicians and professionals are in need of additional research data to support their own judgements during treatment (Kirschenbaum, 1988). Disagreements on how to treat obesity need to be resolved. In 1988, the U.S. Public Health Service noted:

Despite rapid advances in the definition and epidemiology of obesity, of adipose cell metabolism, and of the causes and consequences of obesity, disagreements still prevail on almost every key issue. (p. 275)

Since weight loss professionals are unsure of the precise way to treat obesity, lack appropriate literature as to what constitutes successful

weight maintenance, and either find client follow-up contact difficult to conduct or simply fail to follow-up, it is imperative that appropriate client follow-up studies as related to weight loss and weight control be conducted. Similarly, it is important to find out if what is being done in treatment centers reflects recommendations found in current research literature. The net effect of follow-up studies may help consumers interested in weight loss maintenance. Conversely weight loss program administrators might benefit from understanding what other professionals are doing regarding client follow-up contact. A better understanding of client follow-up contact and the status of weight loss programs may assist in answering the question: What really helps clients permanently control their weight?

Research Hypotheses

The primary research question was: Is there a significant difference between RDs and NDs in the self-reported performance of client follow-up upon completion of the weight loss program.

The following research hypotheses were tested:

- 1) No significant differences exist between dietitians (RDs) and nondietitians (NDs) on self-reported performance of client follow-up contact.
- 2) No significant differences exist between dietitians (RDs) and nondietitians (NDs) on why clients were successful upon completion of the weight loss program.
- 3) No significant differences exist between dietitians (RDs) and nondietitians (NDs) on whether or not selected dietary

program components were offered in their total weight loss regimen.

- 4) No significant differences exist between dietitians (RDs) and nondietitians (NDs) on whether or not selected dietary, exercise, and behavioral components were offered in their total weight loss regimen.

Delimitations and Limitations

Delimitations

1. This study focused only on programs listed in the Oregon Dietetic Association Weight Management Resource Directory (1987).
2. The responses were solicited only from program administrators, who may or may not have been dietitians.

Limitations

1. A select sample was used; therefore, the results of this study may not be generalized to other groups.
2. The definition of a nondietitian may be limiting because those who are not board certified as a registered dietitian may have the same academic preparation as a registered dietitian. A person could have a nutrition degree and not be registered dietitian. Similarly, a nondietitian may have no training in the field of dietetics or nutrition.

Definitions

Behavior Modification: A non-surgical, non-pharmacological set of procedures which can be used to change counterproductive,

inappropriate, observable human habits so that individuals can make improvements in their lifestyles (Holli, 1988).

Behavioral Treatment of Obesity: Changing eating and exercise

behavior so that food consumption can be reduced and exercise initiation and adherence enhanced (Perri, McAdoo, McAllister, Lauer, & Yancey, 1986).

Client Follow-up Contact: The aspect of contacting the client after

formal sessions terminate which may involve phone calls, exchange of letters, or other forms of communication that offer future hope of contact (Janis, 1983).

Dietary Modification: Use of the basic principles of behavior

modification to lower fat intake while increasing complex carbohydrates via a process of slow change, including: assessing the antecedents, behavior, and consequences (ABC's) of eating, using food diaries, goal setting, role modeling, cognitive therapy, and relapse prevention (Holli, 1988).

Long-Term Weight Maintenance: A lengthy period of time in which

weight loss is maintained. Depending upon the authority, this time period can range from 1 to 8 years (Bjorvell & Rossner, 1986; Hirsch & Leibel, 1988; Janis, 1983; Kirschenbaum, 1988; Schachter, 1982b).

Nondietitians (NDs): Refers to those individuals who are not board certified by the state in dietetics or related field.

Overweight: A status specific to the Metropolitan Life Insurance

Height-Weight Tables of 1959 and 1983 and is not an indicator of body fatness. Databases may reflect weights that were self-

reported and may not reflect variances due to ethnic or socioeconomic status. Moreover, the relationship between weight and adiposity is not extremely strong. (Harrison, 1985)

Overfat: Generally referring to the percentage of body fat measured by skinfold calipers, hydrostatic weighing, or electrical impedance. These methods for measuring body fat and estimating obesity are much more accurate than using height-weight charts, but they must be used by trained health professionals. The drawbacks of each method for the estimation of body composition must also be considered (Nieman, 1986).

Referent Power: Refers to socially becoming a significant other with the client which involves three stages. While the first two stages involve the development of the relationship between counselor and client, the third phase involves retaining referent power after contact ends (Janis, 1982).

Registered Dietitians (RDs): Refers to an individual who has completed a 4-year accredited university in dietetics or related area and was board certified as a dietitian by the state.

CHAPTER 2

REVIEW OF THE LITERATURE

Obesity

In 1985, the National Institutes of Health (Van Itallie, 1985) provided the following definition for obesity:

Obesity is an excess of body fat frequently resulting in a significant impairment of health. The excess fat accumulation is associated with increased fat cell size; in individuals with extreme obesity, fat cell numbers are also increased. Although the etiologic mechanisms underlying obesity require further clarification, the net effect of such mechanisms leads to an imbalance between energy intake and expenditure. Both genetic and environmental factors are likely to be involved in the pathogenesis of obesity. These include excess caloric intake, decreased physical activity, and metabolic and endocrine abnormalities. Hence, a number of subtypes of obesity exist. (p. 1-2)

In general, a body fat percentage of 20 percent or greater is considered obese for men; for women, 25 percent or greater is the accepted standard (Buskirk, 1974; Danforth 1985). On the other hand, the percentages of body fat for male athletes range from 10 to 15 percent and female equivalents range from 15 to 20 percent (Wilmore & Brown, 1974). For the average American, ideal body fat percentage is close to the upper limits of this range, 15 percent for males and 22 percent for women (Hannon & Lohman, 1978). Another standard that requires further refinement is the 1959 and 1983 Metropolitan Life height-weight tables for the estimation of obesity and mortality (Andres, Elahi, Robin, Muller, & Brant, 1985). An individual can be overweight yet underfat. Professional football players

often fall into this category (Adams, Mottola, Bagnall, & McFadden, 1982). Conversely, a sedentary 6-foot male might weigh 140 pounds and be underweight, yet overfat. Relying solely on a body weight scale to estimate body composition cannot be justified since the scale fails to account for differences in fat weight and fat-free weight (i.e., bone, muscle, and water).

Theories and Factors Associated With Obesity

In the past 20 years, scientific findings have unraveled some of the mysteries that surround bariatric medicine--the area of medicine that deals with the treatment of obesity. However, most of what is known about obesity is theoretical or needs further elucidation. Researchers from the 1960s through the 1980s have found five major theories that best explain the complex interaction between patient and the disorder of obesity such as: a) genetic obesity theory, b) dietary obesity theory, c) fat cell theory, d) the set point theory, and e) defects in thermogenesis theory. The genetic theory of obesity infers that obesity is largely an inherited disorder. This theory proposes that fat adults were born fat and that very little can be done to correct the situation (Astwood, 1962). Mayer (1965) has concluded that the offspring from two obese parents will have an 80 percent chance of becoming obese, in comparison to no more than 14 percent of the offspring of parents of normal weight.

Dietary obesity is believed to result from the consumption of highly palatable, calorically concentrated foods (e.g., fats, sugars). For instance, it has been well established that lean rats can be fattened with a varied, highly palatable, and calorically concentrated diet

(Sclafani & Springer, 1976). The common denominator that may exist in rats and humans is an affinity towards obesity when exposed to a high-fat diet. Recent evidence shows that when dietary fat is consumed, increased lipoprotein lipase (LPL) activity acts as a catalyst to move fat into the cells for storage (Flatt, 1987; Liebman, 1989). When comparing the fat consumption between nations, it is interesting to note that affluent societies consume more fat than those in thirdworld countries and are at a higher risk for the development of obesity (Danforth, 1985).

Overfeeding during infancy or adulthood may lead to fat cell hypertrophy (the enlargement of existing fat cells) or hyperplasia (the development of new ones). This concept is known as the fat cell theory of obesity. While the mechanism is poorly understood, it is known that fat cell hyperplasia cannot be reversed (Sjostrom, 1980): once new fat cells are created they are virtually impossible to remove unless weight loss is maintained for an indefinite period (Askew, Barakat, Kuhl, & Dohm, 1975).

The set point theory concerns a regulatory feature in humans which is located in the hypothalamic area of the brain. This particular portion of the brain apparently makes adjustments based upon caloric intake, working in much the same way as a room thermostat works. When temperatures rise, the thermostat shuts off the heat supply in order to maintain a constant temperature; when temperatures drop, the thermostat cuts in to reverse the heat supply. The set point seems to be sensitive to changes in caloric intake in order to defend "pre-dieting" body weight (Martin & Mullen, 1987). The set point theory was demonstrated by Sims (1976) in a study using

conscientious objectors. Subjects exposed to a semistarvation diet regained their former weight levels once normal feeding was resumed, and subjects fed a hypercaloric diet typically returned to their former weight levels after termination of the experiment (Sims, 1976).

Homeostasis or the maintaining of the body's constant internal environment may work during phases of overeating and undereating. Regarding the set point, the obese can raise the body weight set point with a high-fat diet and can lower it through exercise (Donahoe, Lin, Kirschenbaum, and Keeseey, 1984; Stunkard, 1984).

The energy deficit theory assumes that obese subjects have defects in the thermic effect of food (TEF) and with adaptive thermogenesis (AT). When a meal is consumed, the obese burn fewer calories from the digestion and absorption of food than do lean individuals (Hill, Heymsfield, McMannus, & DiGirolamo, 1984). The obese may have a blunted response to environmental cold or heat (AT). Exercise has been known to counteract these deficits (Nieman, 1986).

Based upon these data, it is little wonder that obese subjects are at best fighting a difficult and relentless battle when weight losses and weight control are desired. Although the physiology and psychology of obesity is complex, this does not imply that the condition of obesity cannot be affected by treatment (Van Itallie, 1986).

Part of a successful treatment program lies in the reduction of dietary fat. Most Americans can afford to buy highly palatable, calorically-concentrated foods conveniently. Fat contains more than twice the number of calories per gram compared to protein and carbohydrate (US Public Health Service, 1988). Reducing fat intake

may also help reduce the risk of heart disease and certain cancers, including those of the breast, bowel, prostate and uterus (Keys, 1980).

Although diet is certainly a major factor in the disorder of obesity, physical inactivity also plays a significant role in its development (Katch, Martin, & Martin, 1979; Mayer, Roy, & Mitra, 1956; Nash, 1987; Oscai, Babirak, Dubach, McGarr, & Spirakis, 1974; Ravussin et al., 1988). Expressed in terms of heat production (thermogenesis), exercise "is a powerful thermogenic stimulus" (Garrow, 1986b, p. 64). Endurance athletes consume about 5000-6000 calories per day, yet have a decided tendency toward leanness (Franklin & Rubenfire, 1980). Exercise, in combination with mild caloric restriction, may enhance the maintenance of lean body mass, reverse the drop in metabolic rate, utilize body fat stores, and improve the negative psychological effects of obesity (Brownell, 1982).

The reasons why some individuals are obese despite low caloric intake while others whose caloric intake is high remain thin are unclear (Danforth, 1985). It was not considered unusual to link gluttony and overindulgence as the only significant factors involved in human weight gain (Forbes, 1984). If the problems of obesity were that simple, the intake of fewer calories should result in weight loss. Since many obese individuals who diet fail to lose weight, researchers have generally concluded that dieting alone does not work. According to Franklin and Rubenfire (1980), "treatment relying chiefly on caloric restriction alone is successful in as few as 5 percent and probably no more than 20 percent of all cases" (p.1).

Researchers have determined that obesity is associated with many factors: resting metabolic rate (Ravussin, Burnand, Schutz, &

Jequier, 1982; Ravussin, Lillioja, Knowler, Christin, Freymond, Abbott, Boyce, Howard, & Bogardus, 1988); hypothalamic control (Nash 1987); brown adipose tissue (Himms-Hagen, 1979; 1984); genetics (Nash, 1987; Price, Cadoret, Stunkard, & Troughton, 1987; Roberts, Savage, Coward, Chew, & Lucas, 1988); exercise, eating patterns, and overeating (Katch et al., 1979; Mayer, et al., 1956; Nash, 1987; Oscai et al., 1974; Ravussin, et. al, 1988); hormonal influences (Danforth, 1985; Glass, Burman, Dahms, & Boehm, 1981; Nash, 1987); body image (Wright & Whitehead, 1987); and environment or socioeconomic status (Buskirk, 1974). Thus a more comprehensive and complex view of obesity has been developed. Several theories and factors that are associated with obesity are summarized in Table 1.

While most researchers agree that the theories and factors associated with obesity are multi-dimensional, one aspect concerning the physiology of weight control remains stable: when energy intake consistently exceeds energy expenditure weight gain occurs (Gotto, Vertes, & Jackson, 1980). As indicated by Hirsch and Leibel (1988), obesity "always results from an imbalance of food intake and caloric expenditure" (p. 509). Danforth (1985) simplified the equation, stating that energy in minus energy out equals energy stored. The law of thermodynamics indicates that a weight loss occurs when more calories are burned than are consumed (Hirsch and Leibel, 1988).

Medical Consequences of Obesity

Research has determined that obesity contributes to numerous health problems. Experts have associated obesity with various health

Table 1: Theories and Factors that Contribute to Obesity

GENETIC THEORY	Offspring from two obese parents have an 80 percent chance of becoming obese compared to no more than 14 percent for those of normal weight parents (Mayer, 1965).
DIETARY FAT THEORY	It has been well established that lean rats can be fattened with a varied, highly palatable, calorically concentrated diet (Sclafani, 1984)
FAT CELL THEORY	Overfeeding during infancy or adulthood may lead to fat cell hypertrophy (enlargement of existing fat cells) or hyperplasia (development of new fat cells). Fat cell hyperplasia is a one-way street: once created they are virtually impossible to remove (Askew et al., 1975).
SET POINT THEORY	The body is remarkably resistant to changes in caloric intake. Subjects who underwent a semi-starvation diet gained weight back to original levels when normal feeding was resumed and subjects fed a hypercaloric diet typically returned to their former levels after the experiment terminated (Sims, 1976).
ENERGY DEFICIT THEORY	Studies have shown that obese subjects have defects in the thermic effect of food (TEF). When a meal is consumed, obese individuals burn fewer calories from the digestion and absorption of food than do lean individuals (Hill et al., 1984).
BROWN FAT METABOLISM	Obese people may have defects in brown fat metabolism, which is involved with heat production in mammals. If heat production (thermogenesis) does not occur at a normal rate, fewer calories are burned (Bray, 1983; Himms-Hagen, 1979; 1984).
BASAL METABOLIC RATE	The resting energy expenditure (amount of energy from all of the chemical reactions of the body) is lower in the obese than in the non-obese (Ravussin et al., 1982; Ravussin et al., 1988).
HYPOTHALAMIC CONTROL	Removal of the ventromedial hypothalamus (VH) produces an insatiable craving for food in rats, resulting in obesity. Defects in the VH are rare in humans.
BODY IMAGE	Obese people may have a distorted body image which can exacerbate their existing condition (Wright & Whitehead, 1987).

problems: coronary heart disease (Nash 1987; Pollock et al., 1984); hypertension (Van Itallie, 1985; White & Schroeder, 1981); breast and endometrial cancer (Frankle & Yang, 1988); pulmonary stress (Whipp & Davis, 1984); adult onset diabetes mellitus (Frankle & Yang 1988; Kreitzman, Pedersen, Budell, Nichols, Krissman, & Clements, 1984; Maugh, 1982; Nash 1987; Pollock et al., 1984; Sims 1980; Van Itallie, 1985; White & Schroeder, 1981); renal dysfunction (Dawber, 1980; Kannel & Gordon, 1979; Van Itallie, 1979); abnormal blood lipid profiles (Van Itallie, 1985); gallbladder disease (Leijd, 1980); surgical risk (Van Itallie, 1979); organ compression from adipose tissue (Katch & McArdle, 1983); osteoarthritis (Gotto et al., 1980); heat intolerance (Katch & McArdle, 1983); hampered efforts in acceleration and braking body movements (Buskirk, 1974); sexual problems (Gotto et al., 1980); psychosocial trauma (Allon, 1973; 1979; Gotto et al., 1980; Staffieri, 1967); and premature mortality (Garrison & Castelli, 1985). As Table 2 shows, five of the ten leading causes of death in the United States in 1987 were related to diet.

Appropriate program guidelines for safe and effective weight-loss maintenance and dietary modification have been established (American College of Sports Medicine, 1983; Brownell, 1984; Marston & Criss, 1984; Select Committee on Nutrition & Human Needs, 1978; U.S. Department of Agriculture and Department of Health, Education, and Welfare, 1980; U.S. Public Health Service, 1988; and Weinsier et al. (1984). Recent advances in surgery, very-low-calorie-diets (VLCD) and behavior therapy (Stunkard, 1984) and the combination of diet, exercise, behavior modification, and social support (Stunkard, 1984;

Table 2: Estimated Number and Percentage of Total Deaths for the 10 Leading Causes of Death: United States, 1987

Rank	Cause of Death	Estimated Number	Percentage of Total Deaths
1*	Heart diseases (Coronary heart disease) (Other heart disease)	759,400 (511,700) (247,700)	35.7 (24.7) (11.6)
2*	Cancers	476,700	22.4
3*	Strokes	148,700	7.0
4	Unintentional injuries (Motor vehicle) (All others)	92,500 (46,800) (45,700)	4.4 (2.2) (2.2)
5	Chronic obstructive lung diseases	78,000	3.7
6	Pneumonia and influenza	68,600	3.2
7*	Diabetes mellitus	37,800	1.8
8	Suicide	29,600	1.4
9	Chronic liver disease and cirrhosis	26,000	1.2
10*	Atherosclerosis	23,000	1.1
. . .	All causes	2,125,100	100.0

*Causes of death in which diet plays a part.

Source: National Center for Health Statistics, 1988.

Weinsier et al. (1984) have led to some improvement in maintenance success rates for weight loss. Treatment approaches are summarized in Table 3.

In spite of the physiological and psychological problems that are associated with obesity, the results from treatment are likely to be ineffective. Clients who attempt to lose weight for health or cosmetic reasons are often initially successful at losing weight; however, only a small percentage of these clients are able to maintain their goal weight after two years (Gurin, 1989; Leibel & Hirsch, 1984). In this "thin" society, obese individuals may feel persecuted. Weight control programs are able to then capitalize on the psychological as well as the physiological weaknesses of obese women more than men (Weaver, 1988; Willis, 1982; Willis, 1984; Willis, 1985). Health professionals, weight control centers, and physicians alike are frequently unsuccessful in the long-term treatment of obesity, and high attrition rates are found in commercial weight control programs (Volkmar, Stunkard, Woolston, & Bailey, 1981; Wing & Jeffery, 1979; Schifter & Ajzen, 1985; Bjorvell & Rossner, 1986). It is important to question the treatment efficacy of various weight control centers.

Weight-Loss as an Industry

Weight reduction treatment programs have developed into multimillion-dollar industry (Howely & Franks, 1986; Popkess-Vawter, 1982; Toufexis, 1986; Vasselli, Cleary, & Van Itallie, 1983), perhaps even a multibillion-dollar industry Weaver (1988). Increased consumer spending for weight control programs and services, low-

calorie foods, and over-the-counter appetite suppressants is likely to continue.

Table 3: Classifying Obesity and Treatment Approaches

	CLASSIFICATION OF OBESITY		
	MILD	MODERATE	SEVERE
Percent Overweight*	20-40	41-100	>100
Percent of Prevalence	90.5	9.0	0.5
Complications	Uncertain	Conditional	Severe
Treatment	Behavior therapy (diet, exercise, behavior modification)	VLCD and behavior therapy**	Gastric surgery

* Among obese women only

** Very-low-calorie-diet only under medical supervision

Source: Stunkard, 1984

Treatment of Obesity

Because of its heterogeneous nature, obesity has been treated in a number of ways, ranging from dietary alterations and physical exercise programs, to behavior modification. Organizations such as the American College of Sports Medicine (1983), American Heart Association (1985), and American Heart Association (1986) have issued position statements intended to establish standards for professional weight control programs. Nonetheless, some programs, including those which employ pharmacological and surgical methods, reach far beyond the scope of the proposed standards. The research shows that diet, exercise, and behavior modification produce the most effective results for individuals who want to lose weight and maintain weight. According to Weinsier et al. (1984) these "three components are interrelated, interdependent and mutually supportive" (p. 865). Each of these areas is reviewed as follows.

Diet and Weight Control

The use of dietary methods to control weight continues to be an important area of concern. Health professionals and consumers alike are looking for answers that might improve the treatment outcome of obesity. This statement is based supported by the fact that Americans spend billions of dollars on weight loss programs, products, and services (Weaver, 1988).

Several professional organizations have suggested dietary or fitness related guidelines that specifically address the problem of obesity. One such organization, the American College of Sports Medicine (ACSM) has gained widespread support from professionals in

the field of weight-loss. In agreement with the principles proposed by the ACSM, Weinsier et al. (1984) have suggested that each dietary program should:

- 1) satisfy all nutrient needs except energy,
- 2) be acceptable to meet individual tastes and habits,
- 3) minimize hunger and fatigue,
- 4) be readily available and socially acceptable,
- 5) favor establishment of a lasting pattern of eating, [and]
- 6) be conducive to improvement of overall health. (p. 866)

Whether these guidelines are followed by all programs within the industry has not been carefully documented. For example, some programs impose regimens composed of mixed hypocaloric and high bulk complex carbohydrate diets, while others have very low calorie diets (VLCD) (Weinsier et al., 1984). While it is beyond the scope of this study to elaborate on the efficacy of specific diets, it is important to mention that clients of weight control programs should know about the hazards of fad diets that compromise nutritional quality and quantity at the expense of weight loss (Bray, 1969; Fisler, Drenic, Blumfield, & Swendseid, 1982; Genuth, 1979; Kreitzman et al., 1984; Wadden, Stunkard, Brownell, & Van Itallie 1983). For a comprehensive understanding of the physiology of various diets see Weinsier et al. (1984).

It is recommended that the VLCD be used only under medical supervision and only for those who are over 40 percent overweight because the risk of orthostatic hypotension, constipation, diarrhea, headaches, hair loss, potassium loss, and other problems may

outweigh the benefits of weight loss (Wadden et al., 1983; Wilson & Lamberts, 1979). The VLCD can also cause loss of bone mineral, which apparently is not regained once normal weight is achieved (Gotto et al., 1980).

Dietary Cyclic Effect. An additional effect of dieting is that it is cyclic. The implication of going "on" a diet is that the individual will subsequently go "off" the diet, with the distinct possibility of regaining the weight previously lost (Gotto et al., 1980). This on-and-off cycle has been called the "yo-yo" diet, the "fast-feast" cycle, or even the "rhythm method of girth control" (Brownell, 1988; Popkess-Vawter, 1982). With each repeated cycle, weight is regained more rapidly than after previous dieting. In one study (Pollock et al., 1984), a group was allowed to gain weight, followed by a diet to achieve normal weights. When the feast-diet cycle was repeated, the weight gain was quicker in comparison to the controls who were not exposed to this treatment.

When dietary restriction is used alone to treat obesity, only 5 to 20 percent of the obese subjects lose weight and keep it off, and no one diet has been found to be better than others in its long-range results (Franklin & Rubenfire, 1980; Weinsier et al., 1984). Leibel and Hirsch (1984) found that among subjects who lost about 30 pounds or more, less than 3 to 5 percent were able to maintain this loss for more than 2 years.

The exclusive and aggressive use of dietary restrictions for weight management is contraindicated, except in cases of the severely obese. Moreover, the severely obese, in addition to dietary restriction,

should follow a program of behavior modification so that once the weight is lost, changed dietary and exercise habits will help to maintain the loss (Stunkard, 1984; Holli, 1988).

Exercise and Weight Control

Physical exercise is probably the most effective means to influence energy expenditure in favor of weight loss. Expressed in terms of heat production (thermogenesis), "physical exercise is a powerful thermogenic stimulus and is enjoyable to many people" (Garrow, 1986b, p. 64). Indeed, endurance athletes consume from 5000 to 6000 calories per day while continuing to maintain a lean body composition (Franklin & Rubenfire, 1980). Behavior therapy experts have come to believe that exercise may play a greater role in the treatment of obesity than once realized, since exercise may suppress appetite, minimize the loss of lean tissue, and improve psychological functioning, i.e., stress-related eating, self-esteem, and reduced depression (Brownell, 1982; Thompson, Jarvie, Lahey, & Cureton, 1982). Thompson et al., 1982 stated:

Most dietary surveys fail to show that obese people eat more than lean people, but there is quite a lot of evidence that obese people are less active than lean ones. Thus it is logical to treat obesity by increasing activity, rather than restricting food intake. (p. 56)

Exercise and Body Composition. Pollock et al., (1984) reviewed 10 studies in which males in a 20-week walking program, averaging 31 minutes per session, 2.9 times per week, experienced an average body fat loss of 1.29 percent. Subjects that exercised 3 or more times

per week had a more pronounced fat loss (1.8 percent) than those who exercised for 2 times per week or less (0.1 percent). These training programs reflected an average lean body tissue gain of 0.8 kg. Based upon the assumption that the threats to internal and external validity of the data were controlled, the study showed that men who walk 3 times per week for 30 minutes or more can preserve or increase their lean body mass while decreasing their body fat percentage. This finding clearly demonstrates the advantage of endurance training over dieting since an increase in muscle mass results in a higher metabolic rate. Fat is less metabolically active than muscle; therefore, caloric requirements from dieting alone result in no needed increase in energy intake. Similarly, when dieting is drastic (below 1000 calories for normal adults), energy requirements may actually decrease due to the loss of nitrogen (Bray, 1969; Fisler et al., 1982; Genuth, 1979; Weinsier et al., 1984; Wilson & Lamberts, 1979).

Controversy does exist concerning the effects of exercise on resting metabolic rate (RMR). Some professionals have found that exercise reverses the drop in resting metabolic rate (Brehm, 1988; Mole, Stern, Schultz, Bernauer, & Holacomb, 1989) while others have found that it has no effect (Nieman, 1988). However, there is more evidence presented in favor of exercise for the treatment of obesity (Belko, VanLoan, Barbier, & Mayclin, 1987; Brownell, 1984; Franklin & Rubenfire, 1980; Marston & Criss, 1984; Nelson, Anderson, Gastineau, Hayles, & Starnes, 1973; Pate & Blair, 1983; Sims, 1980; Popkess-Vawter, 1982; Weinsier et al., 1984). Belko et al. (1987) found that weight loss due to fat was higher in a moderate energy

intake plus exercise group than it was for a low energy intake without exercise group. This finding was supported by findings of the American College of Sports Medicine (1978; 1983). Having a higher lean-to-fat ratio improves basal metabolic rate. Thus exercise, directly (during exercise) and indirectly (following exercise), enhances weight loss even at rest by helping the body utilize more calories.

The issue which remains to be resolved is how the metabolic rate is affected by the timing of exercise and meals. A study by Willcutts, Wilcox, and Grunewald (1988) showed that exercise prior to a meal may elevate resting metabolic rate to a higher degree in lean individuals than in obese individuals. It was found that both groups in the study consumed more free fatty acids with premeal exercise.

Legwold (1982) found that among 35 obese women on a 1200 calorie diet, those who exercised for 30-minutes in the morning for 12 weeks experienced a greater weight loss (15 pounds average) than those who exercised prior to dinner (10.6 pounds average) for the same duration and time period. Stamford (1989) suggests exercising vigorously before eating and mildly after eating to maximize the thermic effect of food, caloric expenditure and weight loss.

Problems With Exercise. One problem with the application of only a program of exercise therapy for the treatment of obesity is that it is difficult to evaluate (Wing & Jeffery, 1979):

Few investigators have attempted to produce weight loss through exercise alone and exercise presents particularly difficult evaluation problems (e.g. measuring the energy cost of physical activity and accounting for changes in body composition). Nevertheless, there is

currently little convincing reason to favor increased energy expenditure over decreased intake as a weight-loss method. A combination approach should be considered. (p. 272)

Another problem is that obese individuals who enroll in exercise programs may tend to drop out. Pate and Blair (1983) asserted that worksite fitness programs reach only 20 percent of the target population and within 6 months experience a 50-percent attrition rate. Dishman (1982) found that those individuals who would benefit most from exercise fail to participate. Morgan and Goldstein (1987) concluded that "adherence rates in exercise programs vary widely from high to low but typically, 50 percent of participants will drop out within three to six months" (p. 157).

Gillett (1988) reported an exceptionally high (94 percent) exercise adherence of overweight women in a 16-week dance class, observing that the critical factors included:

group homogeneity, carpooling, social networks, pleasurable feeling associated with increased energy and fitness, leader with a health-related background, time limitations of exercise program, commitment to an established goal, desire to change body image, and desire to change health status and improve physical health. (p. 25)

Franklin (1984) concluded that although there are factors that can improve observance of regular exercise programs, including group activities that are varied, recreational, fun, and give the client a feeling of personal success, the majority of studies report poor adherence to exercise programs.

Problems with exercise in the treatment of obesity can also be related to the type of obesity present. Hypertrophic (enlarged fat cell) obesity is seemingly more easily treated than hyperplastic (increased fat cell numbers) obesity. Pollock (1984) studied obese subjects who performed high intensity exercise, 45-minutes, 3 times per week, for 6 months. Results showed a reduction of body fat for hypertrophic subjects (6 kg average reduced fat cell weight); but no change in body fat for subjects. In studies examined by Pollock, hypercellularity did not allow for body fat reduction despite increasing the duration of cycle ergometry. In fact, subjects with too many fat cells, particularly in the case of the severely obese, may experience a weight gain from exercise therapy.

Weight reduction can occur in cases of hyperplastic obesity but the weight loss may be attributed to reduction in fat cell size rather than to reduction in fat cell numbers (Katch and McArdle, 1983). Hyperplastic individuals cannot reduce the number of fat cells. However, it is the size of the fat cell and not the number that is associated with medical risks (Sjostrom, 1980). This means that hyperplastic individuals can benefit from weight loss, even though by accepted standards they may be overweight. The understanding and acceptance of these aspects of hyperplasia may serve to alleviate some of the psychological stress of obesity (Nieman, 1986).

In summary, regular aerobic exercise can be beneficial to both hypertrophic and hyperplastic obesity, barring adherence problems. This is particularly true when combined with sound dietary principles and a program of behavior modification. Caution has been advised in

the application of exercise programs alone as a means to control weight in the case of the severely obese (Garrow, 1986a).

Although exercise is most important in the normal range of body weight (up to $W/H^2=25$) it becomes less important with increasingly severe obesity. Above $W/H^2=40$ obese patients are incapable of exercising enough to affect energy balance or body composition significantly. (p. 72)

While it is important to remember that diet and exercise combined are important components in the treatment of obesity, the maintenance of weight loss would not be lasting without adequate utilization of behavioral strategies.

Behavioral Strategies

Since the early 1970s, behavioral strategies have been used to control weight. Among the methods developed are self-management training (Hall, Hall, Borden, & Hanson, 1973); stimulus control and self-monitoring (Gotto et al., 1980); self-control procedures (Romanczyk, Tracey, Wilson, & Thorpe, 1973); self-help groups and family support (Brownell, Heckerman, Hayes, & Monti, 1978; Frankle & Yang, 1988; Pearce, LeBow, & Orchard, 1978); contingency contracting and covert conditioning (Gotto et al., 1980); cognitive restructuring (Weinsier et al., 1984); monetary contracts (Jeffery, et al., 1978; Romanczyk et al., 1973); aversive conditioning as opposed to reinforcement of weight loss (Abramson, 1973; Romanczyk et al., 1973); relaxation training (Romanczyk et al., 1973); problem solving (Black, 1987); and relapse prevention (Brownell, Marlatt, Lichtenstein, & Wilson, 1986). Significant weight loss may be

achieved when a variety of these behavioral approaches are combined. Self-monitoring applied by itself has the ability to produce substantial weight loss (Romanczyk et al., 1973). Table 4 presents a comprehensive summary of the behavioral treatment of obesity, and Table 5 presents a model for clients desiring behavioral change.

Problems with Behavior Therapy.

There are conflicting views about the efficacy of behavior modification as a means of weight control. One investigator suggested that obese subjects who volunteer for studies "may represent a subpopulation who can lose weight easily" (Currey, Malcolm, Riddle, & Schachter, 1977). Thus, unreliable results may have been obtained from the application of improper methodology. Furthermore, calculating mean weight loss or average weight loss per week is no guarantee of long-term program success. Despite these problems, researchers concluded that behavior therapy produced the best weight loss maintenance in comparison to diet or exercise programs singularly applied (Frankle & Yang, 1988; Wing & Wing, 1979).

Advances in behavioral medicine for the treatment of obesity have led to the development of improved methodology, which indicates promising results. Ferguson (1988) has offered a comprehensive 21-week program which includes sessions on habit awareness and home decolorization, cue elimination and on being active, and three maintenance sessions, including coverage of behavior chains, the act of eating, pre-planning, eating out, dealing with feelings, stress, couples, behavioral analysis and problem solving, living

Table 4: Behavioral Guidelines for Weight Loss

STIMULUS CONTROL

1. Shopping
 - a. Shop for food after eating
 - b. Shop from a list
 - c. Avoid ready-to-eat foods
 - d. Don't carry more cash than needed for shopping list
2. Plans
 - a. Plan to limit food intake
 - b. Substitute exercise for snacking
 - c. Eat meals and snacks at scheduled times
 - d. Don't accept food offered by others
3. Activities
 - a. Store food out of sight
 - b. Eat all food in the same place
 - c. Remove food from inappropriate places
 - d. Keep serving dishes off the table
 - e. Use smaller dishes and utensils
 - f. Leave the table immediately after eating
4. Holidays and Parties
 - a. Drink fewer alcoholic beverages
 - b. Plan eating habits before parties
 - c. Eat a low-calorie snack before parties
 - d. Practice polite ways to decline food
 - e. Don't get discouraged by an occasional setback

EATING BEHAVIOR

- a. Put fork down between mouthfuls
- b. Chew thoroughly before swallowing
- c. Prepare foods one portion at a time
- d. Leave some food on the plate
- e. Pause in the middle of the meal
- f. Do nothing else while eating (i.e., read, watch television)

REWARD

- a. Solicit help from family and friends
- b. Help family and provide this help in the form of praise and material rewards
- c. Utilize self-monitoring records
- d. Plan specific rewards for specific behaviors

SELF-MONITORING

Keep diet diary that includes:

- a. Time and place of eating
- b. Type and amount of food
- c. Who is present/How you feel

Table 4. continued

NUTRITION EDUCATION

- a. Use diet diary to identify problem areas
- b. Make small changes that you can continue
- c. Learn nutritional value of foods
- d. Decrease fat intake: increase complex carbohydrates

PHYSICAL ACTIVITY

1. Routine Activity
 - a. Increase routine activity
 - b. Increase use of stairs
 - c. Keep a record of distance walked
2. Exercise
 - a. Begin a very mild exercise program
 - b. Keep a record of daily distance walked each day
 - c. Increase the exercise very gradually

COGNITIVE RESTRUCTURING

- a. Avoid setting unreasonable goals
- b. Think about progress, not shortcomings
- c. Avoid imperatives like "always" and "never"
- d. Counter negative thoughts with rational statements

Sources: Brownell, 1979; Brownell & Copeland, 1980; Ferguson, 1975; Mahoney & Mahoney; 1976.

Table 5: General Model for Making Behavior Changes in Clients

Step	Activity
1	Desire to change
2	Analyze history of problem
3	Record current behavior
4	Analyze current status
5	Set long-term goal
6	Set short-term goal
7	Sign contract with friend(s)
8	List many possible strategies to be used
9	Select one or two strategies to be used
10	Learn new coping skills
11	Contact helper regularly
12	Outline potential maintenance problems after goal is reached
13	Learn new coping skills
14	Contact helper periodically

Source: Howley and Franks, (1986)

in the world, personal goals, snacks, and cues and holidays. If this comprehensive approach has a weakness, it is that no studies have been conducted to demonstrate the program's effectiveness in weight maintenance.

Perri et al., (1988) evaluated four posttreatment long-term weight control programs for 123 mildly to moderately obese adults, who were under four experimental conditions:

- 1) Behavior therapy plus a posttreatment therapist-contact maintenance program;
- 2) Behavior therapy plus posttreatment therapist-contact plus a social influence maintenance program;
- 3) Behavior therapy plus posttreatment therapist contact plus an aerobic exercise maintenance program; or
- 4) Behavior therapy plus posttreatment therapist contact plus both the aerobic exercise and social influence maintenance. The research concluded after an 18-month follow-up evaluation that all four conditions that combined behavior therapy with posttreatment maintenance yielded significantly greater long-term weight losses than behavior therapy alone" (p. 529).

A group of obese volunteers subjected to behavior therapy plus aerobic exercise (80 minutes per week) achieved a significantly greater weight loss than those who received behavior therapy alone (Perri et al., 1986). After "an 18-month follow-up period, maintenance program participants had significantly greater weight loss progress than the no-contact group" (p.670).

Kirschenbaum (1988), has urged the application of comprehensive behavioral treatment in programs of weight control.

The researcher designed a cognitive behavioral approach composed of the latest findings in scientific literature. This program was called People-At-Risk (PAR) which included:

behavioral contracting, stimulus control, self-monitoring, planning, goal setting, problem-solving, cognitive restructuring, and relapse prevention, supported by an extensive handbook and more than 80 handouts (p. 5).

In Kirschenbaum's PAR program, about 70 percent of the 134 cases were assigned to group treatment, while 24 percent were assigned to individual treatment, and 6 percent were excluded from treatment. The duration of treatment was dependent upon the amount of weight that a client needed to lose. If the loss goal was 50 pounds, the duration of weekly treatments was 1 year; for loss goals of 100 pounds, the duration of weekly sessions was 2 years. An average of 46 pounds was lost and marked behavioral changes were achieved by those who remained in group treatment for at least 3 months. On the other hand, 55.6 percent did not lose significant amounts of weight and a 19.2 percent of those assigned to group treatment dropped out in four or fewer sessions. Permanent or long-term weight control data was not recorded, making assessment of the long-term effectiveness of the program difficult. In order to determine long-term effectiveness of weight control programs, especially those that have a focus on behavior change, client follow-up contact is needed.

Follow-up Contact

Follow-up contact is an important practice in weight loss programs (Janis 1982; Janis, 1983). Counselors involved with clients have the capability to use referent power to invoke behavioral changes. Increasing referent power after a face-to-face meeting terminates may involve phone calls, exchange of letters, or other forms of communication that offer future hope of contact. Giving clients reminders that encourage a personal sense of responsibility and self-confidence apparently enhance behavioral change maintenance (Janis, 1983).

Follow-up contact may help clients retain their motivation toward the treatment regimen. After terminating treatment, the client will likely need continued contact with the counselor insofar as the "client may be dependent upon the counselor" for maintaining self-esteem; the "counselor's refusal to maintain contact" may be perceived by the client as a sign of indifference or rejection (Janis, 1983, p. 150). Lack of motivation among the clients may be minimized if the counselor arranges for gradual rather than abrupt changes in contact (Janis, 1983).

A relevant study involving referent power was demonstrated in an antismoking clinic (Janis & Hoffman, 1970). The study was undertaken to determine whether clients who were exposed to high-contact partnerships would be more likely to adhere to their decision to cut down on smoking than clients in low-contact control groups. The high-contact group partnerships involved a weekly meeting with a counselor. In addition, high-contact group subjects clients were required to phone each other every other day for 5 weeks. Follow-up

interviews conducted 1 year and 10 years after the treatment terminated revealed that the high-contact group were significantly more successful in abstaining from cigarette smoking than the low-contact and control group.

Since social support and follow-up contact are suggested as an important aspect of maintaining behavioral changes, one would think that studies assessing weight loss programs would report on the nature or efficacy of follow-up contact. However, a quantitative analysis conducted by Wing and Jeffery (1979) of weight control programs applied between 1966 and 1977 revealed serious methodological weaknesses. The pretreatment weight of clients was not recorded in 30% of the studies cited, follow-up data was "woefully inadequate." In only 6 percent of the cases had a follow-up of one year or more been conducted. Azrin (1977), and Wilson (1978) stated that follow-up contact requires considerable time and effort, is unpredictable, and may be secondary to the treatment outcome. Only by carefully controlled, long-term follow-up contact with clients can weight maintenance and the potential effectiveness of behavior therapy be determined.

To assess weight loss programs using follow-up procedures on former clients, a set of questions could be used which required the subjects (administrators) to rank in order the reasons why they believed clients were either successful or unsuccessful following completion of their program. These reasons could be as follows:

1. Social support: the involvement of spouse or significant others in facilitating weight loss and maintenance (Pearce et al., 1981; Brownell et al., 1978).

2. Exercise habits: aerobic exercise (walking, bicycling, rowing) performed at 60 to 85 percent of maximum heart rate, three to five times per week, at 15 to 60 minutes per session (American College of Sports Medicine, 1978).
3. Assertiveness skills: the social skill required to be able to refuse requests; to express both positive and negative feelings in a firm and diplomatic fashion; to initiate, engage in conversation and to make personal requests known without suffering excess stress (American Psychological Association, 1985).
4. Behavior modification techniques: non-surgical, non-pharmacological set of procedures which can be used to change or modify counterproductive, inappropriate or appropriate observable human habits so that individuals can make improvements in their lifestyle (Holli, 1988).
5. Stress management: a segment of behavior modification that deals with manipulation of imaginary or real events that cause an organism to adapt. Stress management refers to how well one copes with daily hassles as well as major life events (Hamburg & Adams, 1967; Lazarus & Launier, 1978; Cohen & Lazarus, 1979; Lazarus & Folkman, 1984).
6. Dietary habits: the normal eating patterns of an individual or group of individuals.
7. Feelings of helplessness: emotions felt as a result of repeated failures (Abramson, Garber, & Seligman, 1980). Helplessness may be produced by the following attributes:

- a) internality-externality, or the feeling that one can do nothing about a given problem as opposed to feeling as though something can be done, b) stability, or the feeling that the problem will not go away no matter where one goes, and c) globality, or the feeling that if one is a failure in a given situation, then one will be a failure in every situation.
8. Lifestyle change: to implement a permanent change of personal behavior.
9. Self-image: a subjective rating of how one thinks about oneself
10. Other: respondents could write out the most appropriate answer

Summary

A review of the literature suggested that a combination of diet, exercise, and behavior modification techniques produces the best weight loss and maintenance results. One factor that is particularly important in the treatment of obesity is the aspect of follow-up contact. Contact after treatment is terminated has been known to motivate clients, bolster their self-esteem, and give them a sense of personal responsibility for maintaining treatment regimens. Follow-up contact with clients who have exited weight control programs has been inadequate or difficult to perform. These findings suggest a need for studies that attempt to determine whether or not dietary, exercise, and behavioral components are offered as well as to

determine the nature of follow-up contact that exist after clients leave the program.

CHAPTER 3

METHODS AND PROCEDURES

The purpose of the study was to (a) determine the frequency and nature of client follow-up contact and (b) compare selected components (i.e., diet, exercise, behavior modification) of weight control programs managed by registered dietitians (RDs) and nondietitians (NDs).

Subjects

Administrators of 54 weight loss programs from the Fall 1987 Oregon Dietetic Association Weight Management Resource Directory, were selected as survey subjects. Of the total number of subjects responding to the survey questionnaire, 28 were RDs and 17 were NDs.

Instrumentation

An 80-item questionnaire entitled "Follow-up Procedures Used in Oregon's Weight Control Programs" (see appendix) was designed with the assistance of the OSU Survey Research Center and reviewed by faculty in the college of Health and Human Performance. The approach reflects that recommended by the ACSM (1983). The questionnaire was organized in the following way:

1. Statements 1-6 asked the subjects to circle their response to closed ended questions such as the number of years of experience they have had in the weight control business, the average program length for each client, and the frequency of monitored physiological

measurements, including blood pressure, blood cholesterol, scale weight, and body fat.

2. Statement number 7 asked the subjects to respond to a total of 28 components that may be found in weight control programs. Fifteen components dealt with dietary programming/nutritional counseling, 4 dealt with exercise, and 9 dealt with behavior modification techniques. The subjects were asked to respond by circling either 1 (Yes, does) or 2 (No, does not) as to whether or not a given component was included in their program.

3. Statements 9 and 11 asked the subjects to respond to open ended questions such as when are clients regarded as successful or unsuccessful, respectively.

4. Statements 12, and 12a through 12e asked the subjects close ended follow-up questions such as 1) whether or not follow-up contact was conducted, 2) most important piece of information requested from clients when conducting follow-up, 3) main problem in conducting follow-up, 4) how often follow-up contact was conducted, 5) most important, second most important, and third most important reason why clients were successful, and 6) most important, second most important, and third most important reason why clients were unsuccessful. Based upon the review of literature, the subjects were asked to rank order their response to #5 and #6 above using the following list: (a) Social support, (b) Exercise habits, (c) Assertiveness skills, (d) Behavior modification techniques, (e) Stress management, (f) Dietary habits, (g) Feelings of helplessness, (h) Lifestyle change, (i) Self-image, and (j) Other.

The content validity of the questionnaire was determined by a panel of experts from the College of Health and Physical Education and from the Department of Psychology.

Data Collection

Procedures recommended by Dillman (1978) and Fink (1988), were followed. The initial questionnaire was mailed in early February 1989 thereby avoiding the holiday season. Included with the questionnaire was a cover letter explaining the purpose and importance of the research, a self-addressed return envelope, and a golf pencil with which to complete the survey.

After 4 weeks a follow-up postal card was sent to those who had not returned the questionnaire. Two weeks later, a second follow-up mailing identical to the first mailing was sent to those who still had not responded. Two weeks after that, a follow-up telephone call was made to all nonresponsive subjects, encouraging them to complete and return the survey. A total of 45 out of 54 subjects completed and returned the questionnaire.

Statistical Procedures

The data generated by the questionnaire responses were statistically analyzed using four crosstabulation procedures from a Stat Graphics Program. A chi-square analysis was the statistical tool used for the crosstabulation of the data. A significance level of $p \leq .05$ level was used. This level allowed for sufficient variation, permitting the rejection or the nonrejection of the hypotheses.

CHAPTER 4

RESULTS

The purpose of the study was to compare Oregon weight control centers managed by registered dietitians (RDs) and nondietitians (NDs) on the basis of client follow-up information and program components. A mail survey was sent to administrators of weight control centers listed in the Oregon Dietetic Association Weight Management Resource Directory. Of 54 questionnaires mailed, 45 were completed and returned which is equivalent to an 88.2 percent return rate since three of the programs were no longer in existence. Based on respondents answer to the question, "Are you a registered dietitian?" the questionnaires were divided into two groups: RDs (28, 62.2%) and NDs (17, 37.8%) and data collected was analyzed accordingly.

The data for all variables were analyzed using the Stat Graphics categorical data analysis program. The chi-square statistical method which consisted of contingency tables was used to analyze the data (see Appendix D).

The results of this study are presented and discussed under the headings:

1. Program Characteristics
2. Program Health Status Measures
3. Perception of Client Success
4. Client Follow-up
5. Statistical Analysis

Program Characteristics

Educational Preparation of Respondents The sample was comprised of 28 (62.2%) RDs and 17 (37.8%) NDs. As shown in Table 6, 20 (71.4%) of the RDs reported that the highest educational level completed was a "four-year institution." Six (21.4%) of the RDs indicated that the highest educational level was a master's degree in Dietetics, Nutrition, Nutrition/Home Economics, Nutrition and Health Education, or related field. Two RDs (7.1%) were classified in the "other" category with one completing a B.S. plus dietetic internship and the other holding a B.S. in psychology, post-baccalaureate work in clinical dietetics, and Registered Dietitian internship.

Only one (5.8%) of the NDs indicated that the highest educational level completed was "some community college or technical school beyond high school"; four (23.5%) had completed "some four year college"; and five (29.4%) had completed degree requirements at "four-year institutions." Five (29.4%) had master's degrees; one (5.8%) had a Ph.D. in Health Education; and one (5.8%) was an M.D., board certified in pediatrics.

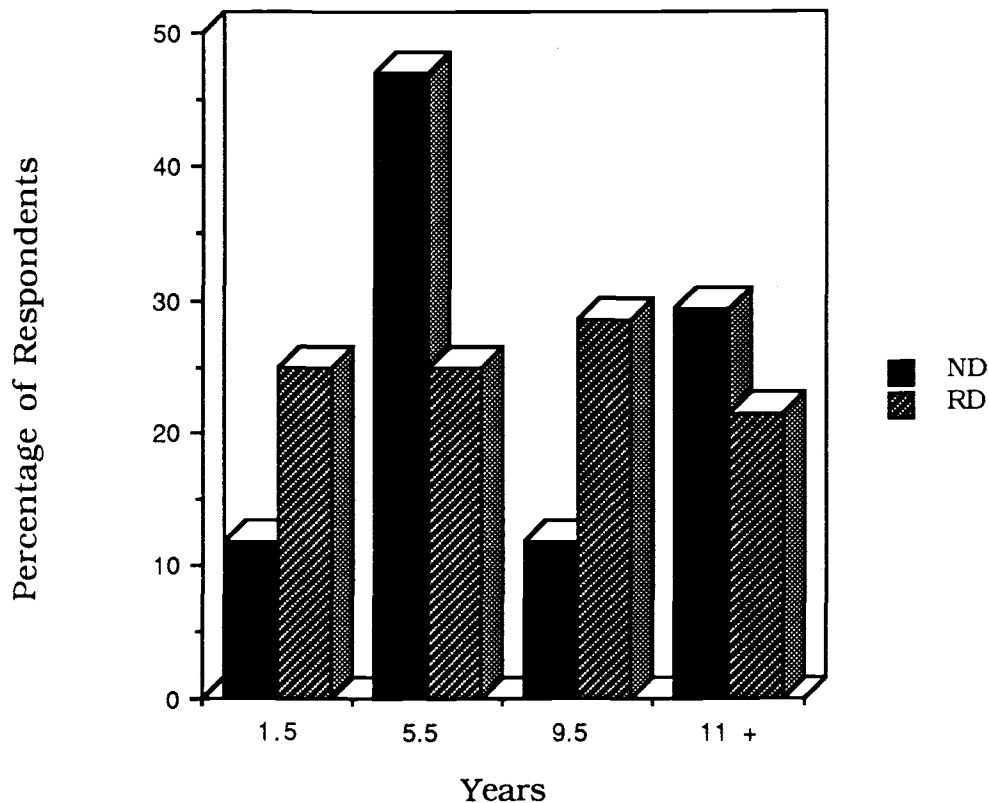
Table 6: Highest Education Levels Completed by Respondents

	<u>Registered Dietitians</u>		<u>Non dietitians</u>		<u>Total Respondents</u>	
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
Ph.D.	-		1	5.8	1	2.2
M.D.	-		1	5.8	1	2.2
Master's	6	21.4	5	29.4	11	24.4
Postbac	1	3.6	-		1	2.2
4-Year College	20	71.4	5	29.4	25	55.6
Some 4-Year	1	3.6	4	23.6	5	11.2
Comm College						
VoTech	-		1	5.8	1	2.2
Total	28	100.0	17	100.0	45	100.0

Years in Business

In response to the question, "How long has your weight control center been in business," 25 percent of the RDs indicated that their weight control center had been in business an average length of 1.5 years; 25 percent for an average of 5.5 years; 28.6 percent for an average of 9.5 years; and 21.4 percent for more than 11 years. Two (11.8%) of the NDs reported that their weight control center had been in business for an average of 1.5 years, 47.0 percent for an average of 5.5 years, 11.8 percent for an average of 9.5 years; and 29.4 percent for more than 11 years. One third of the centers were located in the Portland, Oregon area.

Figure 1: Average Length of Time Weight Control Center in Business



Length of the Weight Control Program

The length of the weight control program offered to clients, as reported by respondents, ranged from 8 weeks to 20 months. Four of the RDs indicated that their program varied in length according to client needs. One ND program offered a free lifetime weekly support group.

Program Health Status Measures

Weight loss maintenance can have noticeable changes in scale weight, blood pressure, body fat, and blood cholesterol. If these

changes are to be seen among clients they must be measured. This is the reason why program health status variables were included in the questionnaire.

Scale Weight

As shown in Figure 2, all (100%) of the RDs and 88.2 percent of the NDs reported that scale weight was measured among clients. Scale weight was taken "once every week" by 19 (67.8 %) of the RDs and 9 (53.0%) of the NDs.

Blood Pressure

Blood pressure was the second most frequent health status measure taken by RDs (39.2%). Five (17.8%) of the RDs reported that blood pressure was taken once every week and five RDs indicated that blood pressure was taken at intervals not specified by the questionnaire. Four (23.6%) of the NDs reported that blood pressure was taken once per week and four indicated that blood pressure was taken at intervals not specified by the questionnaire. Only 10 (35.8%) of the RDs and 8 (47.1%) of the NDs took this measure.

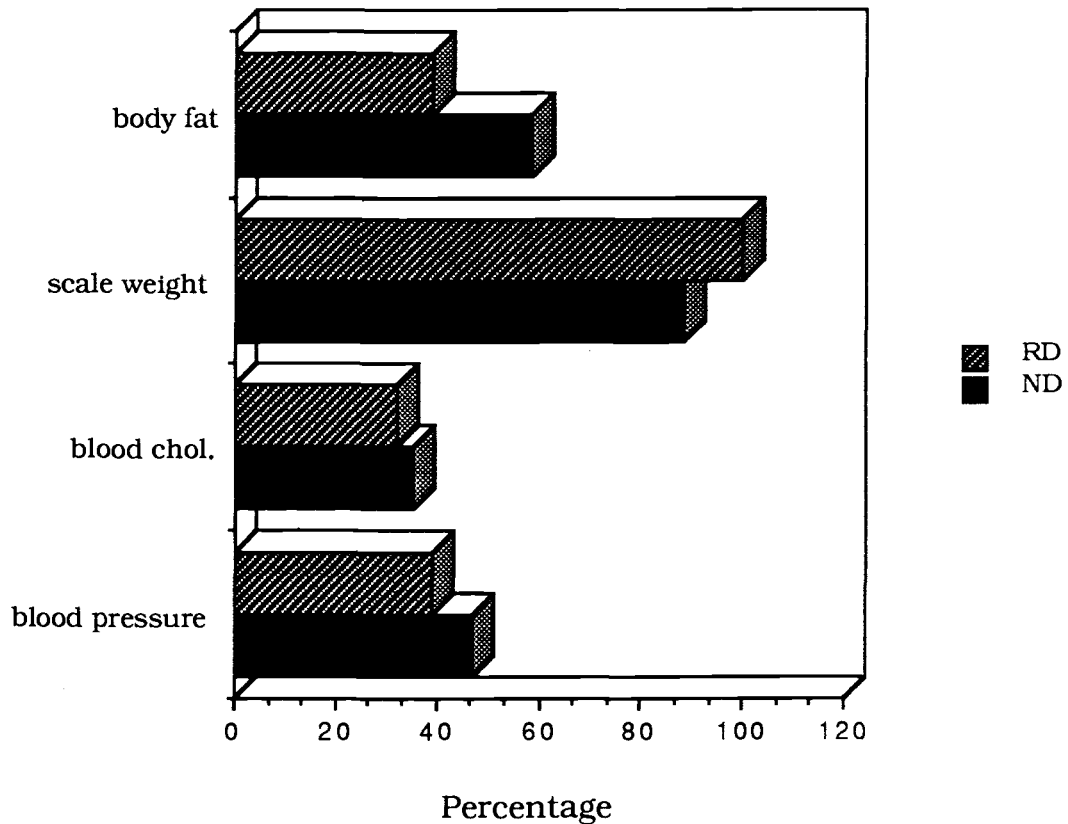
Body Fat

Body fat was the second most frequent health status measure assessed by NDs (58.8%). The most frequently used method for measuring body fat among respondents was skinfold analysis, RDs (17.8%) and NDs (23.5%). Both groups measured body fat at one of the following intervals: "once every month," "every six months," or "based upon individual needs."

Blood Cholesterol

Blood cholesterol was measured by 32.1 percent of RDs and 35.2 percent of the NDs. The majority of respondents in both groups did not have a specified interval for measuring blood cholesterol. The responses included: "once is mandatory-then as needed," "wk. 4, wk. 7, wk. 10, wk. 13, wk. 24," "every 3-6 months," "beginning of program-end of refeeding (wk. 20)," and "before program begins, after program ends."

Figure 2: Health Status Measures Taken



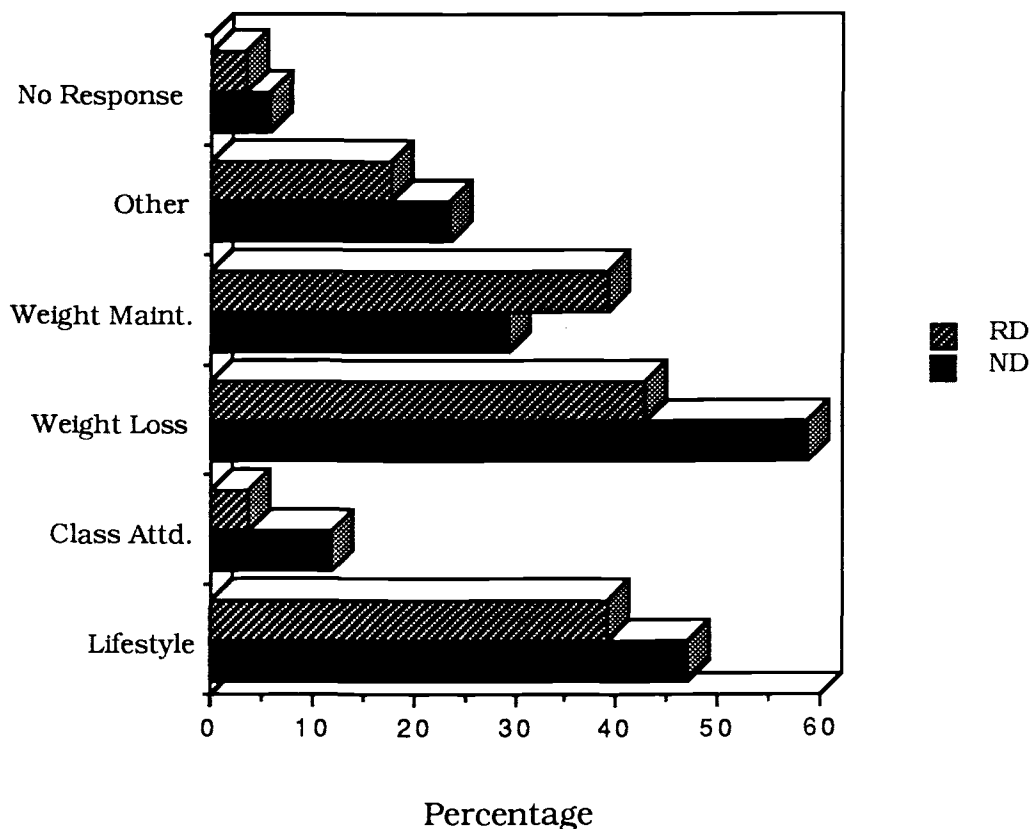
Perception of Client Success

In response to the question "When, in your opinion, are clients regarded as successful" both RDs and NDs gave multiple answers. By giving the respondents an opportunity to give multiple answers to this question, the percentage of responses will add up to greater than 100 percent.

Indicators of client success reported by RDs were: "given amount of weight loss" (42.8%); "lifestyle change" (39.2%); "attendance at all the classes or sessions" (3.6%); and "if the client maintained a weight loss for six months or greater" (39.2%). Five RDs indicated other reasons why clients could be termed successful; and one RD failed to respond to the question (Figure 3).

Indicators of success given by NDs included: "given amount of weight loss" (58.8%); "lifestyle change" (47.0%); "attendance at all the classes or sessions" (11.8%); and "maintenance of weight loss, from six months to two years" (29.4%). Four NDs indicated other reasons for client success; and 1 did not to respond to the question (Figure 3). These "other" criteria of success as indicated by both groups included: "integrate program into knowledge of self"; "when they feel good about themselves"; "varies per situation"; "staying with program structure"; "decrease in binge/purge behavior"; "decrease in weight fluctuation"; and "increase in healthy attitudes about food, weight and eating."

Figure 3: Indicators of Client Success



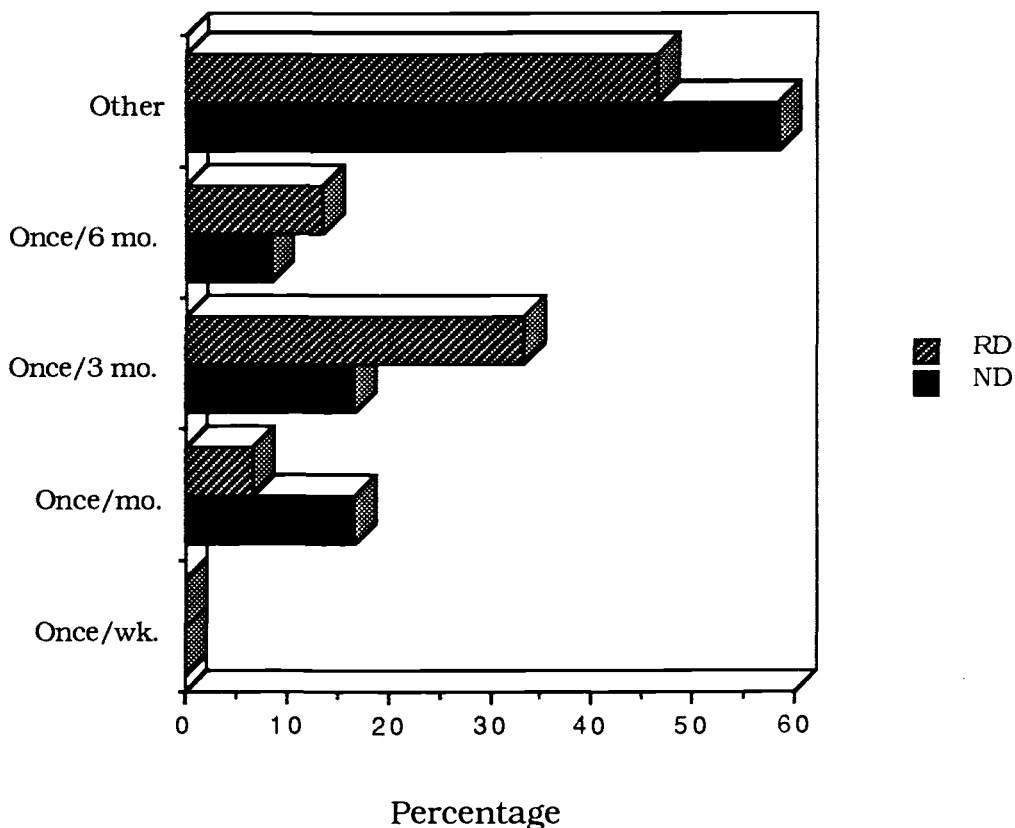
Client Follow-up

Fifteen (53.5%) of the RDs and 12 (70.5%) of the NDs indicated that follow-up contact was performed after the client left the program. Seven of the respondents answered "no" when asked if they performed follow-up, but still responded to some of the follow-up questions. Their responses were excluded from the data.

The most common response as to "how often were clients contacted" was "other" (RDs, 46.6%; NDs, 58.4%). Responses in the "other" category included: "We try to personally contact by phone when a member has been absent 3 weeks." "We contact by post card as well 2-3 times a year"; "On a sporadic basis"; "Varies"; "Annually."

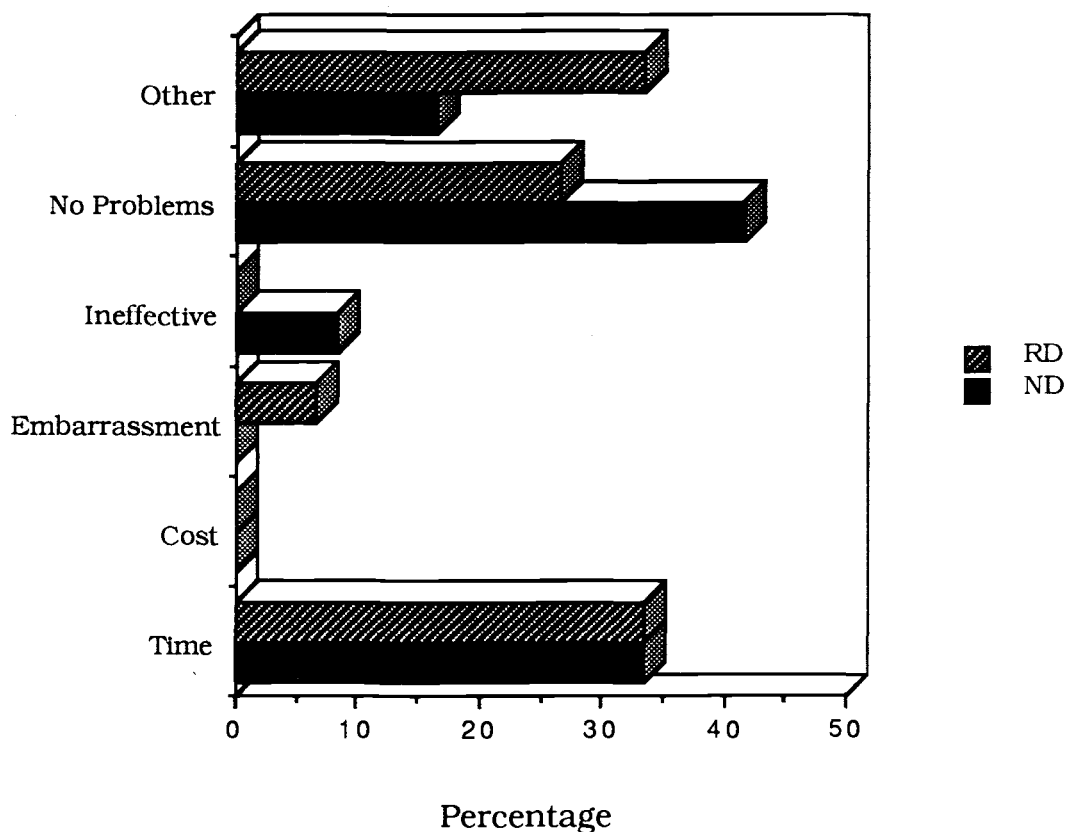
Six (17.8%) of the RDs and 5.8% of the NDs performed follow-up on a varied or sporadic schedule. Two (7.2%) of the RDs and 35.2% of the NDs performed follow-up on a regular schedule.

Figure 4: Frequency of Follow-up Contact



Five (33.4%) of the RDs and four (33.4%) of the NDs indicated that the primary problem in having staff conduct client follow-up contact was the lack of time. Four (26.6%) of the RDs and five (41.6%) of the NDs indicated that there were no problems in conducting follow-up. Figure 5 illustrates the percentage of problems perceived by both groups of respondents.

Figure 5: Perceived Problems in Conducting Follow-up



Statistical Analysis

Four crosstabulation procedures were utilized to analyze the data for each weight center administrator were analyzed according to dietary score, program attribute score, follow-up information obtained from clients, and differences between RDs and NDs. As indicated in Table 7, no Chi-square result approached the .05 level of significance. Therefore, the null hypothesis was not rejected. There were no statistically significant differences found between RDs and NDs on responses regarding:

1. Performance of follow-up contact.

2. Why clients were successful.
3. Whether or not selected dietary programs and components were offered in the total weight loss regimen.
4. Whether or not selected dietary, exercise, and behavioral components were offered in total weight loss regimen.

Hypothesis 1

No significant differences exist between selected weight control programs administered by RDs and NDs on performance of follow-up after client leaves the program. The data generated indicated that there were no statistically significant differences on the performance of follow-up between both groups. RDs did not perform follow-ups more often than did NDs. The null hypothesis was not rejected ($p \leq 0.05$).

Hypothesis 2

No significant differences exist between selected weight control programs administered by RDs and NDs on the primary reason why clients were successful after program completion. The data generated indicated that there were no statistically significant differences on the primary reason why clients were successful between both groups. RDs did not have a particular reason why clients were successful that was more common than NDs. The null hypothesis was not rejected ($p \leq 0.05$).

Hypothesis 3

No significant differences exist between selected weight control programs administered by RDs and NDs on whether or not dietary components were offered in their total weight control regimen. The data generated indicated that there were no statistically significant differences on whether or not dietary components were offered between both groups. RDs did not have more dietary components than NDs in their total weight control regimen. The null hypothesis was not rejected ($p \leq 0.05$).

Hypothesis 4

No significant differences exist between selected weight control programs administered by RDs and NDs on whether or not dietary, exercise, and behavioral components were offered in their total weight control regimen. The data generated indicated that there were no statistically significant differences between on whether or not dietary, exercise, and behavioral components were offered between both groups. RDs did not seem to offer more dietary, exercise, or behavioral components to clients than did NDs. The null hypothesis was not rejected ($p \leq 0.05$).

Table 7: Summary Statistics for Hypotheses

Hypothesis	Chi-square	D. F.	Significance
1) No significant differences exist between selected weight control programs administered by RDs and NDs on performance of follow-up after client leaves the program.	0.217	1	0.140
2) No significant differences exist between selected weight control programs administered by RDs and NDs on the primary reason why clients were successful after completing program.	2.208	1	0.137
3) No significant differences exist between selected weight control programs administered by RDs and NDs on whether or not dietary program components were offered in their total weight control regimen.	3.241	3	0.355
4) No significant differences exist between selected weight control programs administered by RDs and NDs on whether or not dietary, exercise, and behavioral components were offered in their total weight control regimen.	1.394	3	0.706

CHAPTER 5

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

Even though statistical significance was not reached, the direction of the differences needs consideration. A larger sample size could have produced statistical significance from the hypotheses tested.

Client Follow-up Performance

Analysis of the data indicated that nondietitians (NDs) appear to be more likely to perform a client follow-up than the registered dietitians (RDs) (70.5% and 53.3%, respectively). There seemed to be no specific pattern of follow-up procedures for either group.

This finding agrees with findings by Azrin (1977), Wilson (1978), Wing and Jeffery (1979), and Colvin and Crist (1983) who found that follow-up contact requires considerable time and effort, is unpredictable, is generally inadequate, and may be secondary to the treatment outcome. It would appear that long-term follow-up is not a high priority for the administrators of the weight loss programs. Only one of the RDs and two NDs reported that follow-up contact occurred one year after the clients left the program.

When the respondents were asked about the main problem in conducting follow-up, 26.6 percent of the RDs and 41.6 percent of the NDs indicated that there were no problems in conducting follow-up. This finding does not agree with prior studies (Wilson, 1978; Wing and Jeffery, 1979) and may reflect a trend suggesting that NDs may be

more confident in conducting follow-up than RDs. Conversely, NDs when compared with RDs may not want to admit problems when conducting follow-up.

The data suggest that weight control centers administrated by NDs, i.e., persons not having a college degree or those with a degree other than dietetics/nutrition may report the performance of client follow-up contact as often as RDs. Five (29.4%) of the NDs had less than 4 years of college, whereas 100% of the RDs had a 4-year college degree. This study provided no insight as to why this situation would exist. There is a lack of literature available which describes the relationship between educational levels of weight control center administrators and client follow-up contact.

Frequency of Follow-up Contact

An interesting finding is that the NDs compared to RDs reported following-up on clients more frequently and definitively as to how often clients would be contacted (35.2%, 7.2%). The implication is that the NDs compared to RDs may be more interested in weight maintenance, lifestyle change, and client follow-up contact. The data also suggests that a greater percentage of the NDs compared to RDs conducted client follow-up at one month intervals rather than at six month intervals. It seems, therefore, that NDs compared to RDs were just as conscientious about client follow-up contact. Since client follow-up seemed to be more important to NDs than RDs, one could assert that NDs could be more interested in client weight maintenance and lifestyle changes.

Primary Reason For Success

No significant difference existed between the responses of RDs and NDs as to the primary reason why clients were successful upon completion of the weight control program based upon follow-up contact. The results of the respondents approached statistical significance at the ($p \leq .10$) level. While this was not statistically significant, the most common variable selected was lifestyle change. This is noteworthy since there were nine other possible choices which could have been selected by respondents. This suggests that a majority of both RDs and NDs focus on ways to help clients realize that changes in life-long habits, and not just diets is the key to permanent weight control. The data indicate that 39.2 percent of the RDs and 47.0 percent of the NDs believed that when a client makes a lifestyle change, resulting in permanent weight loss, the client is defined as successful. The percentages suggest that NDs may be more interested, and perhaps more effective, in invoking lifestyle changes in their clients than RDs.

Other Indicators of Success.

The responses generated by the question, "When, in your opinion, are clients regarded as successful?" revealed that standards of success were loosely defined. The responses varied from: "We feel by making the choice to become healthier and starting a weight management program, our clients are successful--any weight loss maintained is success" to "When they have learned how to maintain

their desired weight for life and can intervene when they gain 2-4 pounds."

The philosophy of individual weight loss programs may be reflected in the variation of responses. For instance, one program reported a 100 percent success rate, but failed to define the meaning of success. Since the psychological effects of obesity may be as detrimental to personal health as the physiological effects, it is common for programs to emphasize client success rates and de-emphasize failures. In fact, administrators of four programs stated that client treatments were never defined as "unsuccessful"; the client was always successful for one or more of the following reasons: a) increased personal awareness or achievement of some small degree of behavioral change in spite of failure to reach a weight goal, b) any lifestyle change that would eventually promote weight management, c) trying to avoid the use of negative concepts, and d) clients found that the program didn't meet their needs.

The fact that client success was so variously defined among the RDs and NDs suggests that the standards of what constitutes success needs clarification. A definition of successful weight loss and maintenance has not been agreed upon (Colvin & Crist, 1983). Success could be defined as how well the client loses weight gradually and safely via exercise, nutrition, behavior therapy, or social support. The problem with defining success using these four variables is that it what is "appropriate" exercise, behavior therapy, or social support has not been clearly defined. Psychological studies have shown that highly motivated clients, or those who have a belief in their ability to lose weight, may be more successful than those who are not motivated or

believe they can lose weight (Brownell, 1982; Schachter, 1982b; Schachter, 1982b; Hartigan, Baker-Strauch, & Morris, 1982).

A definition of success could be based on initial weight and percentage of body fat. Certainly, it is much more difficult to drop body weight by 100 pounds and reduce body fat content from 45 percent to 25 percent than to drop 20 pounds and lose 10 percent body fat. Kirschenbaum (1988) explained that clients are advised to remain in weekly treatment for one year if they need to lose 50 pounds and for two years for a weight loss of 100 pounds. Theoretically, once the client is satisfied with the amount of weight loss, he/she should have learned how to maintain the weight loss for life. Permanent weight control needs to be the central focus of any weight loss program (Mahoney & Mahoney, 1976).

It is possible that strict standards of success for obese clients could be counterproductive as well as deleterious. Clients who believe that they must eat only certain foods, or exercise only at a certain time of the day, may fall into a perfectionist thinking trap. This type of thinking can lead to a cycle of failure, guilt, helplessness, hopelessness, and depression (Burns, 1980; Willmuth, 1986). A general standard of success based upon lowering body fat by gradually increasing aerobic activity, increasing muscle mass, and lowering fat intake may be more acceptable to both client and therapist.

Dietary Programming

In this study, no significant differences were found between RDs and NDs regarding dietary programming. This finding suggests that

RDs and NDs may have the same potential to dispense nutritional information equally well.

It would seem logical to predict that RDs would have a higher dietary programming score than NDs. RDs have the professional qualifications to design and write the appropriate diet for their clients. However, the results of this study indicate that NDs seem to offer as many appropriate dietary components to their clients. It is important to remember that this finding is based upon the responses from administrators (RDs and NDs), and not on the actual dietary program performance data.

The responses generated may reflect a bias. Because the subjects were listed in the Oregon Dietetic Association Weight Management Resource Directory, they may have felt that they needed to respond a certain way. Perhaps only through observation of actual therapist and client situations can it be clearly determined if nutritional information is dispensed equally well by RDs and NDs.

Total Program Attribute Score

Analysis of the data showed that no significant difference existed between RDs and NDs between for the total attribute score (including a behavior therapy component). This finding suggests that RDs were no more likely than NDs to offer a greater number of dietary, exercise, or behavioral components to their clients. Perhaps the administrators of programs such as Weight Watchers and TOPS (Take Off Pounds Sensibly) may have the potential to be as effective as those offered by either private clinics or hospital-based programs.

Both RDs and NDs reported that dietary habits was the most important follow-up information that they would request from clients. This response may reflect a bias in the sample, since all respondents were obtained from the Oregon Dietetic Association Weight Management Resource Directory and may have felt obligated to respond in a manner which reinforced the importance of a dietary treatment of obesity.

Health Status Measures

All of the RDs and most of the NDs (88.2%) reported that scale weight was measured; 67.8 percent of the RDs and 52.9 percent of the NDs reported that scale weight was taken once every week. These findings are not in agreement with those of other studies (Wilson, 1978; Wing and Jeffery, 1979). All of the other health status measures taken reflected higher percentages than were found in past studies, suggesting that a more conscientious effort to monitor and treat obesity is taking place.

An interesting finding is that while RDs performed scale weight more often than NDs, the NDs used more measures, (i.e., blood pressure, cholesterol, and body fat) than did RDs.

Summary

The results of this study showed that there are no statistically significant differences between registered dietitians (RDs) and nondietitians (NDs) in regards to client follow-up performance, primary reason why clients were successful, dietary programming scores, and total program attribute scores ($p \leq 0.05$).

Obesity, or having too much body fat, is associated with serious physiological and psychological problems. It affects about one out of every four adults in affluent societies. Chronic diseases associated with obesity include heart disease, cancer, and adult-onset diabetes mellitus. Obese people are often socially ostracized as early as age six and, if these attributes are carried into adulthood, they could jeopardize chances of employment and/or marriage. According to the laws of thermodynamics, individuals should lose and maintain weight by a) exercising more, b) eating less dietary fat, or c) a combination of a and b. However, contemporary theories on the development or maintenance of obesity hypothesize that this disorder is more complex than once realized. Some of the factors underlying obesity are genetic in nature, related to individual physiological conditions, or related to behaviors that favor highly palatable, calorically concentrated foods and reduced physical activity.

A vast expansion in the number of commercial treatment centers has emerged over the past few years, but the success rate for controlling obesity has not improved substantially; 95 percent of those who try to lose weight will not maintain this loss after two years (Gurin, 1989). Hence, it is questionable whether the weight loss industry as a whole adheres to effective program guidelines, defines success, or pursues effective follow-up contact with its clients. Studies have revealed that long-term follow-up contacts of two years or more require considerable time and effort, are inconsistently practiced, or are inadequate in nature (Azrin, 1977; Wilson, 1978; Wing & Jeffery 1979). Program and behavioral effectiveness cannot be

ascertained without follow-up contact. The need for this study arose from the lack data relating to client follow-up in the literature.

The purpose of this study was to gather data on client follow-up and program components/attributes of selected weight control centers in Oregon. An 80-item survey questionnaire was developed and used to compare follow-up responses obtained from weight loss programs managed by Oregon's RDs and NDs. Utilizing four crosstabulation procedures, the responses of 28 RDs and 17 NDs were analyzed on the basis of a dietary score, a program attribute score, follow-up contacts, and reasons why clients were termed successful. The four null hypotheses were not rejected ($p \leq 0.05$). There were no statistically significant differences between RDs and NDs in regards to dietary programming scores, program attribute scores, follow-up contact responses, or responses as to why clients are successful.

Conclusions

1. Based on the results of the study it appears that long-term follow-up contact among clients was not a number one priority of the weight control centers surveyed.
2. RDs did not differ significantly from NDs in terms of dietary programming scores, program attribute scores, follow-up contact, and most important reason why clients were successful. Even though statistically significant differences were not found between the groups, more NDs, than RDs reported follow-up performance, conducted follow-up at regular intervals, conducted follow-up at shorter intervals, and taking several measures of health status. With a large sample it might have been shown that NDs may supply more feedback to clients

regarding progress in weight control programs and try to obtain feedback from clients.

3. Although both RDs and NDs focus on helping clients make long-term lifestyle changes, they fail to evaluate these changes through long-term follow-ups.

Recommendations

To advance the field of weight management, studies need to be conducted which:

- 1) Establish effective client follow-up procedures.
- 2) Explore the relationship between the number of employees at weight control centers and effective follow-up procedures.
- 3) Establish the barriers to effective follow-up and determine ways to overcome these barriers.
- 4) Assess the performance difference in dietary programming and exercise prescription of RDs and NDs as related to educational preparation and background.
- 5) Develop effective motivational techniques for weight loss and the maintenance of weight loss.
- 6) Assess client attitude and behavior during weight loss and during maintenance.
- 7) Assess client attitude and behavior towards obesity and body image.
- 8) Assess the differences between successful and unsuccessful clients in the same weight control program.

9) Better define successful weight loss and the maintenance of weight loss.

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APPENDICES

APPENDIX A

COVER LETTER TO ADMINISTRATORS

The Department of
Physical Education



Langton Hall 214
Corvallis, OR 97331-3302

February 13, 1989

Dear Weight Control Professional:

I am seeking your expertise in addressing the problem of obesity. Many students are considering health related careers including weight control management. We would like to be able to tell them what is happening in weight control programs in Oregon. Published research seems to suggest that about 95 percent of those who lose weight will gain it back within 2 years. Although scientific studies provide some possible answers to the reasons why obese clients fail to maintain their weight, there are many questions that remain unanswered. Because of your "hands on" exposure to this problem, I believe that your insights would be extremely valuable.

For this reason, all weight control centers that could be identified in the Oregon Dietetic Association Weight Management Resource Directory were selected. I am asking that you spend about 10 minutes of your time to complete the enclosed questionnaire. In addition, we would like to have a **program administrator** fill out this questionnaire.

Your right to confidentiality will be assured. When the questionnaire is returned, your name will be coded with an identification number. In this manner, your name will never appear on the questionnaire. You may obtain the results by printing your name and address on the back of the return envelope (NOT on this questionnaire) under the section, "copy of the results requested." Valid results are dependent upon your completion and returning of the questionnaire. It is vitally important that the questionnaire be completed and returned **before February 24, 1989.**

Should any questions arise, please feel free to write or call as I will be happy to answer them. My telephone number is (503) 754-3719.

Thanking you in advance for your cooperation.

Sincerely,

Redacted for privacy

Ron W. Leland
Project Director

APPENDIX B
FOLLOW-UP LETTERS

Post card one week follow-up

March 13, 1989

A few weeks ago, a questionnaire concerning the follow-up procedures used in Oregon's weight control programs was mailed to you. Your name was selected from the Oregon Dietetic Association Weight Management Resource Directory.

If you have completed and returned it, please disregard this notice and accept our thanks. If not, please fill out the questionnaire and return it today. Since the sample size is small, it's important that we receive your response so that valid results can be obtained.

Should you need to complete the questionnaire again, misplaced it, or did not receive one, please call me collect (503-754-3719) today and I will quickly send another one to you.

Sincerely,

Redacted for privacy

Ronald W. Leland
Project Director

Department of
Physical Education



Langton Hall 214
Corvallis, OR 97331-3302

April 3, 1989

Dear Weight Control Professional:

About six weeks ago I sought your opinion regarding the problem of obesity. To date, we have not yet received your completed questionnaire and I feel that the mailing may have been lost in route to you.

We are encouraged by the large number of responses. But in order to describe accurate opinions we still need your completed questionnaire. Prior research indicates that those who have not yet returned the questionnaire may have significantly different perspectives about weight control compared to those who have.

Because of your "hands on" experience in helping clients lose and maintain their weight, your insights would be extremely valuable to those pursuing health related careers. The questionnaire should be filled out by a **program administrator, manager, or supervisor**. If possible, please return the questionnaire **before April 7th, 1989**.

Your right to confidentiality will be assured. When the questionnaire is returned, your name will be coded with an identification number. In this manner, your name will never appear on the questionnaire. You may obtain the results by printing your name and address on the back of the return envelope (NOT on the questionnaire) under the section, "copy of the results requested." The results should be ready for mailing in August of this year.

For your convenience, a replacement copy of the questionnaire is being forwarded with this letter. I am asking that you spend about 10 minutes of your time to complete the enclosed questionnaire.

Your cooperation is greatly appreciated.

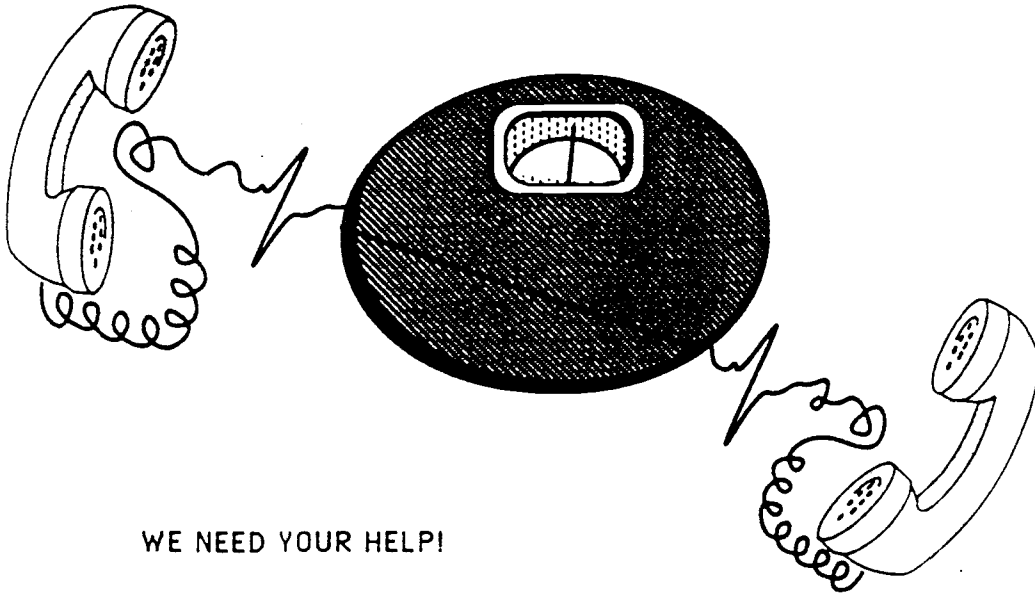
Cordially,

Redacted for privacy

Ron W. Leland
Project Director

APPENDIX C
SAMPLE QUESTIONNAIRE

FOLLOW-UP PROCEDURES USED IN OREGON'S
WEIGHT CONTROL PROGRAMS



WE NEED YOUR HELP!

We'd like to know about the follow-up strategies that you use in your weight control program. Your participation is voluntary and confidential. When you have completed this questionnaire, please seal it in the envelope provided and return it to the address below before February 24, 1989.

Ronald W. Leland, Project Director
Department of Physical Education
Longton Hall, Rm. 214
Oregon State University
Corvallis, OR 97331-

The questions below represent some of the possible attributes of weight control programs. Please read carefully each question and make the most appropriate response based upon your judgement and the directions given.

1. How long has your weight control center been in business? Please do not include the number of years your program has been established nationally. (Round off to the nearest year and circle one letter)

- A. 0-3 Years
- B. 4-7 Years
- C. 8-11 Years
- D. Over 11 Years

2. What is the length of your program? (Circle one number)

- 1 8 to 12 weeks
- 2 Until clients reach their target weight
- 3 Until clients reach their target weight plus our maintenance program
- 4 Other (Please specify _____)

3. Does your program measure the client's blood pressure? (Circle one number)

- 1 NO (SKIP NOW TO QUESTION 4)
- 2 YES

3a. How often does your program measure the client's blood pressure?
(Circle one number)

- 1 Three times per week
- 2 Once every week
- 3 Twice a month
- 4 Other (Please specify _____)

4. Does your program measure the client's blood cholesterol level? (Circle one number)

- 1 NO (SKIP NOW TO QUESTION 5)
- 2 YES

4a. How often does your program measure the client's total blood cholesterol?
(Circle one number)

- 1 Once every week
- 2 Once every three weeks
- 3 Once every six weeks
- 4 Other (Please specify _____)

5. Does your program measure the client's scale weight?

- 1 NO (SKIP NOW TO QUESTION 6)
- 2 YES

5a. How often does your program measure the client's scale weight?

- 1 Daily
- 2 Once every week
- 3 Twice a month
- 4 Other (Please specify _____)

(PLEASE GO ON TO THE NEXT PAGE)

6. Does your program measure the client's percentage of body fat? Please note that body fat is not measured by scale weight. (Circle one number)

- 1 NO (SKIP NOW TO QUESTION 7)
- 2 YES

6a. What is the most frequent method used for measuring body fat among clientele? (Circle one number)

- 1 Skinfold analysis
- 2 Hydrostatic weighing
- 3 Electrical Impedence
- 4 Other (Please explain _____)

6b. On the average, how often does your program measure body fat among clientele? (Circle one number)

- 1 Once per week
- 2 At one month intervals
- 3 At 3 month intervals
- 4 At 6 month intervals
- 5 Once a year
- 6 Other (Please specify _____)

7. The list below represents some of the possible components and/or attributes of weight control programs. Please indicate whether or not each component is included in your program. (Circle one number)

Our weight loss/control program:

	YES, <u>DOES</u>	NO, DOES <u>NOT</u>
a. Provides a caloric intake greater than 1200 calories per day for normal adults.....	1	2
b. Includes foods that are acceptable to the client's financial/economic background.....	1	2
c. Provides a reduction in calories (from the client's base-line diet) that does not exceed 500-1000 calories per day.....	1	2
d. Works without powdered drinks or pills.....	1	2

Our weight loss program: Provides nutritional counseling in the form of helping the client reduce the intake of:

e. Saturated fat intake from their diet (i.e. red meats, high fat dairy products, tropical oils, hydrogenated vegetable shortening, etc.).....	1	2
f. Salt.....	1	2
g. Table Sugar/Sucrose.....	1	2
h. Cholesterol.....	1	2
i. Alcohol.....	1	2
j. Canned/Processed Food.....	1	2

(PLEASE TURN THE PAGE)

YES, DOES
NO, DOES NOT

Our weight loss/control program:

Provides nutritional counseling in the form of helping the client increase the intake of:

- | | | |
|-------------------------------------|---|---|
| k. Fresh fruits and vegetables..... | 1 | 2 |
| l. Whole grains and pasta..... | 1 | 2 |
| m. Beans and legumes..... | 1 | 2 |
| n. Fish, poultry, tofu, tempe..... | 1 | 2 |
| o. Non-fat dairy products..... | 1 | 2 |

Assesses cardiovascular fitness by:

- | | | |
|--|---|---|
| p. 12 minute walk..... | 1 | 2 |
| q. stationary bicycle..... | 1 | 2 |
| r. treadmill..... | 1 | 2 |
| s. Includes an aerobic, large-muscle group exercise program 3 or more times per week, 20 minutes per session, minimum..... | 1 | 2 |

Includes the use of which of the following behavior modification techniques:

- | | | |
|--|---|---|
| t. assertiveness training..... | 1 | 2 |
| u. behavioral contracts..... | 1 | 2 |
| v. refunds of initiation fee based upon weight loss..... | 1 | 2 |
| w. social support from family or friends..... | 1 | 2 |
| x. stress management..... | 1 | 2 |
| y. time management..... | 1 | 2 |
| z. creative visualization..... | 1 | 2 |
| aa. affirmation training..... | 1 | 2 |
| bb. hypnosis..... | 1 | 2 |

8. Who establishes goals for your clients? (*Circle one number*)

- 1 **Your staff**
- 2 **The client**
- 3 **A combination of staff and client**
- 4 **Other** (Please explain _____)

9. When, in your opinion, are clients regarded as successful (e.g., reaching target weight and maintaining it for 6 months)? Please explain.

10. What percent of clients in your program meet the criteria of success based upon your answer in #9? Please estimate.

____ PERCENT.

(PLEASE GO ON TO THE NEXT PAGE)

11. When, in your opinion, are clients regarded as unsuccessful (e.g. when they leave before reaching their target weight)? Please explain.

12. After clients leave your program, do you follow-up by contacting your clients by phone or other methods? (Circle one number)

1 NO (SKIP NOW TO QUESTION 13)

2 YES (GO ON TO QUESTION 12a)

12a. When you follow-up, what do you think is the MOST IMPORTANT, SECOND MOST IMPORTANT, AND THIRD MOST IMPORTANT piece of information that you request most often? (Place one letter of your choice in each box)

Do you request information concerning their:

___ MOST IMPORTANT

___ SECOND MOST IMPORTANT

___ THIRD MOST IMPORTANT

- A. Social support
- B. Exercise habits
- C. Assertiveness skills
- D. Stress management techniques
- E. Dietary habits
- F. Feelings of helplessness
- G. Coping skills with weight plateaus
- H. Coping skills with weight gains
- I. Other (Please specify _____)

12b. Which one of the following, if any, has been the main problem for you in conducting follow-ups?

(Circle one number)

- 1 Too much time for staff to do follow-up
- 2 Too expensive for our center
- 3 Causes too much embarrassment for the client
- 4 Not effective for long-term behavior change
- 5 There have been no problems in conducting follow-ups
- 6 Other (Please explain _____)

12c. After clients leave your program, how often do you contact them?

(Circle one number)

- 1 Once per week
- 2 Once per month
- 3 Once every three months
- 4 Once every 6 months
- 5 Other (please specify _____)

(PLEASE TURN THE PAGE)

12d. From the following list, what do you think is the MOST IMPORTANT, SECOND MOST IMPORTANT, and THIRD MOST IMPORTANT reason why clients become successful in your program?
(Place the letter of your choice in each box)

They were successful because they were able to achieve/practice:

- | | |
|---|---|
| <p>____ MOST IMPORTANT</p> <p>____ SECOND MOST IMPORTANT</p> <p>____ THIRD MOST IMPORTANT</p> | <p>A. Social support</p> <p>B. Good exercise habits</p> <p>C. Assertiveness skills</p> <p>D. Sound behavior modification techniques</p> <p>E. Sound stress management skills</p> <p>F. Good dietary habits</p> <p>G. Dealing with feelings of helplessness</p> <p>H. A lifestyle change</p> <p>I. A positive self-image</p> <p>J. Other (Please specify _____)</p> |
|---|---|

12e. From the following list, what do you think is the MOST IMPORTANT, SECOND MOST IMPORTANT, and THIRD MOST IMPORTANT reason why clients leave the program prematurely? (Place the letter of your choice in each box)

They left the program because they were unable to achieve/practice/change

- | | |
|---|---|
| <p>____ MOST IMPORTANT</p> <p>____ SECOND MOST IMPORTANT</p> <p>____ THIRD MOST IMPORTANT</p> | <p>A. Social support</p> <p>B. Regular exercise habits</p> <p>C. Assertiveness skills</p> <p>D. Sound behavior modification techniques</p> <p>E. Stress management</p> <p>F. Good dietary habits</p> <p>G. Dealing with feelings of helplessness</p> <p>H. A lifestyle change</p> <p>I. A positive self-image</p> <p>J. Other (Please specify _____)</p> |
|---|---|

Now I'd like for you to fill out some demographic information.

13. What is the highest level of education you have completed? (Circle one number)

- 1 High school graduate or equivalent
- 2 Some technical or community college beyond high school
- 3 Some four year college or university
- 4 Four year college of university degree
- 5 Masters Degree
- 6 Ph. D.
- 7 M.D.
- 8 Other (Please specify _____)

13a Major area of study _____

(PLEASE GO ON TO THE NEXT PAGE)

14. Are you a registered dietitian? (Circle one number)

- 1 NO
- 2 YES

15. How many employees do you have (only include those from your center)?

_____ NUMBER

16. Among those employees who work directly with your clients, please indicate how many have obtained the following educational levels? (Indicate highest educational level completed only. If none, write 0)

- | | NUMBER |
|--|---------------|
| a. High school graduate or equivalent..... | _____ |
| b. Bachelors Degree..... | _____ |
| c. Registered Dietitian..... | _____ |
| d. Masters Degree..... | _____ |
| e. Other (Please specify
.....) | _____ |

17. Is there anything else you would like to say about weight control programs? Please write down your comments below.

THANK YOU VERY MUCH!!!

Your contribution to this effort is very greatly appreciated. If you would like a summary of results, please print your name and address on the back of the envelope (NOT on this questionnaire). We will see that you get it.

APPENDIX D

RAW SCORES FOR CONTINGENCY TABLES

Contingency Table for Hypothesis 2

Table matrix: 2 2 RESHAPE 8 8 3 10

Summary Statistics for Hypothesis 2

Chi-square DF. Significance

2.20824 1 0.137276
1.21273 1 0.270791 with Yates correction

WARNING: Expected values in 1 cells < 5 and 0 cells < 2.

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.08333	0.15385	0.00000
Uncertainty Coeff.	0.05792	0.05691	0.05897
Somer's D	-0.27586	-0.28283	-0.26923

Contingency Table For Hypothesis 3

 Table matrix: 2 4 RESHAPE 5 6 5 12 1 7 4 5

Summary Statistics for Hypothesis 3

Chi-square	DF.	Significance
3.24188	3	0.355815

WARNING: Expected values in 4 cells < 5 and 0 cells < 2.

Statistic	With rows		With columns
	Symmetric	dependent	dependent
Lamda	0.06667	0.05892	0.07143
Uncertainty Coeff.	0.03763	0.05619	0.02829
Somer's D	-0.05162	-0.4276	-0.06513

Contingency Table For Hypothesis 4

 Table matrix: 2 4 RESHAPE 9 5 11 3 3 4 7 3

Summary Statistics for Hypothesis 4

Chi-square	D.F.	Significance
1.39443	3	0.706840

WARNING: Expected values in 4 cells < 5 and 0 cells < 2.

Statistic	Symmetric	With rows dependent	With columns dependent
Lamda	0.00000	0.00000	0.00000
Uncertainty Coeff.	0.01612	0.02398	0.01214
Somer's D	-0.12542	-0.10417	-0.15756