THE EFFECT OF NUTRITION COUNSELING FOR WEIGHT REDUCTION ON BARRIERS TO ADHERENCE

By

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The Effect of Nutrition Counseling for Weight Reduction on Barriers to Adherence

Each year thousands of Americans share the common goal of attempting weight reduction. Surveys discussed by the National Institutes of Health panel indicate that 33-40% of adult women and 20-24% of men are trying to lose weight. Unfortunately, dieting attempts are often short-lived and survive an average of only six months and run Americans an annual tab of approximately $30 billion (Callaway, Foreyt, Nuckolls, & VanItallie, 1992).

These unsuccessful attempts inadvertently place the health of individuals at risk. Obesity has been proven to be related to diseases such as diabetes mellitus, coronary heart disease, hypertension, some types of cancer, joint disease, gallstones, and respiratory disease (Mahan & Arlin, 1992; Edmunds, 1991; United States Department of Health and Human Services publication no. (PHS) 91-50212, 1992; Anderson & Lee, 1985; Robison, Hoerr, Strandmark & Mavis, 1993). Consequences of obesity are also documented with respect to orthopedic and pulmonary problems, social and psychological dysfunctions, and sleep and digestive disorders (Robison et al., 1993). Since the majority of the population who lose weight fail to maintain their loss, it is imperative that registered dietitians as nutrition counselors develop an increased awareness of the dynamics of weight reduction. This takes into consideration the definitive meaning of maintenance as an "effective nondrug intervention for medical problems and health risks associated with obesity" (Robison et al., 1993, p. 445). The assessment and analysis of non-adherence will help dietitians become better facilitators

of the weight loss process.

Since overcoming barriers to adherence is vital in long term weight loss, the investigator, through personal experience as a registered dietitian in a private setting, felt it would be helpful to know the impact the nutritional counselor actually has on facilitating dietary change.

Problem Statement

With the myriad of health risks imposed by obesity, thousands of Americans will continue to be at risk if they do not acquire the ability to overcome barriers to dietary adherence. Nutrition counseling has been recognized as a significant factor in facilitating the onset of dietary change (Holli, 1986). However, it may be questionable as to its effect on overcoming long term deterrents.

Purpose of the Study

A challenge that meets the registered dietitian in nutrition counseling is effectively helping individuals overcome barriers to nutritional goals. An individual may choose nutrition counseling out of his or her own desire to make dietary changes or as a result of a prescribed medical treatment by a physician. In many cases, motivation is high at the onset of counseling but diminishes in the presence of internal or external obstacles. The purpose of this study was to identify the impact of nutritional counseling for weight reduction when motivational factors and barriers to participation are present.

Objectives

To accomplish the purpose, the following objectives had to be attained: (1) to determine if the individual perceived the dietitian's assistance as valuable, (2) to determine if information received from the dietitian was pertinent to individual needs,

(3) to determine which factors or deterrents the individual was unable to overcome with the assistance of the dietitian, (4) to determine if the individual was able to make the necessary changes with the help of the dietitian, and (5) to determine if the dietitian was perceived as empathetic.

Definition of Terms

For the purpose of this study, the following definitions will be used:

Obesity: Excessive body fat or a condition of being 20% or more overweight or having a body mass index (BMI) greater than 27.8 for men and 27.3 for women. (United States Department of Health and Human Services, 1992; Anderson & Lee, 1985)

Body Mass Index: A physical measurement calculated by dividing body weight in kilograms by height in meters squared. (Anderson & Lee, 1985; Mahan et al, 1992)

Ideal Body Weight (IBW): The weight appropriate for an individual that results in a body mass index between 20 and 25 in adults. IBW may also be determined upon the height of the individual and may be converted from pounds to kilograms by dividing number of pounds by a factor of 2.2:

Women: Allow 100 pounds for the first 5 feet of the individual's height and 5 pounds for each additional inch over 5 feet.

Men: Allow 106 pounds for the first 5 feet of the man's height and 6 pounds for additional inch over 5 feet. (Anderson & Lee 1985; Mahan et al, 1992)

Chapter 2

Review of the Literature

Conceptual Framework

The framework chosen for this study is a combination of motivational and behavioral theories which give direction and depth to the understanding of how adults are influenced and empowered to overcome situational deterrents to diet adherence. To explore and gain a better understanding of the facets of adherence, it was logical to first examine why adults choose to initiate participation in any learning activity. Research consistently shows that practical education which leads to knowledge about how to do something is chosen by more adults than any other form of learning. Consequently, adults have a strong need to apply what they have learned and to be competent in that application (Knox, 1977; Wlodkowski, 1985).

Various surveys have sought to unveil the primary reasons people participate in various forms of education. The Commission on Nontraditional Study conducted in 1972 determined that 55% of the population participated "to become better informed" while 43% engaged in learning to acquire a new job or to gain advancement in a current position (Merriam & Cafferella, 1991). Surveys also have been conducted to relate sociodemographic characteristics such as sex, age, race, education, and income to the reasons for participation. Cross (1981) has observed that "the reasons people give for learning correspond consistently and logically to the life situations of the respondents" (p. 91).

The effect of life situations on learning is further demonstrated by researchers

who have shown that the decision to participate in adult education comes about as a result of a variety of social and environmental factors (Day & James, 1984). To further understand why adults engage in education, we need to specify the nature of the factors that affect participation, how they are related to one another and how they operate to affect actual behavior (Darkenwald & Merriam, 1982).

In effort to explain human behavior, many theories have been proposed. Until recently, some theorists held that motivational forces in the form of needs, drives, and impulses, frequently operating below the level of consciousness, were the major determinants (Bandura, 1977). This highly criticized theory suggests that behavior emanates from within the individual and is free from cause by outside forces. According to Bandura (1977), "researchers have repeatedly demonstrated that response patterns that are generally attributed to inner causes can be induced, eliminated, and reinstated by varying external influences" (p. 3). This suggests that behavior determinants are within forces of the environment rather than within the individual alone.

Bandura's social learning theory accounts for both the learner and the environment in which he or she operates and suggests that behavior is a function of the interaction of the person with the environment. This demonstrates a reciprocal relationship in that people influence their environment, which in turn influences the way they behave (Merriam & Cafferella, 1991). Social learning theory holds the belief that people have the capability to control behavior by selecting environmental influences, to produce their own support system as well as consequences for their own actions. These self-regulatory functions are created and occasionally supported by external influences but this does not refute that, once established, self-influence partly determines which

actions one performs (Bandura, 1977).

A similar theory that is representative of the social setting and includes segments from theories of cognitivism, behaviorism, and personality was proposed by Julian Rotter, a social learning theorist. Rotter expanded upon the works of Kurt Lewin and E. Tolman who postulated that "human behavior was a result of the interaction of the individual and the environment in the context of a specific situation" (Howard, 1989, p. 200). Furthermore, they believed that people conceive beliefs about possible behavioral outcomes, some of which are preferred over other. Rotter reinforced these concepts of motivation and expectancy by adding the elements of stimulus and response. The resulting theory holds that behaviors are motivated by the interaction of expectancy, reinforcement value, and the specific psychological situation.

Using the works of Lewin, Tolman, and others, Vroom developed yet another theory of motivation entitled the valence-instrumentality-expectancy theory. His theory purported that the motivational force behind all behavior is a product of valence, instrumentality, and expectancy. Howard (1989) reported that "Expectancy is defined by Vroom as the individual's subjective estimation of the likelihood of successfully performing a behavior, instrumentality as the individual's subjective estimation of the likelihood that the behavior would be rewarded, and valence as the positive or negative value that the individual placed on the reward" (p. 200).

People are motivated by goals that are either intrinsic or extrinsic in nature. Stipek (1988) stated that intrinsic goals are composed of task-related (e.g., understanding something) and ego-related (e.g., looking or doing something better than someone) goals while extrinsic goals contain within them social goals (e.g., pleasing others) and rewards

(e.g., buying a new dress). Furthermore, motivation theorists typically claim that external reinforcement is not necessarily important in the facilitation of learning. Stipek stated that theorists "argue that humans learn best in situations in which they perceive themselves to be engaging in learning behavior for their own intrinsic reasons" (p. 39).

In general, the primary purpose of motivation theory is to make attempts to explain and predict behavior in achievement situations. Motives are nothing but hypothetical inventions made up by theorists to make behavior more understandable and predictable (Stipek, 1988). Some theorists believe that achievement motivation is a stable trait and yet others believe it is a result of conscious beliefs and values. According to Stipek, (1988) "This alternative view stresses the effects of recent experiences (e.g., the amount of success or failure) in achievement situations and the effects of variables in the immediate environment on individuals' achievement-related beliefs" (p. 10-11).

Overview of Obesity

It is well documented that the dietary habits of Americans literally place numerous individuals' health at risk yet the percent of the population suffering from obesity continues to rise. In 1990, 27.5% of the American population 18 years of age and over were found to be obese at 20% or above desirable weight (U.S. Dept. Of Commerce, 1993). Based on population estimates from that year, approximately 26 million men and 32 million women were overweight. (Kuczmarski, Flegal, Campbell, & Johnson, 1994). Gray (1989) reported that an estimated 12% of women and men between the ages of 21 and 70 have body max indexes greater than 30. These astonishing figures contribute to the $30 to $50 billion annual revenues of the rapidly growing diet industry, including weight loss products and services (Kuczmarski et al., 1994; Robison et al., 1993).

As obesity allows the diet industry to flourish, it costs the United States approximately $70 billion annually (Kuczmarski et al., 1994). This estimated figure is correlated to health problems associated with obesity that have been previously discussed, such as cancer, cardiovascular disease, adult-onset diabetes, and gallbladder disease. This tab could be decreased with just moderate weight loss (10% to 15% of body weight) which would result in improvements of heart function, blood pressure, glucose tolerance, sleep disorders, and serum lipid profiles. These improvements in health status would help reduce requirements for medication, decrease post-operative complications, and may help to decrease the number and length of hospitalizations (Robison et al., 1993).

When comparing all persons 20-74 years of age from 1960-1962 to 1976-1980, the percent of overweight persons increased from 25% to 26.2% (DHHS Pub. No. 93-1232, 1993). The National Health and Nutrition Examination Surveys (NHANES), which is a series of four cross-sectioned national surveys conducted by the National Center for Health Statistics, also reported that obesity is on the increase. The results of phase one of NHANES III, which took place from 1988-1991, reported that "approximately one-third (33.4%) of all adults in the United States were overweight. Thirty-one percent of adult men and 35% of adult women were estimated to be overweight" (Kuczmarski, et al, p. 205, 1994). When comparing NHANES II (1976-1980) to NHANES III (1988-1994), there was an 8% increase in the prevalence of obesity (Kuczmarski, et al, 1994). "Results of NHANES II reported that 24% of all adult men and 25.9% of adult women were overweight, compared with 31% and 35%, respectively, from NHANES III" (p. 206).

According to the United States Department of Health and Human Services Pub. No. 93-1232, 1992, when examining the black population alone, the percent of overweight persons from 1960 to 1980 increased from 32.6% to 37.7% versus the white population which increased from 24.1% to 25.1%. This supports the statement that "overweight is particularly prevalent in minority populations, especially among minority women" (United States Department of Health and Human Services Pub. No. 91-50212, 1992, p. 115). This publication stated that poverty is related to overweight women as well. In 1976-1980, 37% of women with incomes below the poverty level were overweight compared with 25% of those above the poverty level (United States Department of Health and Human Services Pub. No. 91-50212, 1992).

With the goal of reducing these figures, Healthy People 2000 (United States Department of Health and Human Services Pub. No. 91-50212, 1992) provides a health status objective of reducing obesity to a prevalence of no more than 20% among people aged 20 and older. Since obesity is associated with numerous health risks, as stated in the previous chapter, attaining this goal would have a tremendous impact on the well being of Americans and is of considerable public health importance that deserves much emphasis and attention. As stated by Blanchard, (1974) obesity is the "greatest single health hazard" (p. 152) that affects mortality risks as well as health. For example, if a person is 10 pounds overweight in the fourth decade of life, life expectancy will be decreased by 8%; for 20 pounds above ideal weight, the percentage increases to 18%, and so forth (Hoiberg, Berard, & Watten, 1980).

Though extensive research has been conducted on the underlying causes of obesity, there is no one definitive cause. Obesity is the unfortunate result of a complex

interaction of factors such as those which are medical, psychological, social, behavioral, and cultural in nature. According to Brownell (1994), possible reasons for obesity include endocrine disorders, metabolism, genetics, psychological factors, family upbringing, too many fat cells (hyperplastic obesity) or fat cells that are too large (hypertrophic obesity). Many of these, however, are not the cause of a person's obesity and are often used by people as excuses or create attitudes that may hinder weight loss attempts.

Bouchard (1989) found that there is strong evidence of a link between behavioral and life-style factors to the development and maintenance of obesity. He believes that the connection of genetic factors to obesity is highly variable but estimates that 25% of obesity is genetically linked (Bouchard, 1991). Contributing factors, according to Pi-Sunyer (1994), include genetics as well as "overabundance of food, decreased physical activity, decline in smoking, and cultural factors" (p. 238). Ferguson, Brink, Wood, and Koop (1992) believe that genetics play a role in obesity in addition to "socioeconomic status, behavioral and psychosocial variables " (p. 119). They discovered that even when people have a genetic predisposition for obesity, the environment is the primary determinant of the occurrence and degree of obesity.

Brownell (1994) stated that there are many possible reasons for obesity that will continue to be debated but the one fact remains that people gain weight because of an excess of caloric intake. It appears that many people simply lack the desire to change eating habits in spite of any recommendations that may have been given to do so. The inability or lack of desire to change eating habits is illustrated by the fact that people in the United States have kept their fat intake stable in the past twenty years despite

recommendations to decrease their intake (Lloyd, Paisley & Mela, 1995). An increase in knowledge about the causes of obesity is needed to develop effective treatment and preventative strategies.

Factors of Adherence and Participation

According to Cameron and Best (1987), compliance with medical regimens is usually in reference to participation compliance. Conversely, adherence to health behavior interventions may be in reference to participation compliance as well as to the extent to which people change behavior patterns.

As the prevalence of obesity in our society continues to increase, the number of people trying to lose weight continues to rise as well. Surveys by the National Institutes of Health Panel indicate that 33-40% of adult women and 20-24% of men are making attempts to lose weight, mainly through calorie restriction. This is exemplified by the reality that a person typically adheres to a diet for an average of only six months or less (Callaway et al, 1992).

Patient attrition undoubtedly is a primary reason for unsuccessful weight loss among those receiving nutrition counseling. It is common for patients to quit the program after the first few weeks and, consequently, long before they have attained their weight loss goals. Attrition of patients undermines individual weight loss goals and sometimes places them at a higher health risk. The personal costs involved in program drop out provides incentive to investigate the underlying factors that may be responsible.

One reason people become frustrated with a weight loss program is failure to lose weight quickly. However, the quicker the weight is lost, the more likely the weight will be regained once the diet ceases (Callaway, et at, 1992). Rapid weight loss does not

result in improved weight maintenance (National Task Force on the Prevention and Treatment of Obesity, 1993). Though conclusive proof is yet to be determined by clinical trials, gradual weight change is reported to be more sustainable and therefore more desirable than rapid weight loss (Goodrick & Foreyt, 1991; Foreyt & Goodrick, 1992). However, without changing the causative behavior of obesity, even gradual weight loss is usually temporary. Within a year of completing a program, patients usually regain two-thirds of the weight lost, and nearly all the weight returns within five years (Callaway, et al, 1992). Further studies show that relapse rates are as high as 85-95% one year after treatment (Hospers, Kok, & Strecher, 1990).

A model which provides a theoretical framework for approaches to accelerating the rate of behavior change is the Stages of Change Model, also known as the Transtheoretical Model of Behavior Change (Prochaska & DiClemente, 1986; Greene, Rossi, Reed, Willey, & Prochaska, 1994). This model has been useful in expediting the rate of change for various addictive behaviors by the use of self-initiated programs. It also has the ability to predict behavior change for 12 problem behaviors, including the reduction of dietary fat (Prochaska et al, 1994) and defines behavior change as dynamic. Prochaska and DiClemente (1985) found that very few people are ready to act upon a specific problem behavior. In spite of this, many traditional interventions include skills and strategies for those who are already equipped for action to change behaviors. It would appear that these assuming, action-oriented interventions are relatively ineffective for the majority of people who simply are not ready to make changes. Those people who are ready to take action possess the belief that they have the autonomy to change lifestyle patterns and typically have social support from close relationships. In

order to remain successful in changing and maintaining behavior, an individual must have the belief that he or she is becoming the type of person one wants to be and is skilled at using techniques to prevent relapse (Greene et al., 1994).

When an individual attempts to increase the integrity of his or her health, there are many expectancies, preconceived ideas and perhaps a sense of fear regarding what that change will entail. Environmental factors as well as personal beliefs about the value of the change undoubtedly affect whether the change will successfully occur (McClaran, 1983). As reported by Litwin and Stringer (1968), the motivational theories of Kurt Lewin, Feather and Atkinson stated that the manner in which people act is dependent upon the strength of the expectation that the act will lead to a goal. Actions are also dependent upon the value that is placed on the goal or outcome. A study by McClaran (1983) supported the general hypothesis that those who experience greater satisfaction of basic motivational needs are more likely to complete the weight-reduction program, particularly with regard to satisfaction of need for achievement and need for affiliation. This study also found that the non-completers left the program for stress-related reasons.

A study conducted by Allan (1989) reported that the reasons dieters gave for wanting to lose weight was a major determinant of successful long-term weight loss and maintenance. The two major categories of reasons were losing weight for oneself (self-focused) and losing weight for others (other-focused). Those most successful at weight loss and maintenance reported that they wanted to lose weight for self-focused reasons. Those who were unsuccessful stated that they wanted to lose weight for others.

Cox (1985) examined the Health Locus of Control Scale developed by Wallston, Kaplan, and Maides (1976) and found that people who are more intrinsically controlled

are more likely to take the initiative in their personal health care, are more knowledgeable about their health, and tend to adhere to health care regimens. Conversely, those who are primarily externally motivated tend to feel that their health is attributed only to luck, fate, or other individuals with influence, and thus is beyond their control.

In general, humans have the tendency to seek and develop competencies and gain autonomy by engaging in learning activities by their own volition. This is expressed further by Palank (1991) who found that health-promotive behaviors are those initiated by a person to sustain or increase well-being, self-actualization, and personal fulfillment. Such behaviors may include good nutrition, stress-reduction activities, regular exercise, and the development of a social support system. Lifestyle behaviors have been defined as patterns developed in response to influences from the environment in compliance with available options and socioeconomic conditions.

How individuals perceive their health status also affects adherence to weight reduction regimens. Palank's findings indicate that "those people who rated their health as good, rather than fair, poor, or excellent, were more likely to initiate recommended weight loss" (p. 819). This was interpreted to mean that those in excellent health do not perceive any vulnerability to disease or possible benefits from such a program which results in the absence of behavior change. Those in poor health basically feel it is too late or non-productive to change behavior.

Participation Barriers

Motivation within any context is complex and may be bombarded by a number of intrinsic and extrinsic entities at any given time. Possessing the knowledge of

what one should eat to become healthier, or of what one should do to cope with a physiological condition may be overpowered or outranked by other motivational factors. Influences over food choices include food cost, prestige value of food, religion, ease of food preparation and storage, time factors and convenience, as well as personal food tolerances and preferences (Holli, 1986).

Ferguson et al (1992) found that the primary factors associated with weight loss success or failure include physical activity, motivation, social support, and psychosocial crises. According to Holli (1986), "Motivation may be defined as something that causes a person to act. It can also refer to the process of stimulating a person to action and is concerned not only with what a person can do, but also with what he will do" (p. 174). Furthermore, motivation describes processes that initiate, give direction, and allow behavior to continue. Cox (1985) described motivation as "an important antecedent variable and correlate of the client's cognitive and affective responses to a health concern, the type of health care intervention and interaction expected by the client, and the client's health outcomes subsequent to this intervention" (p. 177).

It is clear from the research that barriers, perceived or actual, have great influence on behavioral change. According to Palank (1991), "Perceived barriers to health-promoting behaviors have been identified as a cognitive-perceptual factor influencing the intent to engage in behaviors" (p. 821). These barriers may be real or imagined and are composed of self-perceptions or situational and environmental factors.

Interference is often associated with a decrease in motivation from a particular cause. One such cause of decreased motivation is advanced age. Although no one is immune to the difficulties which may arise in changing health behavior, older adults

especially have difficulty making changes. Evans (1989) reported that older adults are often threatened by new learning experiences because they present exposure to new experiences and may cause a paradigm shift which may undermine old values.

Valentine and Darkenwald (1990) identified six factors of deterrents: "lack of confidence, lack of course relevance, time constraints, low personal priority, cost, and personal problems" (p. 29). The primary variables affecting lack of confidence include self-doubt, diffidence, and low academic self-esteem. Indirect sources of self-doubt include lack of encouragement from friends and family. Lack of course relevance conveys an inappropriate match between opportunities and individuals' perceived needs and interests. Time constraints are fairly self-explanatory. Low personal priority is indicative of a lack of motivation or a feeling of infringement on personal or family time. Personal problems may include family problems, handicaps, or health problems.

Cost-related deterrents are self-explanatory in that they occur as a result of insufficient financial resources. These barriers may be placed into five major categories including provider-consumer relationships, fiscal cost, site-related factors, fear, and inconvenience (Palank, 1991). The expense of switching to a more healthful diet has been identified as a cost-related barrier to behavior change as well (Cole-Hamilton & Lang, 1986; Cade & Booth, 1990; Mooney, 1990).

Other factors that individuals may experience which make dietary change difficult may include reduced taste quality and lack of family support (Sheiham, Marmot, Taylor & Brown, 1990; Crawford & Baghurst, 1990, Lloyd et al, 1995). Deterrents to dietary adherence may also include the inaccessibility of healthful foods (Cole-Hamilton & Lang, 1986; Crawford & Baghurst, 1990) and lack of motivation (Crawford &

Baghurst, 1990; Thomas, 1981) as mentioned previously. Similar to other researchers, Lloyd et al (1995) found that "perceived barriers reflected actual problems encountered" (p. 316) when they assessed perceived and actual barriers to dietary fat reduction. Similar to other researchers, Lloyd et al (1995) found that adherence problems "included an increase in cost, decrease in convenience, lack of family support for certain changes, and an inability to judge the fat content of diets" (p. 316).

Fear also is a constituent in behavior change obstacles. Schelkun (1993), conducted a study which included asking women about the obstacles that discouraged continued participation in physical activity. They reported that fear of not doing well, ridicule, others thinking they were not athletic, and the absence of encouragement were the primary deterrents to further participation. As changes in personal lifestyle are made, people may be afraid of failure or anxious about what the results of the lifestyle modifications will be. This fear of failure may be precipitated by previous attempts at weight loss which were not successful.

The results of a study done by Hospers, et al. (1990), suggest that the number of previous failures was associated with the perceived stability of the causes for these failures. These attributions resulted in low expectancies of success which were directly related to goal attainment. These researchers found that "If success expectancy is low, special attention should be given to enhance abilities and to overcome real and perceived barriers leading to failure" (p. 414).

Saunders and Rahilly (1990) stated that behavior can be predicted by the intention of the individual to perform that behavior. This intention is a function of the individual's feelings about performing the new behavior and of his or her perceptions of significant

others' expectations. Their research findings supported the hypothesis that "attitudes (beliefs about the consequences of engaging in dietary restriction and evaluation of these perceived probable outcomes) and social influences (perceptions of expectations from significant people and motivation to comply with those perceptions) predict intention to engage in dietary restriction" (p. 173).

Without concomitant support from the social environment, health behavior change is extremely difficult. Zimmerman and Connor (1989) found that an individual attempting to modify health behavior may be positively influenced by significant others. Their research found that family members were especially helpful and more supportive than others involved and that behaviors most influenced by others were those affecting fat consumption and exercise. This is encouraging since health habit modification is not solely an individual problem but a group and societal problem. "An individual's health habits cannot be understood in a vacuum" (Zimmerman & Conner, 1989, p. 58). Long-term change in behavior requires an environment that is actively supportive of change.

While family members can be helpful in supporting individual behavior change, they can be just as detrimental if they lack resources and skills. Parham (1993) found that the main complaints of female weight loss clients were their husbands' attitudes. These attitudes include inadequate or over-acceptance of the individual's obesity, a lack of respect, lack of appreciation of the difficulty of long-term weight management, and a feeling that the individual could not be trusted if she were not fat.

Weight loss participants must be made aware that in the midst of positive motivational and lifestyle factors, motivational barriers may occur. Problems may occur during social occasions, dining out, holidays and vacations. Also, food choices may be

negatively affected by emotional states such as boredom, anxiety, and depression. Holli et al. (1986) states that "the interrelationships among knowledge, attitudes, and behavior are described as more intricate than many of the studies of nutrition education acknowledge" (p. 178).

Role of Self-Efficacy

Social Cognitive Theory, as formulated by Bandura (1986), holds that people are not driven by inner forces nor shaped solely by external stimuli. The individual and the environment constantly are interactive and are determinant upon one another. Bandura defines perceived self-efficacy as "people's judgements of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 39). He believes that success requires much perseverance and effort which requires much testing of alternative forms of behavior and those who doubt themselves will stop this process if initial efforts are unsuccessful.

Matheson, Woolcott, Matthews, and Roth (1991) state that self-efficacy is correlated with many health behaviors including weight reduction. People with addictions who have low efficacy expectations are usually unable to abstain from the addictive substance and those with high efficacy are better able to cope with high-risk situations (Clark, Abrams, & Niaura, 1991).

According to Bandura (1986), in order to accomplish performances effectively, knowledge and skills are necessary but insufficient. Typically, people often know what they need to do to succeed but still do not perform optimally. Knowledge itself does not instigate change but functions as an instrument if and when individuals truly want to make changes (Holli, 1986). Judgements of self-efficacy also determine the amount of

effort individuals will expend as well as the length of time they will persist when obstacles occur. People tend to avoid tasks that they feel exceed their coping abilities but experience no delay when they feel fully capable of managing.

Because people are often influenced more by self-perception of performance, Bandura (1986) found that perceived self-efficacy was a better predictor of subsequent behavior than actual performance. "People register notable increases in self-efficacy when their experiences disconfirm misbeliefs about what they fear and when they gain new skills to manage threatening activities" (p. 123).

When examining self-efficacy in health behavior research, Strecher, DeVillis, Becker, and Rosenstock (1986) found that this self-perception is a consistent predictor of short- and long-term success. When self-efficacy was manipulated in experimental studies, it was proven to be consistently powerful in initiating and maintaining change. They also found that the self-efficacy framework is directly applicable to the practice of health behavior modification which has direct implications for the facilitator.

Nutrition Counseling

Education has been a primary focus in the attempt to change health-related behaviors. One may feel it is hopelessly idealistic to believe it is possible to make significant changes in individuals' lifestyles, especially in those who have a history of giving in to temptations which inevitably cause the new behavior to cease. Although many clients will have significant compliance problems in the form of resistance as they embark on lifestyle change, these problems may be overcome with the careful planning and support of the therapist (Marlatt & Gordon, 1985).

Approximately 52 million American adults are candidates for nutritional therapy

(Sempos, Fulwood, Haines, Carroll, Anda, Williamson, Remington & Cleeman, 1989). According to Hodges and Vickery (1989), nutritional counseling may be defined as "the total process of offering individualized guidance and allowing the client to acquire the ability to self-manage his or her nutritional care" (p. 7). Therefore, this form of counseling will ideally effect behavior change with more healthful behaviors as a result.

An individual often is referred to a registered dietitian by a physician for nutrition counseling. However, a referral is usually not necessary for counseling regarding normal nutritional needs and typically, as this researcher has observed, most people attend counseling upon their own accord. Whatever the situation, it is vital that participants understand the reasons for the consultations.

As Hodges and Vickery (1989) stated, it is important to clarify from the beginning that the client is responsible for any behavior change. By the same token, the client is to accept full credit for appropriate as well as inappropriate behavior. Significant others may provide valuable support, "but the final actions must be taken by the client (Hodges & Vickery, p. 8)".

In certain cases, individuals may feel that they are dissatisfied with counseling received. However, research on patient satisfaction with nutrition services has shown that satisfaction judgements are typically influenced by each individual's personal characteristics (Maller, Dubose & Cardello, 1980; Deluco & Cremer, 1990; Harris, Hodges, Johnson & Shifflett, 1987). It has been recognized that client or patient satisfaction is vital in the individual's compliance and participation, thereby increasing the probability of outcomes which are successful (Cleary, Keroy, Karapanos & McMullen, 1989; Ross, Frommelt, Hazelwood & Chang, 1987; Pascoe, 1983).

A diet counseling survey instrument was developed by Trudeau and Dube' (1995) to measure the moderators and determinants of satisfaction with diet counseling. The researchers identified facilitation skills and knowledge as the greatest determinants of individual satisfaction with diet counseling. Interestingly enough, those patients or clients with more than one prescribed dietary restriction were more satisfied than those with only a single restriction.

As an attempt to provide optimal facilitation and knowledge, counselors assist clients with the process of decision making, resolving interpersonal concerns, and in learning new ways of dealing with life situations. With the goal of being an information provider and counselor, "the dietitian needs to consider how much information to provide, what literacy level to use, and what type of audiovisual material to use" (Tinker, Heins & Holler, 1994, p. 508). The dietitian may be seen as a change agent who has the ability to intervene in the client's environment to promote change in behavior (Holli et al, 1986).

Findings from Julien, 1986; Danish, Lang, Smiciklas-Wright & Laquatra, 1986 supported the statement that the role of the registered dietitian is no longer perceived as an information dispenser but as a catalyst for behavior change. This suggests that individuals perceive the value of dietitians to be greater if they believe that the diet can realistically be put into practice (Trudeau & Dube', 1995). This coincides with the statement that "nutrition intervention is intended to provide the patient with practical information that can be applied to daily living skills" (Tinker et al, 1994, p. 507).

Methods used in nutrition counseling are greatly related to the success of the interaction. The importance of tailoring nutrition counseling to individual needs is well

model developed by Mason, Wenberg & Welsh (1982) centers the dynamics of nutrition counseling on the skills and knowledge required to satisfy individual needs, values, and wants. This suggests that individuals perceive counseling services to be effective if the prescribed diet appears easy to follow and if guidelines are presented in a comprehendible manner. Therapists may use a variety of techniques to accomplish the desired dynamics of weight loss counseling such as self-monitoring, modeling, skills, training, and self-help groups (Damrosch, 1991). According to Pichert et al. (1994), research data supports that problem-solving training is a vital factor in diabetes self-care. Also, including flexibility into meal plans and providing alternatives enables patients to adjust to changing life circumstances and may improve dietary adherence.

According to Perri (1993), though long-term treatment outcomes of nutritional counseling are typically less than ideal, the clinician should realize that virtually all treatments are only short-term interventions that leave the obese individual ill-prepared to experience long-term maintenance. Therefore, follow-up care is vital to enhance the long-term success of weight maintenance. Perri found that "structured programs of post-treatment therapist contacts successfully helped patients to sustain weight-loss progress (p. 165)".

Wing, Epstein, Shapira and Koeske (1984) conducted a study to determine whether contact with the therapist serves as a reinforcer of behaviors involved in weight reduction. Their study did not support the hypothesis that making contact with the therapist and therapy group contingent on weight loss will improve results over the condition that was noncontingent. However, "clients who were seen contingent on not meeting weight loss goals did have the poorest results during the 6 month follow-up

period (p. 711)". These researchers found that this must be considered in the design of clinical treatment programs but noted that the type of contingency used may have had negative effects on long-term habit change "because it conveys that poor performance is to be expected (p. 711)".

Since the primary goal of nutrition therapy is to promote high levels of compliance, it is the counselor's duty to assess the individual's motivation level, feelings about the importance of the nutritional therapy, and his or her capability of making changes. This production of rapport fosters a warm environment that better facilitates counseling for change (Caggiula and Milas, 1986). Strategies that are not conducive to change are those that dictate change to the patient, are stated only in general terms, or incorporate unreasonable or unattainable goals.

. Ferguson et al (1992) found that cognitive or psychological factors were what dieters believed contributed most to successful weight loss. Determination, commitment, and patience were also found to be common contributors. Though nutrition counselors seem to be helpful in facilitating change, true behavior modification is primarily the responsibility of the client.

It is difficult to assess the clients' perceptions of nutrition counseling due to the scarcity of empirical research on the subject. Assessment, instead, is typically done by peer review and audit which provide objective evaluations valuable in establishing nutrition care plans and professional standards but to truly be helpful, must be complemented by information gathered by the individual clients (Trudeau & Dube', 1995).

Summary

The literature review has generally described motivational, participation, and behavioral theories to provide a basis for this study. This provides a framework which describes human behavior and it's reaction to the acquisition of changes, especially those which are health-related. Adult participation in any form of education is precipitated by a combination of social and environmental factors.

As reviewed in the literature, long-term change is much more likely to occur when it is initiated for intrinsic (self-focused versus extrinsic (other-focused) reasons. Change must also occur as the result of the application of knowledge, not simply the possession of knowledge. In order for change to involve adherence, the individual must become focused and comfortable with the new behavior so that autonomy may be recognized and utilized. The literature suggests that change and adherence, in spite of various perceived barriers, occurs out of the individual's own responsibility. Social learning theory holds that individuals possess the capability to control their environment which, in turn, affects their behavior.

The registered dietitian can improve adherence to dietary change by recognizing potential participation barriers and by using appropriate counseling techniques which promote individual responsibility, self-efficacy, and application of knowledge and skills. The literature suggests that the dietitian acts as a catalyst for behavior change but the ultimate responsibility for dietary modification, even in the presence of adherence barriers, lies in the hands of the individual. This study further explores this theory by studying the actual effect dietitians have on enabling individuals to overcome barriers to dietary adherence.

CHAPTER 3

Method

This was a descriptive, quantitative study focusing on the effect the nutrition counselor has on barriers of adherence to weight reduction behavior change. Data was collected on clients' perceptions about nutrition counseling via a questionnaire. Questionnaires were distributed to a convenience sample of volunteers who had undergone nutrition counseling including weight reduction within the past year.

Setting

The setting for the study was a private nutrition consulting practice in a large Southwestern city. The practice is owned and operated by a registered dietitian who counsels clients with various nutrition-related needs and employs several other dietitians as well. Clients enter into nutrition counseling either by physician- or self-referral. Counseling sessions include diet histories, nutritional assessments, identification of problem eating behaviors, food preferences, and general lifestyle tendencies. The researcher who conducted the study is also a registered and licensed dietitian who operates a private nutrition consulting practice, though none of it's clients were involved in the study.

Population and Sample

The population consisted of a total population census who had received nutrition counseling from the above setting and the sample was derived by evaluation of each client file and selection of those who met the inclusion criteria. This criteria included those who had received nutrition counseling within 12 months of the study's onset, were

age 18 or above, possessed a diagnosis of primary or secondary obesity (determined by a Body Mass of Index greater than or equal to 27 or a body weight at least 120% of ideal) at the onset of counseling, and attended a minimum of three counseling sessions with a staff dietitian. The researcher elected to use convenience sampling for sample selection since the limited size of the patient population prohibited the use of random sampling.

Welfare of the subjects

Confidentiality of the information obtained in this study was of concern to the researcher. In order to protect the subjects' confidentiality, the questionnaire cover letter (see Appendix D) instructed respondents to not place their name on the Client's Perception of Nutrition Counseling survey (see Appendix E). Each survey was number coded to establish anonymity and for the purpose of follow-up of non-respondents. The study was submitted to the Oklahoma State University Institutional Review Board for review and approval to conduct the study.

Instrumentation

Clients' Perceptions About Nutrition Counseling (CPNC) is an instrument developed by Hauchecorne, Barr, and Sork (1994). It was developed in response to the fact that dietitians working in clinical settings often need to demonstrate that there are benefits in nutrition services. It was thought that an instrument that could measure a dietitian's effect on a client's quality of life may offer an approach to assessing physical status. The research done by Hauchecorne et al. was prompted by the limited availability of evaluation instruments that could assess clients' perceptions of any difference nutrition counseling made in their health and well-being.

Clients' Perceptions About Nutrition Counseling (CPNC) was based on Bopp's

Value-Added Ambulatory Encounter framework that would measure perceptions of nutrition counseling value, assess if benefits were perceived of the dietary changes that occurred after counseling, and to reveal any unintentional effects of counseling (Hauchecorne et al., 1994). The items that make up the instrument are based on interviews with five nutrition counselors who discussed their counseling experiences in detail.

CPNC was developed and tested by formulating and pilot testing a self-administered instrument which was assessed as to whether the results were useful to clinical nutrition practice and whether the instrument itself was reliable. According to Hauchcorne et al. (1994), a panel of five dietitians and one medical social worker reviewed each stage. Instrument reliability was evaluated and test-retest correlations averaged 0.65 (range = 0.28 to 0.84). The revised instrument was the questionnaire used in this study and is shown in Appendix E.

CPNC is intended to: assess abilities to make dietary change(s); respondents' physical and emotional quality of life as a result of counseling and subsequent dietary change; assess views about the nutritional services provided; identify the barriers to dietary change, and to identify other nutrition-related concerns. It's intended users are registered dietitians who work in ambulatory-care or acute-care settings. Intended respondents are those individuals requiring diet modifications for acute or chronic conditions or those who are participating in counseling for general nutrition. CPNC is not intended for use as a performance review of dietitians and it's results are simply respondents' perceptions about counseling and are unrelated to physical outcomes which are medically determined.

Overall, CPNC was developed with the theory that identification of barriers to dietary change and factors which promote this change will help to guide counseling efforts and subsequent education. For purposes of this study, it will help to answer the research objectives and ultimately the research problem.

Data Gathering Method

A letter of inquiry (see Appendix B) was sent to 79 qualifying clients which explained the study's purpose and the vital role individuals would have if participation was chosen. Enclosed with the letter was a self-addressed, stamped post card (see Appendix C) which allowed each recipient to indicate their willingness to receive and complete a questionnaire. This prior consent from potential participants was a requirement of the dietitian who owned and operated the consulting business from which individuals' names and information were obtained. The informational letter which was mailed to this dietitian is shown in Appendix A. Those who returned the postcard with a positive response were mailed the questionnaire with a brief cover letter (see Appendix D) which briefly thanked each person for participating and indicated that the questionnaire should be returned in an enclosed self-addressed, stamped envelope provided within 10 days. Individuals were told not to identify themselves by name but were instructed to indicate their gender and age for grouping and distribution purposes. Each questionnaire was number coded for the purpose of future identification for follow up.

Those people who received the initial letter of inquiry but did not return the postcard were contacted by phone in all cases where phone numbers were available. Phone numbers were obtained from the nutrition consulting business or from directory

assistance. Individuals who agreed to participate as a result of the phone contact were mailed a questionnaire. Those individuals who agreed to complete the questionnaire but failed to return it to the researcher were contacted by telephone by the researcher as well.

Chapter IV

Data Analysis

This study examined the effects that nutrition counseling for weight reduction has on barriers to dietary adherence. With the many health risks imposed by obesity and prevalence of this disease in the United States, Americans will continue to suffer the consequences of obesity unless individuals are able to adhere to dietary regimens and modify eating behaviors.. Though nutrition counseling has been proven as significant in facilitating dietary change (Holli, 1986), the researcher questioned the impact it has on overcoming the hurdles that individuals face when making such a change and which barriers were or were not overcome with the assistance of the dietitian..

The researcher attempted to address this by asking members of the sample group certain questions about their experience and perceptions about the nutrition counseling received from a registered dietitian in a private nutrition consulting business. The questions were intended to answer the following research objectives: (1) to determine if the individual perceived the dietitian's assistance as valuable, (2) to determine if information received from the dietitian was pertinent to individual needs, (3) to determine which factors or deterrents of the individual was unable to overcome with the assistance of the dietitian, (4) to determine if the individual was able to make the necessary changes with the help of the dietitian, and (5) to determine if the dietitian was perceived as empathetic. It was believed, by the researcher, that if these objectives were met, the impact of nutrition counseling on making dietary changes could be determined.. This information was intended to be used as a reference and resource for practice for

registered dietitians who are involved in nutrition counseling.

Frequency distributions for each questionnaire statement, which utilizes a likert-type scale, were performed manually. Data obtained from the questionnaires was used to answer the research objectives by grouping answers into percentages. The analysis of data determined the impact of nutrition counseling when attempting to overcome various barriers to adherence.

Sample

The research objectives were addressed by the completion of Client's Perceptions About Nutrition Counseling (see Appendix E) by a convenience sample of volunteers who responded to either an initial mailing of postcards or to a follow-up phone contact by the researcher. A limitation of the study was the stipulation that mailings of questionnaires could not be executed without the prior consent of each qualifying individual. This potentially limited the number of individuals who participated in the study.

Of the 79 individuals who qualified for the study and received the initial letter of inquiry and self-addressed, stamped postcard, 41 (51.8%) returned the card to the researcher. Thirty-six (88%) of those who returned the card agreed to participate in the study and five (12%) declined participation. Thirty-two (89%) of those who agreed to participate returned the questionnaire to the researcher. The remaining four (11%) who agreed to participate failed to return the questionnaire. The researcher, using information supplied by the nutrition consulting business, was unsuccessful in contacting these four subjects.

There were 36 non-respondents to the initial mailing of 79 letters requesting

There were 36 non-respondents to the initial mailing of 79 letters requesting participation. The researcher contacted each of these individuals by phone if phone numbers were available from the nutrition consulting business or from directory assistance. Twenty-four were contacted with 16 agreeing to receive a questionnaire and eight declining participation. Thirteen of the latter group actually returned the questionnaire to the researcher. The researcher attempted to contact the other three; two could not be reached and one declined to participate.

The total number of individuals who consented to participate, either by response card or telephone contact, was 52 out of 79 (66%). The number of responses received from those agreeing to participate was 45 for a response rate of 57% of the population or 86.5% of those agreeing to participate. Reasons given from individuals for nonparticipation included the following: (1) lack of time due to busy personal schedules, (2) general dislike of questionnaires and/or limited choices they typically impose, and (3) dissatisfaction with the nutrition counseling experience. One individual declined because she felt she was too old to participate. The most frequently given reasons for declining participation was lack of time or poor previous experiences with questionnaires.

Demographic Data

The demographic data collected in this study included age, gender, height and weight. Height and weight were needed to determine if individuals met the inclusion criteria of this study's definition of obesity while age and gender provided depth to the study results.

There were twice as many women ($n = 30$) as men ($n = 15$) completing this study

weight, and Body Mass Index (BMI) of the sample. The mean age for both men and women was 44.9 with a median age of 45. Twenty-eight (62.6 percent) of the subjects were between the ages of 36 and 55. The average percent ideal weight for women was 151% and for men was 139% with an overall average percent ideal weight of 147%. The average BMI for women was 30.5 and for men was 33.3 with an overall average BMI of 31.4.

Questionnaire Data

Questionnaires included subjective (fill in the blank) information which notified the researcher of the reasons for seeking nutrition counseling, what personal factors improved as a result in change of diet, and each individual's age and gender. Individuals were also instructed to indicate if they were able to talk with a dietitian when they wished and if follow-up contacts were useful.

The beginning of each questionnaire requested general information about individuals' experience at the nutrition consulting business and reasons for seeking nutrition counseling. Each individual indicated that they were able to talk with a dietitian when they wished and attended more than one counseling session. Forty-two individuals (93.3%) indicated that the follow-up contacts were useful; two did not indicate whether the contacts were useful, and one individual indicated that follow-up visits were not useful because weight loss did not occur. Reasons why sessions were felt to be beneficial included the following: (1) the dietitian provided encouragement and motivation , (2) the dietitian helped change eating habits by providing tools and guidance, (3) the dietitian helped to keep individuals focused on nutritional goals, and (4) provided applicable information on healthy eating.

Table 1. Summary of Respondents' Characteristics

Age and Gender (N = 45)

Characteristic	Number	Percent
Gender:		
Females	30	67
Males	15	33
Age:		
Below 25 years	5	11
26 to 35 years	3	7
36 to 45 years	16	35
46 to 55 years	12	27
56 to 65 years	5	11
66 to 75 years	4	9

Characteristic	Average BMI	Average % IBW
Males	33.32	139
Females	30.50	151
Overall	31.44	147

Individuals were asked why they chose to consult with a dietitian. Twenty-four indicated that they primarily desired advice regarding weight reduction. Nine of these individuals desired weight reduction to improve symptoms of high blood pressure, high cholesterol, or diabetes. Other reasons for seeking nutrition counseling included controlling fat intake for symptoms of irritable bowel syndrome or hypercholesterolemia, instruction on a diabetic diet, general advice on eating properly for good health and/or increased energy, and diet advice for osteoporosis. In addition to the above reasons, 14 individuals also indicated that they desired reassurance that they were eating properly and 18 indicated that someone recommended that they see a dietitian.

Likert Scale Questions

Each questionnaire included 15 questions which had likert-scale responses rated 1 through 5. A rating of 1 indicated a response which disagreed strongly with the corresponding statement, a rating of 3 indicated neither agreement of disagreement, and a rating of 5 indicated a responses which agreed strongly with the corresponding statement.

Table 2 corresponds with the first research objective which was to determine if the individuals perceived the dietitian's assistance as valuable. Each respondent indicated that the information was useful by selecting either a score of 4 or 5 on the likert scale.

Table 2. The dietitian provided useful information

Likert Scale Number	Number of Responses	Percent
4 (agree)	7	15.5
5 (agree strongly)	38	84.4

According to Table 3, each respondent demonstrated confidence in the

information that the dietitian presented by again giving the two highest scores of 4 and 5. No scores lower than 4 were selected. This question helped to answer whether individuals perceived the dietitian's assistance as valuable.

Table 3. The dietitian knew what she was talking about

Likert Scale Number	Number of Responses	Percent
4 (agree)	4	8.
5 (agree strongly)	41	91.1

As indicated in Table 4, the majority of respondents indicated that their individuals needs were met by the dietitian. Two individuals gave no response. This question helped to answer the research objective which was to determine whether information received was pertinent to individual needs.

Table 4. The advice from the dietitian was suited to my special needs

Likert Scale Number	Number of Responses	Percent
3 (neither agree or disagree)	1	2.2
4 (agree)	6	13.3
5 (agree strongly)	36	80
No rating given	2	4.4

Table 5 illustrates whether the dietitian was helpful in helping individuals make personalized food choices. One individual gave no response. This question helped to determine if individuals were able to make the necessary changes with the help of the dietitian.

Table 5. After talking with the dietitian I knew what to eat for my special needs

Likert Scale Number	Number of Responses	Percent
3 (neither agree or disagree)	2	4.4
4 (agree)	11	24.4
5 (agree strongly)	31	68.9
No rating given	1	2.2

Table 6 contains the summary of responses which indicated that the majority of individuals strongly agreed that the dietitian enabled them to make dietary changes.

Table 6. After talking with the dietitian I changed my diet

Likert Scale Number	Number of participants	Percent
3 (neither agree or disagree)	5	11.1
4 (agree)	20	44.4
5 (agree strongly)	20	44.4

Table 7 helped to answer whether the dietitian gave information pertinent to individual needs. This statement evaluated if the dietitian, after nutrition counseling and assessing eating habits, made individuals realize that modifications were not needed. The majority of individuals disagreed or strongly disagreed with this statement which indicated that they felt, for the most part, that a change in eating habits was warranted. Several, however, agreed with this statement indicating that changes were not needed as conveyed by the dietitian. Four individuals gave no response, perhaps because they felt that if changes were indeed needed, the statement did not pertain to them.

Table 7. By talking with the dietitian I learned I didn't need to change my diet

Likert Scale Number	Number of Responses	Percent
1 (disagree strongly)	22	48.9
2 (disagree)	11	24.4
3 (neither agree or disagree)	4	8.9
4 (agree)	3	6.7
5 (agree strongly)	1	2.2
No score given	4	8.9

Table 8 indicates that the majority of individuals felt that they could change their diet with the assistance of the dietitian. Those individuals who selected a rating of 4 or 5 (agree or strongly agree that they could not make necessary changes) were to indicate which barrier(s) or problem(s) they specifically had by checking items including the following: Knowing what to eat, Getting to the Store, Finding the foods I needed, The foods I needed cost too much, Meal/snack preparation, Eating (in general), or Other. Thirty-four (75.5%) individuals made likert-scale selections below a rating of 4 or 5 indicating that they disagreed strongly with the statement and therefore did not indicate any barriers or problem areas that were not overcome with the dietitian's assistance. Only five (11.1%) people rated this question with a 4 or 5 indicating that they agreed with this statement and had difficulties in making changes. Of these 5 individuals, two indicated that knowing what to eat was a problem, one had trouble getting to the store, two had difficulty finding certain foods, one had problems with meal/snack preparation, and 3 had difficulty with eating in general.

Several individuals responded incompletely to this statement. One person agreed

somewhat strongly by selecting a rating of 4 but failed to indicate which factor(s) were problem areas. Perhaps none of the options were applicable and the selection of "other" was overlooked. Two people made no likert-scale selection but indicated problem areas. Both had difficulty preparing meals and snacks, one had trouble knowing what to eat, and one individual had difficulty finding the necessary foods and with eating in general. Three people made no likert-scale selection and did not indicate any problem areas possibly because they felt that the question was not pertinent to their situations which were improved by the dietitian.

Table 8. After talking with the dietitian I could not change my diet

Likert Scale Number	Number of Responses	Percent
1 (disagree strongly)	17	37.8
2 (disagree)	11	24.4
3 (neither agree or disagree)	6	13.3
4 (agree)	5	11.1
5 (agree strongly)	1	2.2
No score given	5	11.1

The summary of responses in Table 9 helped to determine if the individuals was able to make the necessary changes with the help of the dietitian. Thirty-four (75.5%) individuals moderately to strongly agreed with the above statement by selecting likert scale numbers 3 through 5 and indicated by filling in the blank what factors were improved. Sixteen of these individuals indicated that their weight improved, ten indicated that their health in general improved and/or cholesterol and diabetic blood sugar levels. Two felt their energy improved and seven felt their attitude, mood or

outlook on life improved.

Ten individuals incompleted the question. One individual selected a likert-scale number of 5 but did not state what improvements were made as a result in a change of diet. Six individuals indicated improvements including overall health, weight, improvement and body fat but did not select a score. Three people did not select a score nor did they state what improved as a result of change in diet. The statement's meaning was perhaps unclear to these individuals resulting in their lack of response.

Table 9. After changing my diet my (insert improvement) improved

Likert Scale Number	Number of Responses	Percent
3 (neither agree or disagree)	2	4.4
4 (agree)	15	33.3
5 (agree strongly)	19	42.2
No score given	9	20

The results reported in Table 10 helps to support whether individuals felt that changes were made with the help with the help of the dietitian. It also helped to support whether the dietitian provided information pertinent to individuals needs and if the dietitian was perceived as empathetic. The dietitian was apparently able to facilitate changes within individuals which not only helped them to meet their dietary goal but to receive an emotional boost as well. Each individual at least moderately agreed with this statement while one person did not respond to the question.

Table 10. After talking with the dietitian I felt better emotionally

Likert Scale Number	Number of Responses	Percent
3 (neither agree or disagree)	8	17.8
4 (agree)	19	42.2
5 (agree strongly)	17	37.8
No Score Given	1	2.2

The summary of responses to the statement reported in Table 11 helped to support and determine if individuals were able to make changes with the help of the dietitian. Improving physical well being takes effort and perseverance and often is a difficult task without the assistance AMD motivation of an outside force. As indicated in this table, the majority of respondents felt that their physical capabilities improved while several disagreed with this statement. One individual gave no response perhaps because physical improvement was not perceived.

Table 11. After talking with the dietitian I felt better physically

Likert Scale Number	Number of Responses	Percent
2 (disagree)	5	11.1
3 (neither agree or disagree)	8	17.8
4 (agree)	13	28.9
5 (agree strongly)	18	40
No Score Given	1	2.2

As table 12 indicates, the majority of individuals agreed that the information received was pertinent to individual needs and that necessary changes were made with

questionnaire disagreed by giving a rating of 2.

Table 12. After talking with the dietitian I felt in control of my condition

Likert Scale Number	Number of Responses	Percent
2 (disagree)	1	2.2
3 (neither agree or disagree)	13	28.9
4 (agree)	16	35.5
5 (agree strongly)	14	31.1
No Score Given	1	2.2

The summary of results reported in Table 13 primarily supports that the dietitian was perceived as empathetic and keys into the more emotional/motivational aspects of counseling. An overwhelming 80% strongly agreed with this statement while another 17.8% agreed as shown in table 13. One person disagreed which unsurprisingly was the same person who reacted negatively to the previous and other questionnaire statements.

Table 13. The dietitian provided support and encouragement

Likert Scale Number	Number of Responses	Percent
2 (disagree)	1	2.2
4 (agree)	8	17.8
5 (agree strongly)	36	80

Similar to the previous table, the summary of results in Table 14 helped to determine if the dietitian was perceived to be empathetic. It seems that it is very important to individuals to feel that their nutrition counselor has genuine interest and concern in their well-being which only improves the counseling relationship and outcome. The majority of individuals agreed with this statement while one person

strongly disagreed.

Table 14. The dietitian cared about me

Likert Scale Number	Number of Respondents	Percent
1 (disagree strongly)	1	2.2
3 (neither agree or disagree)	1	2.2
4 (agree)	10	22.2
5 (agree strongly)	33	73.3

The results recorded in Table 15 helped to determine if individuals felt that the dietitian's assistance was valuable and indirectly if information received was pertinent to individual needs. Most respondents agreed with the statement which relays, in this study, that the importance and value of receiving counseling from a dietitian was perceived.

Table 15. Anyone with my condition should talk with a dietitian

Likert Scale Number	Number of Responses	Percent
3 (neither agree or disagree)	2	4.4
4 (agree)	13	28.9
5 (agree strongly)	30	66.7

The results reported in Table 16 helped determine how valuable the dietitian's assistance was perceived to be on the behalf of the respondents. Eighty-Eight percent strongly disagreed with this table's question which demonstrates that the majority of individuals surveyed felt there was at least some benefit to talking with the dietitian. One person gave no response which may be interpreted as disagreement with the statement.

Table 16. There was no benefit in talking with the dietitian

Likert Scale Number	Number of Responses	Percent
1 (disagree strongly)	40	88.9
2 (disagree)	2	4.4
3 (neither agree or disagree)	1	2.2
4 (agree)	1	2.2
No rating given	1	2.2

Summary of Results

The results of this study strongly favored the positive influence that dietitians have on assisting individuals in their attempts at weight reduction. It should be noted that the majority of qualifying individuals who participated in the study had positive experiences with nutrition counseling. All participants, at least to some extent, felt that the dietitian's assistance was valuable, credible and pertinent to individual needs. All but one individual indicated that follow-up contacts were useful.

Subjective comments were given by individuals in several sections of the questionnaire. These comments usually commended the dietitian and the overall counseling experience. Several felt the dietitian was a true friend and confidant that played a vital role in changing eating habits. Those who were not able to meet their dietary goals stated that the dietitian was not at fault but that they simply were not ready or motivated to make changes for personal reasons. The dietitian was often seen as extremely helpful and encouraging when individuals struggled with changing habits. One individual attributed a weight loss of 54 pounds solely to the dietitian.

Those individuals who lost weight frequently commented that due to their weight

loss, blood cholesterol levels decreased. Individuals who were diabetic stated that blood sugars were better controlled as a result of weight reduction. Personalized counseling was found to be a great asset by one individual who found generalized, group dieting methods to be negligent of specific needs. The dietitian's help often went beyond that of dietary counseling to helping individuals cope with everyday problems and stresses that indirectly influenced their dieting successes. The overall tone of the participants' comments indicated that seeking the help of a dietitian was greatly rewarded in multiple facets of their life and that everyone should seek this assistance from time to time.

Chapter V

Summary and Discussion

Summary

This study examined the effect(s) of nutrition counseling for weight reduction on barriers or challenges to dietary adherence. The research questions which were answered as a result of the study included: (1) was the dietitian's assistance perceived as valuable, (2) was information received from the dietitian pertinent to individual needs, (3) which factors or barriers individuals were unable to overcome, (4) were individuals able to make necessary changes with the assistance of the dietitian, and (5) was the dietitian perceived as empathetic. Each of these responses, through the completion of the Clients' Perception of Nutrition Counseling questionnaire, primarily supported a positive and constructive relationship with the dietitian. Therefore, the results of this study have significant implications for registered dietitians who provide nutrition counseling to clients in the private setting. Since nutrition counseling is also provided to individuals in hospitals, clinics, and in the realms of public health, this study's result has positive implications for dietitians in those areas as well.

The purpose of this study was to identify the impact of nutritional counseling for weight reduction when motivational factors and barriers to participation are present. It is very common for individuals to face roadblocks when attempting to make a change in lifestyle. Changes present new, uncharted territory which often causes apprehension and lack of confidence in individuals. This may result in individuals preferring to resume a

familiar, though potentially unhealthy lifestyle rather than embarking on a sometimes emotionally painful journey of overcoming obstacles.

The study results indicate that the dietitian was often seen as an expert in the field of nutrition who was often viewed as a mentor and confidant who provided a support system for individuals attempting weight reduction. It is interesting to note that even those people who did not lose a significant amount of weight believed their experience was one that was positive. Perhaps the dietitian instilled confidence in individuals which encouraged them to pursue their nutritional goal in spite of setbacks. Lack of weight reduction but perseverance among these individuals suggests that the dietitian is able to help overcome the fear and potentially destructive nature of barriers to dietary adherence.

Some individuals, in spite of raving reviews of the dietitian, still had difficulty overcoming certain barriers resulting in the inability to make dietary changes or to achieve personal goals. It is possible that with further counseling sessions, which specifically dealt with each of these problems, barriers to nutritional goals would be overcome. This suggests that dietitians should first and foremost identify potential and actual barriers to adherence at the onset and throughout all nutrition counseling sessions. This identification will help to guide and facilitate the sessions in a manner which will address, and hopefully conquer, these barriers. After barriers are identified and methods are chosen to manage them, weight reduction and other nutritional goals may be achieved and maintained.

It should be recognized that even when barriers are identified and strategies are discussed, attainment of goals may not be achieved. Even with the best counseling techniques, there will always be a certain percent of the population that is still unable to

undergo and maintain dietary changes. This does not necessarily fault the ability of the dietitian to facilitate change but may indicate a lack of intrinsic motivation within the individual. The dietitian can advise, reinforce, facilitate, express empathy, and determine areas of strength and weakness but the ultimate determinant of diet success lies within each individual. As stated in the review of literature, knowledge may be imparted by the dietitian but independently does not instigate change (Holli, 1986). Support from others surrounding those attempting dietary change undoubtedly has a positive effect on achievement of dietary goals. However, the final actions and sustained change in behavior is intrinsically centered and the ultimate responsibility of the individual.

The dietitian's assistance was perceived as valuable

Four of the survey's questions or statements, which utilized a likert-scale, addressed if the dietitians's assistance was valuable. The dietitian was seen by each participant as someone who was an expert in the field of nutrition who provided valuable information and assistance which undoubtedly affected the client/professional relationship. If an individual does not perceive the dietitian as presenting information which is valid and trustworthy, the counseling experience will be thwarted and changes will not occur via the help of the professional. The majority of participants found their counseling experience so helpful that they agreed that anyone with a similar dietary condition should speak with a dietitian as well. While one individual found no benefit in talking with a dietitian, the remaining participants found there was great benefit in the counseling sessions. This vividly demonstrates the value that is perceived of the dietitian and suggests that dietitians, through appropriate counseling skills tailored to individual

needs, are able to convey a professional competence which is trusted and respected.

Information received from the dietitian was pertinent to individual needs

Two of the survey questions queried whether individuals found the information received throughout nutrition counseling as pertinent and applicable to individual needs. In this study, all participants as a minimum, moderately agreed that the advice from the dietitian was suited to individual needs. This acknowledgment of the importance of personalized counseling, on behalf of the dietitian, led to individuals feeling in better control of their condition which is an important hurdle in achieving desired results.

Factors or deterrents that individuals were unable or able to overcome

The majority of individuals (75.5%) indicated that there were no barriers or problem areas that they were unable to overcome with the assistance of the dietitian. The most common barriers that were reported were difficulty in finding foods recommended by the dietitian and with following the diet as prescribed. This might indicate that the dietitian did not review with these individuals where certain food items could be easily found or that they were reviewed but not noted by these individuals. Those who had difficulty with following the diet as prescribed perhaps found the information valuable but were unable to apply what they had learned to daily situations. Another problem area reported included meal/snack preparation. Interestingly, those who reported these deterrents agreed strongly or somewhat strongly that advice from the dietitian was suited to special, individual needs. Perhaps though the dietitian was able to tailor information to each individual, the individuals themselves were unable to transfer this information to real life situations due to other outside factors such as family, time, or simply lack of motivation. Trouble with getting to the store was reported as a barrier for one individual

which probably could not be directly addressed by the dietitian but is an individual responsibility.

Were individuals able to make necessary changes with the help of the dietitian

Several questions on the survey addressed this research objective. Each individual found, at least to a moderate degree, that changes were made possible with the dietitian's assistance. Though it is possible that all changes were not made that were needed, individuals felt that they were able to make at least some adjustments in their diet and lifestyle. Many felt that because of these changes they were enhanced physically as demonstrated through weight reduction and improved blood sugar, cholesterol levels, energy levels, and outlook on life. Several individuals subjectively reported that even though changes may have not been maintained, the dietitian was seen as a great mentor and asset to their physical livelihood. Therefore the dietitian, according to these individuals, was not at fault for their inability to make or maintain changes. Coincidingly, these results suggest perhaps the dietitian is not able to help individuals overcome barriers or inspire ongoing motivation, in certain incidences, in spite of well-planned, individualized counseling.

The dietitian was perceived as empathetic

Perhaps the trait which is equally, if not most, important to the individuals' perceptions of the counseling experience is a feeling of empathy and compassion from the dietitian. When individuals feel that the counselor truly understands and appreciates the adjustments and challenges that are encountered in lifestyle modification, they are more likely to persevere. Ninety-five percent gave a likert-scale rating of 4 or 5 when asked if they agreed that the dietitian cared about them and only 2.2% strongly disagreed.

Similarly, 97.8% found that the dietitian provided support and encouragement throughout the counseling sessions. Though empathy is important for the facilitation process, the parameters of this study did not examine its long-term effects on overcoming and maintaining barriers to adherence.

Conclusions and Recommendations for Practice

The results of this study provide insight to the relationship between nutrition counselors and their clients and the resulting manifestations of dietary change. It may be assumed that most registered dietitians, equipped with their training tools and ambition, strive to assist individuals in making dietary change. As counselors they have the responsibility of assessing each individual's diet history, goals, nutritional needs and of providing appropriate nutrition information based on this assessment. What each dietitian must also provide is assistance to overcome barriers that inevitably act as roadblocks in the quest for long-term dietary change and success.

The professional credentials and reputation of providing sound nutrition information often leads individuals to seek trustworthy nutritional advice from registered dietitians. Viewing the dietitian as the nutrition expert with valuable information is the first step in achieving a nutritional goal through nutrition counseling.. If an individual does not perceive the dietitian as a presenter of valid and useful information, the continuation of counseling most likely will not occur because it would be seen as a waste of time, effort and money. Therefore, dietitians must kept abreast of current nutritional issues, findings, and food products and present this information to clients in a manner which will foster the counseling relationship. Dietitians should be aware, however, that simply providing information of value does not guarantee change within their clients.

Individuals may find information interesting and nice to know, but unless that information is taught in an applicable manner which correlates with individual lifestyles, it is virtually useless.

The relevance of providing information which is pertinent to individual needs to overcoming obstacles to dietary change is strongly present and should not be ignored. If nutrition information is not tailored to what individuals need, change or adjustment in dietary behavior most likely will not occur. If information is presented in a standardized form to every individual and the dietitian presents or discusses only generalized information, individuals will not internalize and process the information in a manner that will facilitate change. Such a tailored interaction displays true concern and recognition for individual needs which fosters a more productive relationship between dietitian and client. Therefore, a standard approach to each individual should never be used by nutrition counselors. Dietitians should ask specific questions about their clients' lifestyles such as family dynamics, meal preparation ability, work schedules and financial ability. By discussing these personal lifestyle statistics, dietitians can help clients to anticipate and become equipped to overcome potential barriers before they occur.

Unfortunately, even in the most ideal counseling situation which utiizes well planned and executed counseling techniques, the responsibility for change and overcoming barriers to adherence lies with each individual. As social learning theory postulates, learning is somewhat of a two-way street in which the environment affects the individual and the individual affects the environment. Barriers to change may occur in each individual's environment but, when equipped with techniques to overcome these

barriers as learned in counseling sessions, individuals have the capability to succeed in their endeavors of dietary change. Utilizing and maintaining this capability is the responsibility of the individual.

Strengths and Limitations

One of the major strengths of this study was the choice of the Clients' Perception of Nutrition Counseling tool. It examined varying aspects of the nutrition counseling experience and allowed individuals to rate their level of agreement with statements regarding their progress and feelings towards counseling. Participants were encouraged to write subjectively about the positive and negative aspects of their experience with the dietitian and were free to make additional comments which would further describe their particular situation. Because the questionnaire collected both subjective and objective information, this study is significant for registered dietitians who are concerned with the impact they have on individuals attempting dietary change and wish to determine deterrents which are most commonly experienced during attempts at weight reduction.

A limitation of this study was that a questionnaire could not be mailed to every client who met the research criteria. The owner of the nutrition consulting business would not allow the study to be done unless the contingency of prior approval from each qualifying participant was met. Seventy-nine clients qualified for the study yet only 52 individuals agreed to participate through an initial postcard mailing. A total of 45 questionnaires were received. Had prior approval not been a requirement, a mass mailing of questionnaires to all those qualifying may have resulted in a higher number of participants and consequently a greater amount of research data.

Another limitation was the possibility that those who felt the nutrition counseling

experience was not positive or beneficial did not respond or wish to participate in the study. This suspicion is founded on the factor that nearly all respondents, with a few exceptions, had extraordinarily positive experiences. For example, one individual, who later agreed to participate after the researcher explained the study's purpose and goals, initially did not wish to participate for he felt that his unsuccessful weight loss experience would not qualify him for the study. This particular limitation may have been avoided if the initial letter of inquiry had more explicitly encouraged the participation of individuals who had positive as well as less than ideal counseling or weight loss experiences.

Implications for Further Study

Further research with a larger sample would be desirable. Also, the inclusion of individuals who received nutrition counseling from more than one setting would be interesting and would allow comparison between settings. For example, one might compare individuals' perceptions of counseling from a dietitian in the private setting to those from a public (e.g. hospital) setting. Also, a comparison of findings from individuals who were referred from a physician for nutrition counseling to those who were self-referred would provide insight as to whether self-initiation is advantageous when trying to overcome barriers to adherence.

Further research into specific motivators and deterrents would be useful. Identifying specifics about how individuals are most commonly motivated as well as deterred to reach nutritional goals would provide a valuable resource for dietitians when designing their approach to individualized nutrition counseling.

Examining the relationship of frequency of counseling sessions and the ability to

overcoming barriers is another possible way in which the dietitians's effect could be studied. It would be interesting to compare perceptions of nutrition counseling and overcoming barriers to adherence in individuals who had only several consultations to those who had multiple counseling sessions.

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APPENDIXES

APPENDIX A

Letter to Owner of Nutrition Consulting Business

Valerie Biddle, R.D./L.D.
103 South 67th Street
Broken Arrow, OK 74014

Nutrition Consultants of Tulsa
c/o Cece Davis
2021 South Lewis
Suite 710
Tulsa, OK 74104

March 1, 1995

Dear Cece,

Thank you for agreeing to allow your clients to participate in my research study through Oklahoma State University. I assure you that no names will appear in the printed study. Only a general tabulation of number of men and women participants and possibly height and weight will be reported. Data obtained from the questionnaire will be reported in percentages and frequency distributions.

The Chair of my thesis committee, Dr. Bob Nolan, has reviewed and approved the enclosed letter of inquiry and response card that will initially be sent to all clients who qualify for the study. (Those who are or were at least 20% above ideal weight at the onset of nutrition counseling, attended a minimum of three counseling sessions within the past year, and are age 18 or above) I would appreciate a few minutes of your time to review this letter as well. Those who agree to participate in the study as indicated on the self-addressed, stamped response card, will be sent a questionnaire entitled "Clients Perceptions About Nutrition Counseling".

Again, thank you for your time and consideration. I will call you early next week to discuss this further.

Sincerely,

Valerie Biddle, R.D./L.D.

APPENDIX B

Letter of Inquiry to Potential Participants

Valerie Biddle, R.D./L.D.
103 South 67th Street
Broken Arrow, OK 74014

Dear Potential Participant:

As an individual who has recently undergone nutrition counseling by a registered dietitian at Nutrition Consultants of Tulsa, your input in a graduate study through Oklahoma State University would be greatly appreciated. Your participation would require only a few minutes of your valuable time.

You may have experienced many challenges while implementing a healthier lifestyle. This often includes a process which requires individuals, such as yourself, to experience various challenges and triumphs before attaining long-term success. Your personal experience is a valuable asset in helping dietitians, like myself, successfully counsel others in their quest for a healthier lifestyle. Therefore, I am asking you to be a vital part of my survey.

A questionnaire will be sent to you, with your permission, which will take no more than just a few minutes of your time to answer. All responses are number coded and your name will not appear in the research study or be revealed to Nutrition Consultants of Tulsa to ensure anonymity.

Enclosed you will find a return post-card on which you may indicate your willingness to cooperate with providing vital information for this study. A quick response would be appreciated. Thank you for the courtesy of your assistance.

Very Sincerely Yours,

Valerie Biddle, R.D./L.D.

APPENDIX C

Participant Response Card to Initial Letter of Inquiry

Dear Valerie:

____ Please send the questionnaire; I will be happy to cooperate.

____ I am sorry but I do not wish to answer the questionnaire.

Comments:

Date:_____ Name_____

APPENDIX D

Questionnaire Cover Letter

Valerie Biddle, R.D./L.D.
103 South 67th Street
Broken Arrow, OK 74014

Dear Participant:

Thank you for agreeing to complete the enclosed questionnaire. Your input will be of great assistance in my graduate research about perceptions of nutrition counseling. You are not requested to provide your name on the questionnaire but an indication of your gender and age would be appreciated as it will provide important parameters in this study. All questionnaires are numbered to establish anonymity and for the purpose of follow-up of non-respondents. When completed, please return the questionnaire in the enclosed self-addressed, stamped envelope within the next 7-10 days.

Thank you again for your generosity.

Very Sincerely Yours,

Valerie Biddle, R.D./L.D.

APPENDIX E

Research Instrument

Clients' Perceptions About Nutrition Counseling

Clients' Perceptions About Nutrition Counseling

Instructions: Please read each question or statement before responding

1. Were you able to talk with a dietitian when you wanted to? (Circle choice) Yes No
   If no, please explain:

2. Did you talk with the dietitian more than once (Circle choice) Yes No
   If yes, was the follow-up contact(s) useful? (Circle choice) Yes No
   Please explain:

3. Why did you talk with a dietitian at Nutrition Consultants of Tulsa? (Check all that apply)
   ____For advice on _____with my symptoms of_____
   ____For reassurance that I was eating properly ____ For general nutrition advice _____I am not sure
   ____Someone recommended that I see a dietitian _____Other (comments):

4. Circle how much you agree or disagree with each statement:
   (1=disagree strongly; 2=disagree; 3=neither agree or disagree; 4=agree; 5=agree strongly; NA=not applicable)

	Disagree Strongly				Agree Strongly
a. The dietitian provided useful information	1	2	3	4	5
b. The dietitian knew what she was talking about	1	2	3	4	5
c. The advice from the dietitian was suited to my special needs	1	2	3	4	5
d. After talking with the dietitian I knew what to eat for my special needs	1	2	3	4	5
e. After talking with the dietitian I changed my diet	1	2	3	4	5
f. By talking with the dietitian I learned I didn't need to change my diet as my intake was already suited to my needs	1	2	3	4	5
g. After talking with the dietitian I could not change my diet	1	2	3	*4	*5

*If you circled 4 or 5, were any of these a problem?

____Knowing what to eat ____Getting to the store ____Finding the foods I needed in the store

____The foods I needed cost too much ____Preparing meals and snacks _____Eating ____Other

h. After changing my diet my_____improved	1	2	3	4	5
I. After talking with the dietitian I felt better emotionally	1	2	3	4	5
j. After talking with the dietitian I felt better physically	1	2	3	4	5
k. After talking with the dietitian I felt in control of my condition	1	2	3	4	5
l. The dietitian provided support and encouragement	1	2	3	4	5
m. The dietitian cared about me	1	2	3	4	5
n. Anyone with my condition should talk with a dietitian	1	2	3	4	5
o. There was no benefit in talking with the dietitian	1	2	3	4	5

5. Have you any other comments about the contact you had with the dietitian?

6. Your age:_____ Sex (circle): Male Female

Thank you! Your answers will help dietitians provide better nutrition counseling services!

VITA

Valerie Biddle

Candidate for the Degree of

Master of Science

Thesis: THE EFFECT OF NUTRITION COUNSELING FOR WEIGHT REDUCTION ON BARRIERS TO ADHERENCE

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in Dalton, Nebraska, On September 25, 1965, the daughter of Elwin and Barbara Linton.

Education: Graduated from Leyton High School, Dalton, Nebraska in May 1983; received Bachelor of Arts degree in Food, Nutrition, and Dietetics from University of Northern Colorado, Greeley, Colorado in March 1988. Completed a didactic dietetic internship at Saint Francis Hospital, Tulsa, Oklahoma in May 1989 and passed national registration boards in October 1989. Completed the requirements for the Master of Science degree with a major in Occupational and Adult Education at Oklahoma State University in December, 1995.

Experience: Employed as clinical and managerial dietitian at Broken Arrow Medical Center, Broken Arrow, Oklahoma, May to November 1989; Clinical and Outpatient dietitian at Saint Francis hospital, Tulsa, Oklahoma, May 1989 to November, 1993; Nutrition Consultant at Aspen Family Medicine, Broken Arrow, OK, May 1993 to present; Nutrition Consultant for Developmental Disabilities Services, State of Oklahoma, November, 1993 to present; Nutrition Consultant for Home Health Providers of Oklahoma, Broken Arrow, OK, June 1995 to present.

Professional Memberships: American Dietetic Association, Oklahoma Dietetic Association, Tulsa District Dietetic Association..

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 02-21-95 **IRB#:** ED-95-049

Proposal Title: THE EFFECT OF NUTRITION COUNSELING FOR WEIGHT REDUCTION ON BARRIERS TO ADHERENCE

Principal Investigator(s): Robert Nolan, Valerie Biddle

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:

Signature: _____ Date: February 22, 1995

Chair of Institutional Review Board