ABSTRACT

Kaufmann, B. E. The impact of "Winning Weighs" weight control program on perceived body image. MS in Community Health Education, 1991, 115pp. (B. Pretasky)

The Body Esteem Scale (BES) was administered and weights and body fat percentages were obtained for 75 Ss (61F, 14M). Subjects (20-66 years of age) were assessed at the beginning, end, and 4 months following a weight control program, "Winning Weighs". The Kolmogorov-Smirnov goodness of fit test showed statistical significance ($p < .05$) for the following subscales of the BES: female sexual attractiveness pretest to posttest ($z = 1.99$), pretest to post-posttest ($z = 1.64$), and posttest to post-posttest ($z = 2.4$); male physical condition, posttest to post-posttest ($z = 1.48$); female physical condition posttest to post-posttest ($z = 1.79$). Total scores on the BES were found to be significant for the following: females pretest to posttest ($z = 1.70$), males and females combined pretest to post-posttest ($z = 1.79$), female total scores posttest to post-posttest ($z = 1.86$), and males and females combined posttest to post-posttest ($z = 1.88$). A dependent t-test showed a significant difference in Ss' perceived ideal goal weights and assessed goal weights (ideal = 147.03, assessed = 162.85, $t = -5.40$, $df = 74$). The dependent t-test was also applied to show a significant weight change for the following: pretest to posttest (pre = 168.23, post = 158.08, $t = 14.56$, $df = 56$), pretest to post-posttest (pre = 175.36, post-post = 163.97, $t = 10.51$, $df = 35$), and posttest to post-posttest (post = 160.10, post-post = 158.95, $t = 2.35$, $df = 32$). A dependent t-test determined significance for the following body fat percentages: pretest to posttest (pre = 31.68, post = 29.62, $t = 9.95$, $df = 40$), pretest to post-posttest (pre = 31.68, post-post = 28.11, $t = 9.54$, $df = 28$), and posttest to post-posttest (post = 29.48, post-post = 28.07, $t = 9.05$, $df = 26$). Thus, female sexual attractiveness and male and female physical condition subscales showed significant changes following the "Winning Weighs" Program. Furthermore, the female BES total score and the male/female combined score showed significant change. Weight and body fat percentages were significantly lower at post and post-posttesting. The "Winning Weighs" Program was successful in at least short term weight loss maintenance.

THE IMPACT OF "WINNING WEIGHS" WEIGHT CONTROL PROGRAM ON PERCEIVED BODY IMAGE

A THESIS PRESENTED

TO

THE GRADUATE FACULTY

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CHAPTER I

INTRODUCTION

It has been stated that, if a "cure" for obesity is defined as reduction to a desired weight and the maintenance of that weight for five years, it's more likely that a person will be cured of most forms of cancer than obesity (Brownell, 1982). We live in a nation increasingly obsessed with thinness. While at the same time, we also are becoming increasingly more overweight. It is estimated that nearly 34 million adults in the United States are obese. In prehistoric times the ability to store excess calories as fat was useful to protect against periods of food shortage. As the world became industrialized food became constantly available and the physical work needed to obtain and prepare it was drastically reduced. Modernization of transportation as well as an increase in sedentary work and recreation styles also contributed to decreased energy expenditures. As a result, our fat storage ability became more of a hindrance to health than a support of it.

Our concept of what is an acceptable weight has also evolved over time. Currently there are a number of methods to change or control weight including pills, powders, liquid diets, as well as sensible eating plans. One question to consider is what motivates the individual to

lose weight and seek a change in appearance. When the desired change is achieved, does the individual recognize the change as positive or negative? Does self-perception have any reflection on the ability to sustain the loss?

Background

The media has helped to turn the weight control business into a multibillion dollar industry. Lifestyle together with numerous other factors has made obesity one of the most prevalent diet-related problems in the United States. According to The Surgeon General's Report on Nutrition and Health (U.S. Department of Health and Human Services (USDHHS), 1988) it has been estimated that Americans spend more than $10 billion per year on fad weight reduction treatments. It is evident that most are looking for the "quick fix". Thus, a more realistic view would be to consider obesity as a chronic disease that will require lifelong treatment and management. Societies' view of the obese person also has an obvious impact on weight loss and the individual's perception of self. The obese are often looked upon with disgust and are usually seen to be entirely to blame for their situation. In addition to the socially undesired aspects of obesity, it has also been related to a number of other health problems including diabetes, cardiovascular disease, stroke, hypertension, gallbladder disease, hypercholesterolemia, and several types of cancer, including colo-rectal,

prostate, breast, and uterine. The following is a summary of what Brownell (1984) felt were the three major factors that make obesity the serious health problem it is today. There are serious medical and psychological consequences. It is a prevalent disorder with ranges of 15-50% of the total population being obese and 25% of all children being obese. It is also resistant to treatment. Even at this, it has been said that the psychological and social disadvantages of being overweight can be even more disabling than the medical complications. For these reasons society is always looking for the key to overcoming obesity.

There are many theories about the causes of obesity and the most effective approach to treatment. The behavior modification approach to weight loss attempts to change eating and exercise habits for a lifetime. Obesity is a complex problem influenced by a variety of psychological and physiological variables. Therefore, Storlie and Jordan (1984) indicated, in order to develop effective behavioral strategies and deal with the many relevant issues in a broader context, a program must be based on an understanding of human behavior, most particularly an understanding of both the psychological and physiological factors which enter into the regulation of energy balance. Stunkard and Berthold (1985) described the mechanics of behavioral weight control programs as simple. They stated that treatment is usually carried out in a group format with

5 to 12 people in clinical programs and as many as 60 to 80 in larger programs. Treatment is usually conducted on a weekly basis for about an hour. Duration of the program can last from 8 weeks to 6 months or longer. They outlined the most commonly used elements of behavioral weight control as follows: (1) stimulus control, (2) eating behavior, (3) reward, (4) self-monitoring, (5) nutrition education, (6) physical activity, and (7) cognitive restructuring.

"Winning Weighs", a 9 week behavior modification oriented weight control program, attempts to incorporate these concepts. The "Winning Weighs" Weight Control Program was developed in 1985 by the registered dietitians at Lutheran Hospital, La Crosse, WI. This was done in response to a need for group support in weight loss efforts. As part of Lutheran Hospital's Nutrition Services, "Winning Weighs" emphasizes the importance of healthy lifestyle changes to support permanent weight loss. A registered dietitian assists the participant in the assessment of appropriate individualized weight loss goals. Registered dietitians, exercise physiologists and behaviorists collaborate to offer their individual expertise for the nine education sessions. A listing of each of the "Winning Weighs" education sessions may be found in Appendix A.

Purpose of the Study

The purpose of the study was to assess the impact of weight changes achieved during participation in the "Winning Weighs" Weight Control Program on the participants' perceived body image.

Need for the Study

Changing behavior has been shown to be difficult, even when the individual realizes that such changes may enhance health. Due to the complexity of behavior changes, it was decided that a study looking at the impact of a comprehensive behavior modification program would be significant in examining changes in perceived body image and weight loss. Storlie and Jordan (1984) indicated the need to determine whether participants of a behavior modification weight control program were successful at actually changing their eating habits and improving self-perceptions to achieve a greater loss of weight for a sustained period of time. Therefore, the ultimate question, is whether or not a better understanding of the factors leading to excessive weight gain and how weight influences our self-esteem can significantly influence weight control. This study will seek to address the impact of weight changes on self-perception.

Further investigation into body image and weight control, as indicated by Drewnowski and Yee (1987), found that almost 9 out of 10 normal-weight men expressed a desire

to be thinner. Both the men and women who wished to lose weight expressed negative body perceptions. Other research indicates that such misperceptions could lead to inappropriate weight losses and methods of weight loss. As a result, healthy perceptions of body image could be beneficial in sustained weight loss. The concept that body image may be affected positively or negatively by weight loss may be of importance to sustained weight loss.

The more variables that can be determined to be significant in weight loss the more successful we can be in long-term maintenance of weight control. The "Winning Weighs" Program was designed to encourage the development of healthy perceptions of body image and appropriate assessment of weight loss goals.

Hypotheses

The following null hypotheses were established for use with this study:

1. The pretest to posttest change scores on the following Body Esteem Scale subscales will not be significantly different:

Male subscales	Female subscales
a. physical condition	a. sexual attractiveness
b. upper body strength	b. weight concern
c. attractiveness	c. physical condition

2. The pretest to post-posttest change scores on the following Body Esteem Scale subscales will not be significantly different:

Male subscales	Female subscales
a. physical condition	a. sexual attractiveness
b. upper body strength	b. weight concern
c. attractiveness	c. physical condition

3. The posttest to post-posttest change scores on the following Body Esteem Scale subscales will not be significantly different:

Male subscales	Female subscales
a. physical condition	a. sexual attractiveness
b. upper body strength	b. weight concern
c. attractiveness	c. physical condition

4a. The pretest to posttest change scores for males on the Body Esteem Scale total score will not be significantly different.

4b. The pretest to posttest change scores for females on the Body Esteem Scale total score will not be significantly different.

4c. The pretest to posttest change scores for males and females combined on the Body Esteem Scale total score will not be significantly different.

5a. The pretest to post-posttest change scores for males on the Body Esteem Scale total score will not be significantly different.

5b. The pretest to post-posttest change scores for females on the Body Esteem Scale total score will not be significantly different.

5c. The pretest to post-posttest change scores for males and females combined on the Body Esteem Scale total score will not be significantly different.

6a. The posttest to post-posttest change scores for males on the Body Esteem Scale total score will not be significantly different.

6b. The posttest to post-posttest change scores for females on the Body Esteem Scale total score will not be significantly different.

6c. The posttest to post-posttest change scores for males and females combined on the Body Esteem Scale total score will not be significantly different.

7. There will be no significant difference between subjects' perceived ideal goal weight and assessed ideal goal weight.

8. There will be no significant difference in weight between pretest and posttest.

9. There will be no significant difference in weight between pretest and post-posttest.

10. There will be no significant difference in weight between posttest and post-posttest.

11. There will be no significant difference in body fat percentage between pretest and posttest.

12. There will be no significant difference in body fat percentages between pretest and post-posttest.
13. There will be no significant difference in body fat percentages between posttest and post-posttest.
14. There will be no significant relationship between subjects' weight loss and score on the Body Esteem Scale pretest to posttest change.
15. There will be no significant relationship between subjects' weight loss and score on the Body Esteem Scale pretest to post-posttest change.
16. There will be no significant relationship between subjects' weight loss and score on the Body Esteem Scale posttest to post-posttest change.

Assumptions

The following assumptions were made:

1. The participants understood and completed the Body Esteem Scale honestly.
2. The participants understood and accurately followed their prescribed meal plan.
3. All equipment utilized in the study functioned properly throughout the study.
4. The participants understood that they could withdraw from the study component of the program at any point if they elected to do so.

Limitations

The following were limitations of the study:

1. Misinterpretation of the questions may have altered the outcome of the study.
2. Uncontrolled external influences may have had an impact on perceived body image.
3. Uncontrolled external influences may have had an impact on weight change.
4. Attendance and motivation may have been influenced by preexisting monetary rewards established as part of the "Winning Weighs" Weight Control Program.
5. The skill and experience of the skinfold technician may have influenced the precision of the body fat measures.

Delimitations

This study had the following delimitations:

1. The subjects were limited to those that attended at least eight of the nine sessions.
2. The subjects were limited to employees of Lutheran Hospital and their families and employees of the Department of Transportation in La Crosse, WI.

Definitions of Terms

The following are terms related to this study:

Body Esteem Scale - A paper and pencil questionnaire comprised of 35 items. Each item is assessed on a five-point Likert scale. For males, body esteem dealt

with physical condition, upper body strength, and attractiveness. For females, it dealt with sexual attractiveness, weight concern, and physical condition (Fronzoi & Shields, 1984).

Behavior Modification - A technique used to reduce or eliminate the maladaptive behaviors and to teach more appropriate behaviors (Abramson, 1977).

Body Image - The mental image a person has of the physical appearance of the body. It includes the attitudes and feelings of the individual regarding his/her body.

Obesity - An excess of accumulated body fat. The degree of fatness is a continuum and is related to a standard of normality (USDHHS, 1988).

"Winning Weighs" Weight Loss Program - A nine session behavior modification based weight control program offered through Lutheran Hospital's Nutrition Services Department.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The literature review is divided into three sections to give a more complete picture of the nutrition and weight management issues of this study. The divisions are as follows: (1) obesity, (2) significance for public health, (3) behavior modification, and (4) body image.

Obesity

Although obesity and overweight are often used interchangeably, Wright and Whitehead (1987) provided a more clear distinction between the two. They defined obesity as a surplus in body fat and overweight as an excess in body weight relative to a selected standard.

Measures of Obesity

The standard most commonly used is the weight, adjusted for height, associated with longest survival rate. These are based on actuarial data from the Metropolitan Life Insurance Company (MLIC). The original tables were prepared in 1949 and revised in 1959 (MLIC, 1959) based on the Build and Blood Pressure Study of 1959 (Society of Actuaries, 1960). The most recent revision was in 1983 (MLIC, 1983) based on the Build Study of 1979 (Society of Actuaries and Association of Life Insurance Medical

Directors of America, 1980). Weigley (1984) summarized two criticisms of the new charts. The first being the idea of basing the tables on mortality alone ignores possible nonfatal risks of increased weight. The second was that no consideration was given to cigarette smoking, which is associated with both lower weight and shorter life span. A further criticism was offered by Stern (1984) in that age should be a consideration when assessing reasonable weight. She assessed that there can therefore be no best weight associated with longevity in adults age 25 to 59. To further classify degrees of overweight Stunkard and Stellar (1984) proposed the following: (1) mild obesity is 20-40% overweight, (2) moderate obesity is 41-100% overweight, and (3) severe obesity is greater than 100% overweight. Based on these standards they determined that almost 91% of all obese women are mildly obese.

Significance for Public Health

Although statistics vary, obesity affects approximately 34 million adults between the ages of 20 to 74, with the highest rates observed among the poor and minority groups. According to The Surgeon General's Report on Nutrition and Health (USDHHS, 1988) 25.6% of Americans aged 20 to 74 are overweight. Rates for blacks exceed those for whites, and those for females of all races exceed those for males. The highest rate of overweight occurs between

the ages of 35 to 64 for men and continues to increase through the ages measured for women. Gortmaker, Dietz, and Cheung (1990) indicated that recent studies have documented an increased prevalence of childhood and adolescent obesity in the United States. They felt that these increases will likely result in increased adult obesity in the future based on tracking of obesity from adolescence into adulthood and the tendency for adults in the United States to become obese as they age. They also identified increased television viewing as a strong risk factor for both the onset of obesity and a decrease in its remission by decreasing activity levels and possibly influencing diet.

Theories of Obesity

It has been suggested that obesity may be caused or maintained for physiological reasons. Weight gain is a result of an excess of energy input in relation to expenditure. Factors outlined in the The Surgeon General's Report on Nutrition and Health (USDHHS, 1988) are as follows: heredity, overeating, altered metabolism of adipose tissue, defective or decreased thermogenesis, decreased physical activity without a reduction in energy intake, and certain medications. Any of these various factors can work alone or in combination to result in weight gain. Brownell (1984) suggested that the two most common theories on the physiology of obesity are the fat cell theory and

the set point theory. The fat cell theory concluded that adult-onset obese persons had fat cells much larger (hypertrophy) than those of normal weight. Those with childhood onset obesity had an increased number of fat cells (hyperplasia). It was first hypothesized that nutritional and genetic influences early in life lead to hyperplasia and that the number of fat cells stabilized some time in adolescence. Weight gain after this was thought to be a result of increase in cell size only. The current knowledge is that cell number can increase in adults during prolonged periods of positive energy balance. Reciprocally it is believed that cell number may decrease when the individual loses a great deal of weight and remains reduced for an extended period of time. Based on this theory, Brownell stated that hyperplastically obese people are likely to be heavy due to their large number of fat cells. Weight loss for these people will be difficult due to the biological need to keep these cells supplied with energy.

In the set point theory it is believed that the body may send out physiological and psychological signals to defend against changes above or below the set point. This theory is quite controversial. Even if accepted it is not possible to identify which individuals are above or below their set point. Atkinson, Russ, Ciavarella, Owsley, and Bibbs (1984) stated that when there is a deviation

from the set point, metabolic and hormonal changes occur which tend to minimize changes in body weight. "The metabolic changes that occur with weight gain decrease metabolic efficiency, and, conversely, changes that occur with weight loss tend to increase metabolic efficiency" (p.440). As a result of these mechanisms the obese person who has lost weight and is below their set point is like a semi-starved person and will have a hard time maintaining this weight due to biological pressure to restore the body to its original weight. This then, is a strong argument for behavior modification as well as other interventions such as low fat diets and increased physical activity to help the person maintain their weight loss through cognitive and behavioral restructuring.

Health Consequences of Obesity

Krotkiewski, Bjorntorp, Sjostrom, and Smith (1983) described the health consequences of various body fat distributions. They found that the distribution of fat around the abdomen, or upper body obesity, was associated with an increased occurrence of cardiovascular risk factors such as hypertriglyceridemia and impaired glucose tolerance. Lower body obesity, more common in women, did not appear to be associated with increased cardiovascular risk factors.

Most experts agree that excessive body weight and its duration is associated with increased morbidity and mortality. Many serious conditions such as

noninsulin-dependent diabetes, gallstones, sleep apnea, osteoarthritis, and some types of cancer have a direct relationship to obesity.

Obesity Treatment

To lose weight there must be a decrease in caloric intake, an increase in caloric expenditure, or both. Some of the major methods of weight control are behavior change therapy, caloric manipulation, drugs to decrease appetite or increase satiety, and surgical intervention. As of yet, no one perfect approach has been found and no single approach can be expected to be ideal for everyone. As mentioned earlier, for any approach to have permanent results changes must be maintained for a lifetime. Rock and Coulston (1985) proposed the following criteria for health and safety evaluation of dietary approaches to weight loss: the diet must satisfy all nutrient needs except energy, meet individual tastes and habits, minimize hunger and fatigue, be readily obtainable and socially acceptable, favor the establishment of a changed eating pattern, and be conducive to improvement of overall health.

For a weight loss program to be successful it must minimize attrition. Pratt (1990) summarized a number of single-factor variables to identify predictors of attrition. These include: higher expectations of weight loss, greater weight gain 2 weeks prior to starting the program, higher anxiety about losing weight, and lower expectations of

family support than persons who completed weight reduction programs. She concluded that retention of participants could be improved if professionals: (1) developed the motivation, self assurance, learning skills, and enthusiasm of participants in programs, (2) demonstrated the lessons' relevance to the client's own health and to the health of family members, (3) offer lessons that enable clients to control their eating and exercise habits and to become committed to the program, and (4) clarify the program's weight loss goals of only 1 to 2 pounds per week and discuss expected outcomes for the program.

A study was conducted by Hahn and Betts (1986) to determine the types of weight loss diets urban adults used and to determine which types of weight control methods were the most successful in achieving and maintaining a weight loss over time. It was found that 41% of subjects used a combination of exercise and caloric restriction, 13% used increased exercise only, 19% used caloric restrictions only, and the remaining subjects used a variety of other methods. The other methods selected included diet pills, health clubs, weight loss clinics, and liquid diets. It was concluded that self-regulated weight control methods were rated as the most successful for achieving weight loss and group support methods were rated as the most successful for maintaining a weight loss. It was therefore concluded that although self-regulated weight

control methods were most successful in achieving weight loss, some form of support, such as behavior therapy, may be needed to maintain the loss. This conclusion was supported by a study conducted by Miller and Sims (1981) utilizing 67 subjects. They concluded that those that maintained a weight loss for at least one year used behavior therapy techniques significantly more than subjects who had not maintained a weight loss. In a review of weight loss methods Wing and Jeffrey (1979) concluded that use of behavior therapy may lead to the best outcome concerning maintenance of a weight loss.

Behavior Modification

Although the basic concept of establishing an energy deficit to achieve weight loss is very simple, obesity continues to remain remarkably resistant to treatment. A combination of diet, exercise, and behavior modification seems to be the most effective approach. Even with this combination the long-term effectiveness is questionable. Because obesity is a condition that requires continuous attention, any behavior change requires a lifelong commitment.

Early behavior modification programs were based on the following assumptions summarized by Storlie and Jordan (1984): (1) obesity is a learning disorder and, therefore, should respond to treatment in accordance with the principles of learning theory; (2) obesity is a simple

disorder caused by excess intake of calories; (3) the obese person is an overeater; (4) obese persons are more sensitive to food stimuli than nonobese; (5) obese persons have an eating style distinct from that of the nonobese; (6) teaching the obese person to behave like a normal weight person will result in weight loss; (7) psychological factors are irrelevant to the development of obesity; and (8) with only infrequent exceptions, organic variables, such as metabolism, may be disregarded. These assumptions are now seen to apply only to a small subgroup of obese individuals.

More recent behavioral programs are placing increased emphasis on psychological issues. Behavior change has become only part of a comprehensive approach. Often the individuals' motivation for being overweight needs to be addressed. In many cases, eating serves another purpose for the person other than nourishment. This may include a number of needs from love to safety and many others. Storlie and Jordan (1984) outlined the four characteristics of treatment. First, the treatment process initially will focus on behavior. Second, each technique suggested contributes to a process of gradual change. Third, it is an educational approach. Fourth, the attitudes that the patient takes towards the enjoyment of food and the incorporation of the patient's food preference are considerations in dietary planning.

A weight modification class conducted by Hudiburgh (1984) combined a reduced calorie diet, exercise, and behavior modification. The 20 women enrolled in the class averaged a 10 pound weight loss. At one year eight of the women revealed an average loss of 20 pounds since the beginning of the class. These results supported the use of a behavior modification component in weight control. Ferguson (1978) stated that instruction and dietary counseling alone will set the stage for behavior change but will rarely result in change. Paulsen, Lutz, McReynolds, and Kohrs (1976) also supported this. In their study, counseling alone was found less successful in promoting weight loss and maintenance than its combination with behavior modification.

In studies looking at group compared to individual intervention some interesting results were observed. Adams and Grady (1986) compared a series of 12 behavior modification group programs (with 125 participants) with 28 individual programs. They observed that men participating in group sessions and women seen in individual sessions lost the most weight. Kingsley and Wilson (1977), in a study of 78 women found those seen individually lost slightly more weight than those in groups. However, on follow-up, losses with group intervention were greater. Jeffrey et al. (1983) chose men as the study population

and found no significant weight difference between intervention methods.

The importance of family support in a behavior modification weight loss program was investigated by Hart, Einav, Weingarten, and Stein (1990). Five behavior modification groups were followed for one year. It was found that a disinterested or uninvolved family increased the likelihood of failure for a participant. They also found that exercise improved participants' sense of well-being and reinforced positive feelings associated with weight loss.

Body Image

Body image or self-concept has been defined in a number of ways throughout the literature. Jupp, Collins, McCabe, Walker, and Diment (1983) defined it as, "a dynamic concept, defined in terms of a picture or mental representation, or a constellation of representations, of the body self which gradually changes throughout life as the body develops and changes" (p. 484). Wright and Whitehead (1987) concluded that to assess body image one must also assess obesity in a sociocultural context. They hold that there is no universal measurement for assessing overweightness. This concept of cultural influences on obesity perception is supported by research conducted by Rittenbough (1982) and Allon (1979). Yet, as much as body image is defined as a dynamic concept, our society's ideas of the most

desirable figure will change over time. Therefore, Massara and Stunkard (1979) suggested that differing ideals of beauty will reflect cultural values as well as the prevalence of obesity. In their study of 213 Puerto Rican migrants they found a wide range of acceptable weights and a cultural definition of obesity beginning at 86% above desired compared to 20% by medical standards. Society's attitude towards and perception of the obese person has also been a focus of research. Allon (1979) stated, "many onlookers lower fat people from whole and usual people to tainted, discounted people. Stigmatizing the overweight person includes the rejection and disgrace that are connected with a condition viewed both as a physical deformity and as a behavioral aberration" (p. 470).

A negative attitude towards the obese prevails in the literature. These attitudes have been found to have a direct impact on the way the overweight person views himself/herself. In Allon's (1979) research it was found that overweight people have certain views about the stigma of being overweight that can help or hinder them in losing weight.

> A strong negative body image, cited frequently by all females who had trouble losing weight, may act as an inhibitor or deterrent in the weight-losing process. Perhaps for weight-losing to be successful, a person must have somewhat of a positive self-image or have some degree of self-esteem or at least not be overwhelmed by a negative body and self-image that one may reaffirm by not succeeding on one's diet. (p. 478)

Many overweight people tend to lack this positive self-image. They tend to focus on their weight as a negative aspect of interacting with society and this in turn can have a negative effect on weight loss.

Wright and Whitehead (1987) formed two major conclusions about the obese individuals' body image. The first is that the perception of body size is an important factor in the self-concept of obese persons. The second is that the body image disturbance is characteristic of the severely overweight.

The concept of a phantom body size was introduced by Glucksman and Hirsch (1969). They found that during and following weight loss, obese subjects increasingly overestimated their size. Yet, before weight loss they tended to underestimate their size. The term phantom body size relates to the finding that following weight loss they continued to perceive themselves as if they had not lost weight.

In contrast to these conclusions about the body image of the obese, others have found that body image disturbance isn't more serious or prevalent among the obese than the average weight person. Paul and Robinson (1983) studied a group of women runners with an average weight of 123.2 pounds and found that 57% thought they were overweight. Drewnowski and Yee (1987) also concluded that women tend to see themselves as overweight even if they are not.

Their study looked at sex differences related to body image and found that gender is a significant predictor of perceived overweight and dissatisfaction with body shape. Three possible explanations for the variations in findings are presented by Klesges (1983). These are as follows: different conceptualizations of body image among various researchers, different assessments used to measure body image, and most studies have used patients who were either hospitalized or were being treated for eating disorders.

The literature supports the potentially detrimental affects of obesity on health and self-concept. As discussed, there are many approaches to weight control, yet, an ideal method has not been found. No single approach can be expected to be effective for everyone. Thus, the literature suggests the need for continued research regarding the factors that influence achieving and sustaining weight loss.

CHAPTER III

METHODS AND PROCEDURES

Introduction

This chapter will discuss the methods and procedures used in the study. The five sections of this chapter are presented as follows: (1) subjects, (2) instrumentation, (3) "Winning Weighs" Weight Control Program, (4) research design, and (5) statistical analysis.

Subjects

The initial sample for the study consisted of 75 participants from the La Crosse area. The ages ranged from 20 to 66 years, with a mean age of 37.6. The distribution of the population by gender was 61 females and 14 males.

All subjects were volunteers. Copies of the consent and institutional review board forms may be found in Appendix B. In addition, participants became subjects if they met two criteria established by the "Winning Weighs" Weight Control Program. Weight loss goals could not exceed 17 pounds and the individual had to be assessed as having a minimum weight loss goal of 4 pounds.

All subjects were informed of the rebate system of the program. This was a built in system that offered a rebate of one half of the cost of the program if the weight

loss goal was reached and not exceeded by the end of the first 9 weeks. The second half of their program cost was rebated at the time of the 4 month follow-up if the weight loss was at least maintained. The volunteer nature of the study was stressed by explaining to participants that they could withdraw from the study at any time without risking loss of rebate.

Instrumentation

The Body Esteem Scale

The Body Esteem Scale (BES) (see Appendix C) was used to assess changes in perceived body image. This scale was developed by Fronzoi and Shields (1984) who felt that body esteem is multidimensional and differs for males and females. For males, body esteem focused on physical condition, upper body strength, and attractiveness. For females, the focus was sexual attractiveness, weight concern, and physical condition. These categories were determined by the developers of the scale and represent what they found to be the three factors, according to gender, that influence body esteem. Thus, this data collection tool seemed highly appropriate for this study.

The instrument was a 35-item questionnaire. Each item was assessed on the following five-point Likert scale: (1) have strong negative feelings, (2) have moderate negative feelings, (3) have no feelings one way or the other, (4) have moderate positive feelings, and

(5) have strong positive feelings.

Reliability. Cronbach's alpha was computed for all factors. The coefficients for males were .81 for attractiveness, .85 for upper body strength, and .86 for general physical condition. For females the coefficients were .78 for attractiveness, .87 for weight concern, .82 for general physical condition. It was concluded, based on these scales, that the BES is a tool of reasonable internal consistency (Franzoi & Shields, 1984).

Convergent validity. To test the validity of the scale it was administered along with the Rosenberg Self-Esteem Scale to 44 males and 78 female undergraduate students from the University of California at Davis. A correlation was predicted between general self-esteem and each of the three body esteem subscales, in both males and females. This prediction was supported in all aspects except the females' weight concern factor (Franzoi & Shields, 1984). Based upon this information, the BES was considered both a valid and reliable tool and appropriate for use in data collection.

Height and Weight

Participants were weighed, in street clothes, to the nearest tenth of a pound on a Digitron digital floor scale. All heights were measured to the nearest .25 inch with one permanently affixed tape measure.

Desired Weight Goals

Desired weight goals were determined based on three factors. The first factor was each person must have had at least 4 pounds to lose. Second, ideal weight was based on the 1959 Metropolitan height and weight tables. Lastly, participants were to have set weight loss goals at 17 pounds or less.

Body Fat Assessment

Body fat assessment was achieved with the use of Lang skinfold calipers. Skinfolds for males were obtained from the chest, abdomen, and thigh. For females skinfolds were obtained from the tricep, abdominal, and illiac crest.

"Winning Weighs" Weight Control Program

"Winning Weighs" was developed by registered dietitians at Lutheran Hospital in 1985 in response to a need for group support in weight loss efforts. As part of Lutheran Hospital's Nutrition Services, "Winning Weighs" emphasizes the importance of healthy lifestyle changes to support permanent weight loss. A registered dietitian assists in the assessment of appropriate individualized weight loss goals. Registered dietitians, exercise physiologists and behaviorists collaborated to offer their individual expertise for the nine weekly education sessions. Classes were offered on a weekly basis with each class being presented three times during the week. This was done to allow for variable work schedules in the hospital setting.

Each participant was asked to attend at least five classes in addition to the initial assessment to remain eligible for their rebate. A content outline of the "Winning Weighs" Weight Control Program may be found in Appendix D.

Research Design

A one-group pretest posttest post-posttest design was utilized in this study. This design involves one group which is pretested, exposed to a treatment, and posttested at two different time intervals. The success of the treatment is determined by comparing pretest and both posttest scores (Gay, 1981).

Validity Concerns

Internal validity. A number of internal validity concerns were inherent in this design. History and maturation were not controlled. Other factors may influence the subjects to allow them to perform better on posttest measures. Due to the length of the study, history and maturation may have had an influence on study results.

Testing and instrumentation were not controlled. Subjects may have become familiar with the instrument that would allow them to have scored better on subsequent testing.

Statistical regression was not controlled for in this design. It was possible, due to repeated exposure to the same instrument that subjects would perform better on subsequent testings.

External validity. An external validity factor was also of concern in this design. The external validity factor of pretest-treatment interaction was not controlled. The nature of the design may have caused subjects to react differently to the intervention than if they would not have been pretested.

Statistical Analysis

Nonparametric tests were chosen to analyze data gathered in the first six hypotheses as well as 14 through 16. According to Blalock (1972):

> We would expect to find that nonparametric alternatives to the differences-of-means test will be most useful whenever either of two conditions is met: 1. we cannot legitimately use an interval scale but ordering of scores is justified, or 2. the sample is small and normally cannot be assumed. (p. 244)

The Kolmogorov-Smirnov one-sample Z test was used to determine if the change scores between tests were significant at the .05 level of significance for hypotheses one through six.

A dependent t-test was applied to analyze the data gathered for hypotheses 7 through 13. The data gathered when determining perceived weight goal, actual weight goal, and actual body fat percent were interval level. The assumption was also made that the distribution of scores within the population follow a normal distribution.

Nonindependent samples are samples formed by some type of matching. The ultimate matching is when the two

samples are really the same sample group at two different times, such as one group which receives two different treatments at two different times or which is pretested before treatment and then posttested. When samples are nonindependent, the error term of the t-test tends to be smaller and therefore there is a higher probability that the null hypothesis will be rejected. Thus, the t-test for nonindependent samples was used to determine whether there was a significant difference between those who had lost weight and those who had not lost weight and their perceived body image (Gay, 1981).

The Mann-Whitney U test was the nonparametric test chosen to analyze the data for hypotheses 14 through 16. The test was selected to determine if a weight loss resulted in a significant change in perceived body esteem score at the .05 level of significance. This test is typically used when: (1) the dependent variable is quantitative and continuous in nature, (2) the independent variable is between-subjects in nature, and (3) the independent variable has two and only two values (Jaccard 1983). Thus, the Mann-Whitney U test was appropriate for analysis of data.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

This chapter will discuss the results of the analyses of the data. The following format has been used in the presentation of each null hypothesis: each has been stated, followed by discussion of method of analysis and results, and concluded with a statement of either rejection or acceptance.

Results

1a (males). The pretest to posttest change score on the male physical condition subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = .81$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

1b (males). The pretest to posttest change score on the male upper body strength subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit

test was applied to analyze the data. The change score was statistically nonsignificant ($z = .92$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

1c (males). The pretest to posttest change score on the male attractiveness subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = .53$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

1a (females). The pretest to posttest change score on the female sexual attractiveness subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically significant ($z = 1.99$, $p < .05$). Therefore, the null hypothesis was rejected.

1b (females). The pretest to posttest change score on the female weight concern subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit

test was applied to analyze the data. The change score was statistically nonsignificant ($z = .78$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

1c (females). The pretest to posttest change score on the female physical condition subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = 1.28$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

2a (males). The pretest to post-posttest change score on the male physical condition subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = 1.23$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

2b (males). The pretest to post-posttest change score on the male upper body strength subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = .61$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

2c (males). The pretest to post-posttest change score on the male attractiveness subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = .49$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

2a (females). The pretest to post-posttest change score on the female sexual attractiveness subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically significant ($z = 1.64$, $p < .05$). Therefore, the null hypothesis was rejected.

2b (females). The pretest to post-posttest change score on the female weight concern subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = 1.15$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

2c (females). The pretest to post-posttest change score on the female physical condition subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = 1.17$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

3a (males). The posttest to post-posttest change score on the male physical condition subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically significant ($z = 1.48$, $p < .05$). Therefore, the null hypothesis was rejected.

3b (males). The posttest to post-posttest change score on the male upper body strength subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = .82$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

3c (males). The posttest to post-posttest change score on the male attractiveness subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = .97$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

3a (females). The posttest to post-posttest change score on the female sexual attractiveness subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically significant ($z = 2.40$, $p < .05$). Therefore, the null hypothesis was rejected.

3b (females). The posttest to post-posttest change score on the female weight concern subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = 1.24$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

3c (females). The posttest to post-posttest change score on the female physical condition subscale of the BES will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically significant ($z = 1.79$, $p < .05$). Therefore, the null hypothesis was rejected.

4a (males). The pretest to posttest change score on the BES total score for males will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = .74$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

4b (females). The pretest to posttest change score on the BES total score for females will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically significant ($z = 1.70$, $p < .05$). Therefore, the null hypothesis was rejected.

4c (males and females). The pretest to posttest change score on the BES total score for males and females combined will not be significantly different. In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically significant ($z = 1.79$, $p < .05$). Therefore, the null hypothesis was rejected.

5a (males). The pretest to post-posttest change score on the BES total score for males will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = .47$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

5b (females). The pretest to post-posttest change score on the BES total score for females will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = 1.19$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

5c (males and females). The pretest to post-posttest change score on the BES total score for males and females combined will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically nonsignificant ($z = 1.05$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

6a (males). The posttest to post-posttest change score on the BES total score for males will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied. The change score was statistically nonsignificant ($z = .50$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

6b (females). The posttest to post-posttest change score on the BES total score for females will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically significant ($z = 1.86$, $p < .05$). Therefore, the null hypothesis was rejected.

6c (males and females). The posttest to post-posttest change score on the BES total score for males and females combined will not be significantly different.

In preparation for analysis all data were converted to absolute values. A Kolmogorov-Smirnov goodness of fit test was applied to analyze the data. The change score was statistically significant ($z = 1.88$, $p < .05$). Therefore, the null hypothesis was rejected.

7. There will be no significant difference between subjects' perceived ideal goal weight and assessed ideal goal weight. A dependent t-test was performed comparing the means of the two weights. The t value was statistically significant ($t = -5.40$, $df = 74$, $p < .05$), indicating that the mean score for subjects' perceived ideal goal weight (147.03) was significantly lower than the mean score for assessed ideal goal weight (162.85). Therefore, the null hypothesis was rejected.

8. There will be no significant difference in weight between pretest to posttest. A dependent t-test was performed comparing the means of the two weights. The t value was statistically significant ($t = 14.56$,

df = 56, $p < .05$), indicating that the mean score for subjects' pretest weight (168.23) was significantly higher then the mean score for subjects' posttest weight (158.08). Therefore, the null hypothesis was rejected.

9. There will be no significant difference in weight between pretest and post-posttest. A dependent t-test was performed comparing the means of the two weights. The t value was statistically significant ($t = 10.51$, df = 35, $p < .05$), indicating that the mean for subjects' pretest weight (175.36) was significantly higher than the mean for subjects' post-posttest weight (163.97). Therefore, the null hypothesis was rejected.

10. There will be no significant difference in weight between posttest and post-posttest. A dependent t-test was performed comparing the means of the two weights. The t value was statistically significant ($t = 2.35$, df = 32, $p < .05$), indicating that the mean for subjects' posttest weight (160.10) was significantly higher than the mean for subjects' post-posttest weight (158.95). Therefore, the null hypothesis was rejected.

11. There will be no significant difference in body fat percentages between pretest and posttest. A dependent t-test was performed comparing the means of the two percentages. The t value was statistically significant ($t = 9.95$, df = 40, $p < .05$), indicating that the mean for pretest percentages (31.96) was significantly higher

than the mean for posttest percentages (29.62). Therefore, the null hypothesis was rejected.

12. There will be no significant difference in body fat percentages between pretest and post-posttest. A dependent t-test was performed comparing the means of the two percentages. The t value was statistically significant ($t = 9.54$, $df = 28$, $p < .05$), indicating that the mean for pretest percentages (31.68) was significantly higher than the mean for post-posttest percentages (28.11). Therefore, the null hypothesis was rejected.

13. There will be no significant difference in body fat percentages between posttest and post-posttest. A dependent t-test was performed comparing the means of the two percentages. The t value was statistically significant ($t = 9.05$, $df = 26$, $p < .05$), indicating that the mean for posttest percentages (29.48) was significantly higher than the mean for post-posttest percentages (28.07). Therefore, the null hypothesis was rejected.

14. There will be no significant relationship between subjects' weight loss and score on the BES pretest to posttest change. Weight loss data required for this analysis was determined by converting weight loss to yes or no results. The pretest to posttest change score was determined by computing differences between total score pretest to posttest on the BES.

A Mann-Whitney U test was applied to the ranked data for those who had lost weight (n = 43) and those who had not (n = 1). The difference in ranks was not statistically significant (u = .5, p > .05). Therefore, there was a failure to reject the null hypothesis.

15. There will be no significant relationship between subjects' weight loss and score on the BES pretest to post-posttest change. Weight loss data required for this analysis was determined by converting weight loss to yes or no results. The pretest to post-posttest change score was determined by computing differences between total score pretest to post-posttest on the BES.

A Mann-Whitney U test was applied to the ranked data for those who had lost weight (n = 26) and those who had not (n = 1). The difference in ranks was not statistically significant (u = 1.5, p > .05). Therefore, there was a failure to reject the null hypothesis.

16. There will be no significant relationship between subjects' weight loss and score on the BES posttest to post-posttest change. Weight loss data required for this analysis was determined by converting weight loss to yes or no results. The posttest to post-posttest change score was determined by computing differences between total score posttest to post-posttest on the BES.

A Mann-Whitney U test was applied to the ranked data for those who had lost weight (n = 20) and those who had

not ($n = 6$). The difference in ranks was not statistically significant ($u = 40.5$, $p > .05$). Therefore, there was a failure to reject the null hypothesis.

Discussion

The significant results of the analysis of the data collected are summarized and discussed. Significance was determined for the female sexual attractiveness subscale of the BES at all assessment times. This might indicate that the females in the study tend to equate their sexual attractiveness with their weight. Weight and percent body fat also improved at all assessment times. Hopefully they were able to gain a better understanding and greater acceptance of their own bodies through the program.

Significance was also determined for male and female physical condition subscales of the BES but only when looking at posttest to post-posttest results. Hopefully an increase in individual activity levels took place based on information provided in the program. The class portion of the program was offered during cooler months. Perhaps some of the change took place in the physical condition subscales during the posttest to post-posttest time because of warmer temperatures and greater access to a wider variety of activities.

Total scores on the BES were significant at the following times: (1) female total score pretest to posttest, (2) male and female total scores combined pretest to

posttest, (3) female total score posttest to post-posttest, and (4) male and female total score combined posttest to post-posttest. As participants progressed through the program the total scores indicated an improved self concept. This was perhaps due to achieving their weight loss goals as well as information provided during the weekly lectures. A significant difference was also determined between subjects' perceived ideal goal weight and assessed ideal goal weight. As expected subjects' perceived ideal goal weights were generally lower than assessed goal weights. People tend to overestimate a safe rate of weight loss. So the importance of assessment and monitoring can be seen. This also indicates a need for education on safe weight loss.

The final significance was determined for changes in weight and percentages of body fat on comparing all assessment times. These results confirm the success of the "Winning Weighs" Weight Control Program in providing a mechanism for controlled weight loss and at least short term maintenance of loss.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Obesity is a complex problem influenced by a variety of variables. Just as there is no one cause for it there is no single or simple solution. The more variables that can be determined to be significant in weight control the more successful long-term maintenance will be. It was the purpose of this study to assess the impact of the "Winning Weighs" Weight Control Program on the participants' weight loss and perceived body image. This study was conducted examining the "Winning Weighs" Weight Control Program, a preexisting program a Lutheran Hospital in La Crosse, Wisconsin. The BES, developed by Fronzoi and Shields (1984), skinfold measures, and body weights were the variables measured. Sixteen null hypotheses were tested in the investigation.

A total of 75 volunteers entered the program. A one-group pretest, posttest, post-posttest quasi-experimental design was utilized. The group was pretested, exposed to treatment, and then posttested at two different times. The initial posttest was conducted immediately upon completion of the classes. The post-posttest was conducted 4 months following the structured program.

Statistical analyses of data were conducted using the Kolmogorov-Smirnov one-sample z test for null hypotheses number one through six, the t-test for nonindependent samples was used for numbers seven through 13, and the Mann-Whitney U test was used for hypotheses 14 through 16. The level of statistical significance established for acceptance was set at $p < .05$.

Findings

The findings based upon each of the 16 hypotheses are as follows:

1. The posttest score on the BES was significantly higher than the pretest score for the female sexual attractiveness subscale.
2. The post-posttest score on the BES was significantly higher than the pretest score for the female sexual attractiveness subscale.
3. The post-posttest score on the BES was significantly higher than the posttest score for male physical condition, female sexual attractiveness, and female physical condition subscales.
4. The posttest total score on the BES was significantly higher than the pretest score for the females and both sexes combined.
5. The post-posttest total score on the BES was not significantly higher than the pretest score for either sex.

6. The post-posttest total score on the BES was significantly higher than the posttest score for the females and both sexes combined.

7. The subjects' perceived ideal goal weight was significantly lower than their assessed ideal goal weight.

8. Posttest weights were significantly lower than pretest weights.

9. Post-posttest weights were significantly lower than pretest.

10. Post-posttest weights were significantly lower than posttest weights.

11. Posttest body fat percentages were significantly lower than pretest percentages.

12. Post-posttest body fat percentages were significantly lower than pretest percentages.

13. Post-posttest body fat percentages were significantly lower than posttest percentages.

14. No significant relationship was determined between subjects' weight loss and their score on the BES pretest to posttest.

15. No significant relationship was determined between subjects' weight loss and their score on the BES pretest to post-posttest.

16. No significant relationship was determined between subjects' weight loss and their score on the BES posttest to post-posttest.

Conclusions

Based on the findings the following conclusions were drawn:

1. The females' perception of their sexual attractiveness consistently improved across the three assessments. Perhaps this could imply a relationship between weight and perception of sexual attractiveness. This would hold true when we look at the image of the sexually attractive person as portrayed in the media.
2. The most significant changes took place during the posttest to post-posttest time. Those subscales found to be significant were male physical condition, female sexual attractiveness, and female physical condition. Although no structured exercise component was included in the program one session was devoted to exercise and regular exercise was encouraged.
3. The most significant changes were found for the larger populations, the females and the two sexes combined. The combined groups would be expected to follow the trend of the females since the population was primarily female.
4. The male sampling may have been too small to show significance.
5. The most significance was found in hypotheses dealing with concrete factors such as weight and body fat percentages. Weight and body fat percentages were the primary objective measures recorded throughout the program.

Subjects entered the program on a voluntary basis with a goal of weight loss. This action would indicate that the individual is ready to work on behavior change in order to decrease their weight.

6. The "Winning Weighs" Weight Control Program was successful in helping participants lose weight and body fat. Participants were shown to consistently decrease in weight and body fat during the program. More importantly they continued to show a loss in the 4 months after formal classes were completed. This would indicate that the participants received useful and practical information to aid them in at least short term maintenance of weight loss. The goal is that the changes are for a life-time.

Recommendations

Based on the findings and conclusions of the study, a number of recommendations have been made.

Verbal instructions on the BES to all subjects would aid in greater understanding of the instrument. This should take place prior to the initial exposure. Clarification of the Likert scale and interpretations of the questions would provide more confident results. The development of a more simplified instrument for the measurement of body image perception would also increase understanding and therefore reliability of the results.

The use of subjects involved in an existing program presents a number of influencing factors. The program

selected provides for monetary rewards for attendance and weight loss. Elimination of this would result in a more accurate picture of the individuals' motivation to comply with the meal plan and attend classes.

The subjects were also coworkers so they frequently interacted outside of the class. This would undoubtedly influence compliance, hopefully in a positive manner. In addition, subjects gender may have influenced program results. A history of the program attendance indicated that the majority of past participants had been females. A more evenly distributed group would provide more reliable data for each group. It would also decrease the affects of the unequally distributed population on the combined data.

The accuracy of the skinfold measures is dependent upon the skill of the technician. The same caliper and test taker were used for all measures to provide as much reliability as was possible for this study. If resources would allow, hydrostatic weighing would be the recommended means of assessing body fat percentages.

A number of "Winning Weighs" Weight Control Program changes can be suggested. Future programs should include specific class times designated for addressing the issue of body image. A program such as this would be an ideal place to work on dispelling some of the unrealistic images of the ideal body portrayed in the media. We need to work

on helping people set realistic goals based on their individual body types.

The literature indicated that future programs could benefit from encouraging more involvement of family or support persons. Those around the individual need to understand the process they are involved in as well as their goals in order to provide positive support. Lifestyle changes are more realistic if the subjects' efforts are supported on a day to day basis rather than sabotaged, intentionally or unintentionally. Building in suggestions for such supports would be an additional recommendation for future study.

A final program suggestion is to offer a structured exercise component in addition to the lecture. The benefits of exercise are well known in terms of weight control and providing a general sense of well-being.

Additionally, similar studies should be conducted utilizing a variety of populations including: other types of group weight loss programs, individual weight loss programs, all male or all female populations, populations at varying levels of obesity, and perhaps even a postpartum population.

Further follow-up should be conducted at one year to assess long term success, maintenance, and perception of body image. Continued support, individual or group,

during this time would help to encourage greater compliance and maintenance of changes.

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APPENDIX A

PROGRAM OUTLINE

"WINNING WEIGHS" WEIGHT CONTROL PROGRAM
CLASS OUTLINE

Dates

January 16, 17, 18.....Assessments

January 23, 24 .....Meal Planning With the Point System

January 30, 31 .....The Role of Exercise

February 6, 7 .....Behavioral Issues

February 13, 14 .....Fat Facts

February 20, 21 .....Convenient Calorie Cutters

February 27, 28 .....Supermarket Safari

March 6,7 .....Nutrition Potpourri

March 13, 14 .....Holiday Eating

APPENDIX B

CONSENT AND INSTITUTIONAL REVIEW BOARD FORMS

INFORMED CONSENT FORM

University of Wisconsin - La Crosse
La Crosse Lutheran Hospital
La Crosse WI, 54601

Project Title: The impact of weight loss on perceived body image.

Principal Investigator/Project Director:
Barb Kaufmann/ Barb Beier

1. Procedures to be followed: You will be asked to complete the Body Esteem Scale at three points during the "Winning Weighs" Program. These times will be during your initial assessment, the final class and four months following the program. Weights and skinfold measurements will also be taken at these times.

2. Potential discomforts or risk to be expected by the subject: The procedures used are not invasive and should result in no discomfort to you, the subject, or others. The Body Esteem Scale will be filed by number rather than name to protect anonymity.

3. Potential benefits to the subject and others: A positive perception of body image could be beneficial in sustained weight loss. The more variables that can be determined to be significant in weight loss the more successful we can be in long-term maintenance of weight control. Skinfolds will be beneficial as a motivational tool. These will help to reinforce progress if actual weight change is minimal, however, there have been significant changes in eating and exercise habits.

4. Participation in the study portion of the program is voluntary and you are free to withdraw at any time.

Information compiled in this study will be handled with strict confidence. All data collected and analyzed will be done without mention of individual information.

If you should have any questions the Principal Investigator or Project Director will answer all inquiries concerning procedures, risks, or benefits or your part in the study.

Barb Beier
(608) 785-6792

Barb Kaufmann
(608) 785-0530

Informed consent Form, continued
page 2 of 2

Project Title: The impact of weight loss on perceived body image.

Principal Investigator/ Project Director:
Barb Kaufmann, R.D. / Barb Beier, Ph.D

1. I,_____, being of sound mind and _____ years of age, do hereby consent to, authorize and request the person named above to undertake and perform on me the proposed procedure, treatment, research or investigation.

2. I have read the above document, and I have been fully advised of the nature of the procedure, the possible risks and benefits involved in it, all of which I hereby assume voluntarily.

3. I hereby acknowledge that no representations, warranties, guaranties or assurances of any kind pertaining to the study have been made to me by the University of Wisconsin-La Crosse, the officers, administration, employees or anyone acting on behalf of any of them.

4. I understand that I may withdraw from the study portion of the program at any time.

_____ _____
(Subject) (Date)

GUNDERSEN MEDICAL FOUNDATION, LTD.
1836 SOUTH AVENUE
LA CROSSE, WISCONSIN 54601
(608) 791-6600
FAX 791-6601

A.C.V. ELSTON III, M.D.
Vice President For Research

November 22, 1989

TO: Reverend Daniel Vinge

FROM: A. C. V. Elston, M.D.

RE: Barb Kaufmann's protocol

Dear Reverend Vinge:

I have met with Barbara Kaufmann, a Master's thesis candidate from UW-L, an employee of ours, in the Dietary Department. She has an innovative survey of behavioral characteristics in association with a voluntary weight loss reduction program that is presently in place for the Hospital employees.

I reviewed Barb's protocol and discussed some of the logical rearrangements that might be constructively considered as improvements. I believe that as the research does not involve patients, and it is not particularly invasive, that it would be appropriate to forward it to your committee without reviewing it from the scientific committee. Should you have any questions, I would be glad to field them.

Sincerely,

A. C. V. Elston, M.D.
Vice President for Research

ACVE/ks

"Achieving the finest patient care requires continuous effort and study by individuals devoted to the advancement of medical science and practice."

ADOLF GUNDERSEN, M.D. (91)

LUTHERAN HOSPITAL
LA CROSSE

December 12, 1989

Barbara Kaufman, R.D.
2515 Smith Valley Road
La Crosse, WI 54601

Dear Barbara:

The Institutional Review Board has reviewed your proposal for your study, "Changes in Perceived Body Image as a Result of Weight Loss," and has approved it after your addition of voluntary participation for employees to the consent form, and your understanding of destroying any identifiers after the study is completed.

We will look forward to hearing the results of the study.

Sincerely,

Mary Anderson/dk

Mary A. Anderson
Vice Chairperson
Institutional Review Board

MAA:dk

APPENDIX C

BODY ESTEEM SCALE

THE BODY ESTEEM SCALE

Instructions: On this page are listed a number of body parts and functions. Please read each item and indicate how you feel about this part or function of **your own body** using the following scale:

1. Have strong negative feelings.
2. Have moderate negative feelings.
3. Have no feelings one way way or the other.
4. Have moderate positive feelings.
5. Have strong positive feelings.

---

1. body scent _____
2. appetite _____
3. nose _____
4. physical stamina _____
5. reflexes _____
6. lips _____
7. muscular strength _____
8. waist _____
9. energy level _____
10. thighs _____
11. ears _____
12. biceps _____
13. chin _____
14. body build _____
15. physical coordination _____
16. buttocks _____
17. agility _____
18. width of shoulders _____
19. arms _____
20. chest/breasts _____
21. appearance of eyes _____
22. cheeks/cheekbones _____
23. hips _____
24. legs _____
25. figure/physique _____
26. sex drive _____
27. feet _____
28. sex organs _____
29. appearance of stomach _____
30. health _____
31. sex activities _____
32. body hair _____
33. physical condition _____
34. face _____
35. weight _____

From "The Body Esteem Scale: Multidemensional structure and sex differences in a college population" by Fronzoi and Shields, 1984, Journal of Personality Assessment, 48(2), 173-178.

APPENDIX D

CLASS OUTLINES AND HANDOUTS

PERSONAL SCREENING

Date: January 16,17,18

Objective: During the 20 minute personal screening session participants will complete the following with the assistance of a registered dietitian:

1. obtain accurate height
2. obtain accurate weight
3. obtain body girth measures
4. obtain skinfold measures
5. determine personal program weight goal
6. determine program weight loss goal
7. determine appropriate calorie level for weight loss
8. complete the Body Esteem Scale

Materials Needed:

1 Digitron scale

1 permanently affixed tape measure

1 Lang skinfold caliper

1 tape measure

1 record book

2 record sheets for each participant

MEAL PLANNING FOR CALORIE COUNTERS/THE POINT SYSTEM

Date: January 23, 24

Materials: food models, measuring cups and spoons, overheads, handouts

Objective: At the completion of the class the participants will understand the conversion of calories to points, the rational for the use of this system and the most efficient use of calorie points.

I Introduction

The point system is a simplified calorie counting system with one calorie point equaling 75 calories. This system allows the individual greater freedom in selection of foods. Since no one food or food group can supply all the nutrients needed for health, a variety of foods are encouraged. Guidelines for distribution of points between the various food groups will be provided but the final choice is the individuals.

II Icebreaker

Read the dieters prayer.

III Distribution of calories

A. Recommended distribution of carbohydrate, protein and fat in the American diet.

1. 50% carbohydrate
2. 30% fat
3. 20% protein

B. Calories provided by carbohydrate, protein and fat. (overhead)

1. carbohydrate=4 calories per gram
2. protein=4 calories per gram
3. fat=9 calories per gram

C. Discuss the satiety value of carbohydrate, protein and fat. (overhead)

IV Portion control

A. Review average calories, carbohydrate, protein and fat provided by standard portion sizes of various foods. (overhead and food models)

B. Stress importance of portion control

1. show measuring cups and spoons

V The point system

A. Calorie needs and weight goals are individual

1. stress the importance of each person working their own program

B. Review each food category

1. Point out special considerations that change the point value of foods such as adding syrup to fruit.
2. Stress portion control. The individual can determine their own portion sizes but must remember to take increased points accordingly.
3. Free foods
4. Review how to calculate point values.

VI Behavior modification

A. Unrealistic goals (handout)

1. Goal setting>comparing performance>emotional response

2. Internal traps

3. Imparative traps

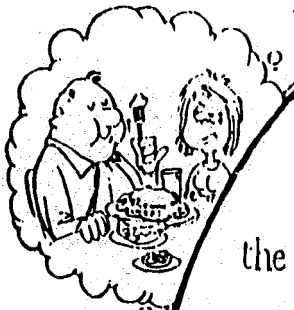
4. Have participants take part in activity on imparative thoughts in handout

VII Closure

A. Review importance of variety in the meal plan and looking at goals realistically.

B. Have participants work on a personal assessment sheet for their own use at home. List reasons why they want to start a weight control program and why they might prefer to postpone it.

The Dieter's Prayer



To be slender is my goal,
I shall not eat.
Yea, tho I trudge through
the valley of fat I shall not fear
for mine is the path
of diet cola and cottage cheese.
Tho hot fudge sundaes and french pastries
beckon, I shall not falter!
Tho I suffer the slings and arrows
of outrageous friends who order sauces
and creams, I will remain strong,
as the thought of my new self
comforts me always.
Surely double chins and chubby cheeks
shall melt away
and I will dwell in the house
of the thin
FOREVER!!
Amen

SETTING UNREALISTIC GOALS

Dieters often set out-of-reach goals for themselves. When the goals are not met, the negative emotional response can lead to a total lapse in willpower, and ultimate failure.

This occurs in a three-part process. Setting the goals comes first, and is often unconscious. Actual performance is then compared to the unrealistic goal, and there is a positive emotional reaction if the goal is achieved and a negative one if it is not. The examples below show how the process works.

SETTING GOAL	COMPARING PERFORMANCE	EMOTIONAL RESPONSE
-Will never cheat on diet	Cheat on diet	Guilt and Resignation
-Will do my best with diet	Meet goal on most occasions	Satisfaction and desire to improve
-Will be good at sports	Others do better and look better	Embarrassment
-Will increase activity level	Increase is steady and substantial	Pride in doing something positive
-Will lose weight weekly	Some weeks weight is stable or up	Discouragement and self-blame
-Will lose most weeks	Lose weight 6 out of 8 weeks	Feel good about hard work

INTERNAL ATTITUDE TRAPS

Each of us holds internal conversations. How you view your diet can help or hinder you greatly. There are several common traps you may encounter. If you are prepared to counter thoughts and attitudes with counter thoughts and attitudes, your job will be eased.

Internal Trap #1; "The Diet is The Key"

Fat Thought: The diet and the program are the only reasons I lose weight. When the diet is over, I will have real trouble keeping the weight off.

Counter Thought: I am losing weight because of my own efforts. Just because the program ends doesn't mean my new habits will vanish. The program helps me but I get the credit.

Page 2 - attitude traps

Internal Traps #2: "Is This Worth The Effort?"
Fat Thought: I have been dieting for weeks and I still have lots of weight to loose. I can't wait till this program ends so I can get back to normal.
Counter Thought: Stop this right now. Who said this would be easy? It took a long time to gain the weight and it will take longer to lose it. I would like to lose fast and easy, but facts are facts. I don't want to let down now and waste the effort. I can stick with it.

The "fat thoughts" you have lived with you for years will do their best to control your attitudes and eating unless you learn to form some counterthoughts.

IMPERATIVE TRAPS

Imperatives are words that imply urgency and no room for error. Using these words can pave the path to trouble and loss of control. Examples follow:
"I can never eat more than 1200 calories."
"I must never eat butter crunch ice cream again."
"I will eat a salad for lunch every day."
"I will exercise every day."

Because these are unrealistic goals, if you falter even once you will suffer such disappointment that you will lose sight of all of the positive accomplishments because of a few inevitable mistakes.

The imperatives are habits just like other behaviors and attitudes. To develop a new habit, practice is the key. Once you know what attitudes gives you trouble, you can gradually weaken their ability to influence you by replacing them with positive approaches.

My Imperative Thoughts:	Counter Statements:
1. _____	_____
_____	_____
2. _____	_____
_____	_____
3. _____	_____
_____	_____

A Vital Component/Exercise

Date: January 30, 31

Materials: Handouts, overheads

Objective: Following this class participants will understand the importance of an individualized exercise program in weight loss.

I Introduction

Maintaining lean mass during weight loss is vital to sustained weight loss.

II Icebreaker

Have the class stand and take part in a short stretching activity.

III Battle of the bulge (overhead and handout)

A. Exercise in general

1. aerobic: define and state examples
2. anaerobic: define and state examples
3. frequency, duration, intensity
4. tips for stretching
5. self limiting excuses

IV Heart rate

A. Calculation of training heart rate

1. define training heart rate
2. calculate an example
3. take your pulse and have the class participate
4. have the class calculate their own

V What is a workout? (handout)

VI Personalize your workout (Exercise handout)

A. Setting personal goals/ why exercise

1. weight loss
2. toning
3. flexibility
4. general improved health

B. Selecting the exercise that is right for you

C. How to determine intensity, frequency and duration

D. Reminders

1. fluids
2. weather conditions
3. special medical considerations
4. warning signs-listen to your body
5. doctors approval

E. Sequence

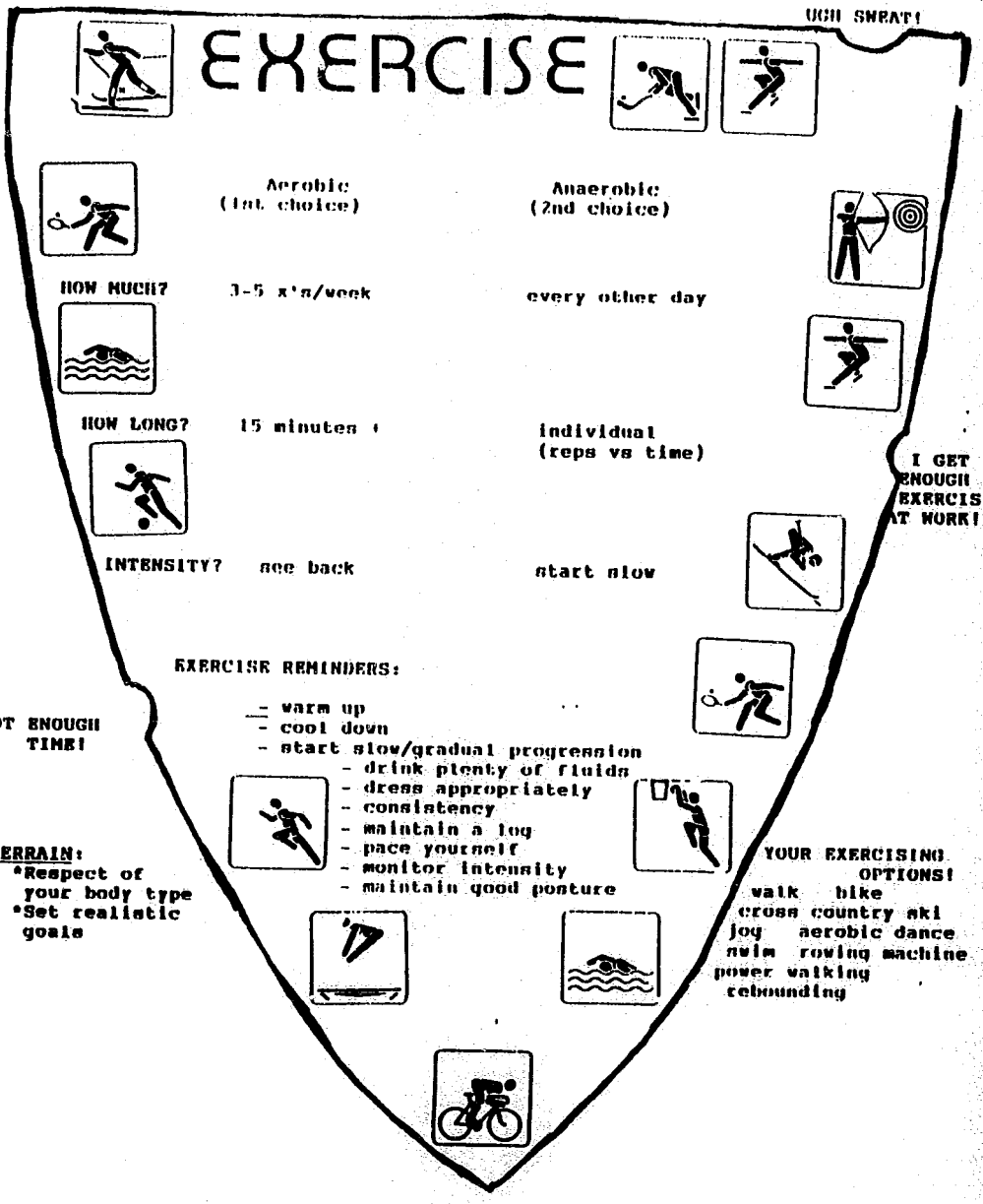
1. warm up-show examples
2. exercise
3. cool down-show examples

F. Activity log

VII Closure

Remember to make your exercise routine personal and regular. Also remember to listen to your body.

BATTLE OF THE BULGE



EXERCISE

1. GOALS
   -weight loss/increase metabolism
   -toning
   -flexibility
   -feel better about self

2. HOW MUCH? HOW OFTEN?
   -weight loss-----at least 3x/week for 20 minutes
   -toning----------every other day for _____ repetitions
   -flexibility-----daily, holding stretches for minimum of_____
   -feel better-----minimum of 3x/week for 20 minutes

3. HOW INTENSE?
   -start off slowly and gradually increase
   -pace yourself

4. REMINDERS
   -drink plenty of fluids during exercise
   -avoid exercising in really hot or really cold weather
   -for a special exercise routine for pain see a doctor
   -if you have pain, dizziness, excessive shortness of breath, faintness or sweating that lasts beyond 7-10 minutes after exercise has stopped, stop the exercise and see your doctor
   -get your doctors approval in starting an exercise program

5. EXERCISE SEQUENCE
   -warm up-----deep breathing, shoulder rolls, knee bends
   -exercise----swimming, walking, exercise class, toning, biking
   -cool down---step in place, arm reaches overhead, stretching

6. Exercise must be regular to achieve and/or maintain your goal. Choose exercise routines that you can vary. Choose exercise routines that you enjoy!

THE ADDICTIVE NATURE OF FOOD

Date: February 6,7

Objective: After attending the presentation participants will have a better understanding of how they relate to food and how these relationships develop.

Materials: handouts

I Stages of dependency:

A. Learning the mood swing

B. Seeking the mood swing

C. Developing harmful dependency (paying an emotional cost)

D. Using to feel normal (pain whether using or not)

II List of issues associated with overweight

A. Food is socially acceptable

B. Food is associated with family tradition

C. Food tolerance

D. Your relationship with food

E. Classical conditioning (pairing food with everything)

F. Control/ out of control

G. Unconscious (not aware of eating habits)

H. Compulsion/ addiction

I. Self talk

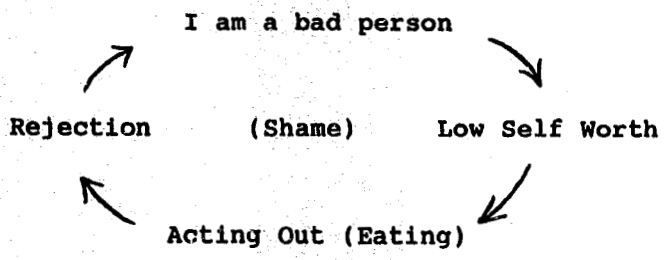
1. denying

2. minimizing

J. Shame (the fat is visible)

K. Feeling bad and soothing feelings with eating

III The cycle



IV Essentials of recovery

A. Breaking isolation

B. Control of the environment

C. Affirmations

BARRIERS TO ACHIEVING PERSONAL GOALS

Everyone who gets stuck does so because at least one, usually several, and sometimes all of the following eight barriers cause them to reroute, postpone, or abandon their journey. It is important to recognize them and confront them to change them.

1. LOW SELF-ESTEEM: Negative criticism, perceived failures, and trying to measure up to other people's standards damage your sense of self-worth and lead you to believe you do not deserve better or more than you have.

2. NOT SEEING ALTERNATIVES: Without options you have no place to go. Without the decision-making skills to choose options and follow through with a plan, you spin your wheels or slide back to square one.

3. NOT KNOWING WHAT YOU REALLY WANT: Confused by conflicting messages about what you should do and be, you let your parents, preachers, Madison Avenue advertisers, or the "Joneses" set priorities for you. Without a clear sense of what you value, you lack the vision to accomplish your goals.

4. DEFENDING THE STATUS QUO: You fritter away the energy you have. You use much of it to defend your current position. Instead of setting a goal, plotting a course, and following a plan, you find perfectly good reasons not to change.

5. FEAR: The prospect of changing frightens you. Change brings with it the possibility of failure, rejection, disappointment, and pain as well as the chance that getting what you think you want will not solve your problems after all. Fear causes you to sacrifice probable gain so you can avoid possible pain.

6. LACK OF COOPERATION: You stoically try to go it alone because you do not know where to look for help or you are reluctant to ask for the support of people who love you.

7. PERFECTIONISM: You want a guarantee. You want a perfect solution and a perfect unobstruted road to your goal (which also must yield perfect results). For you it's perfection or nothing. With that ultimatum, you can never achieve what you want.

8. LACK OF WILL: You choose to avoid acting on your desires or do not direct the energy to get you going and keep you moving all the way to your destination.

FAT FACTS

Date: February 13,14

Materials: overheads, handouts, artery model

Objective:

From the information provided in class participants will have the knowledge to purchase and prepare low cholesterol and saturated fat meals.

I Introduction

Is there a good fat? People are becoming more conscious today of their fat intake. They are lowering their intake to reduce weight, lower cholesterol, or to become more health conscious. The U.S. dietary guidelines state, "avoid too much fat, saturated fat and cholesterol." Today the difference of fats will be explained and recommendations to reduce total fat and cholesterol will be provided.

II Definitions

A. Cholesterol

1. Define= A fat-like substance found among the fat in the bloodstream called lipids. It can build up along with other lipids in the vessels like rust in a pipe. (artery model)

2. How do we get it in our system?

a. liver produces it

b. oral intake (overhead on content in foods

3. Types of cholesterol (overheads)

a. HDL "good cholesterol" helps carry cholesterol out of the body

b. LDL "bad cholesterol" responsible for depositing cholesterol in the tissues.

B. Saturated fat

1. Define= A fat usually of animal origin and is solid at room temperature. Like cholesterol, these dietary fats raise the blood cholesterol level by increasing the amount of LDL.

2. Dietary sources (overhead)

a. dairy

b. animal

c. plant

3. Reading labels for saturated fat

a. ingredients to avoid

b. specific types of products typically high in saturated fats

4. Hydrogenation

C. Polyunsaturated fats

1. Define= Fats of vegetable origin. In increased amounts it reduces blood cholesterol levels.

2. Sources (overhead)

D. Monounsaturated fats

1. Define= It has been shown to decrease the total and LDL cholesterol while raising the HDL.

2. Sources (overhead)

E. Triglycerides

1. Define= Another fat found in the blood. High levels of this are a risk factor in heart disease.

2. Levels can be lowered by a decrease in consumption of foods high in simple sugar, alcohol and fat.

3. High sugar intakes stimulate the pancreas to produce extra insulin and this in turn produces fat storage and increased weight.

4. Alcohol increases the fat absorption in the gastrointestinal tract and reduces fat digestion, causing an increase in cholesterol and triglycerides in the blood.

III What should our diet contain?

A. AHA recommendations (overhead)

10% saturated

10% polyunsaturated

10% monounsaturated

B. Reduce overall fat (fat chart)

C. Eat no more than 5-6 ounces of poultry, fish or lean meat (USDA Good or Choice grades)

D. Excess fat should be removed before and during cooking

E. Roast, bake, broil on a rack

F. Limit the use of eggs to 2-3 times per week, including those used in cooking

G. General suggestions

1. Review handout on ingredients to limit or avoid

2. Review recipe modifications

H. Selection of a margarine and oils (overhead)

IV Closure

Remember that maintaining an ideal weight will help to lower the LDL and plasma triglyceride levels.

MODIFICATIONS FOR LOWERING FAT AND INCREASING FIBER

INGREDIENTS	QUANTITY	SUBSTITUTE RECIPE MODIFICATIONS
Whole Egg	1	1/4 c. egg substitute, 1 white + 1 tsp. oil or 2 whites
Butter	1 C.	1 C. margarine
Shortening or Lard	1 C.	3/4 C. oil
Shortening	1/2 C.	1/3 C. oil
Whole Milk	1 C.	1 C. skim milk
Light Cream	1 C.	1 C. evaporated skim milk or 3 tbsp. oil + skim + 1C
Heavy Cream	1 C.	1 C. evaporated skim milk or 1 C. Poly Perx or 2/3 C. skim + 1/3 C oil
Sour Cream	1 C.	1 C. plain yogurt or 1 C. blended low fat cottage cheese (with lemon juice)
Regular Cheese	1 oz.	1 oz. skim milk cheese
Flour (as thickener)	2 Tbsp.	2 Tbsp. cornstarch
Salad Dressing	1 Tbsp.	1Tbsp. low cal dressing
Baking Chocolate	1 oz. (1 sq.)	3 Tbsp. powdered cocoa + 1 Tbsp. oil
Condensed Soup		Homemade skim milk white sauce
Cream of Mushroom	1 can	1 C. white sauce + 4 oz. can drained mushrooms
Cream of Chicken	1 can	1 1/4 C. white sauce + chicken bouillon

INGREDIENTS TO LIMIT OR AVOID

High Saturated Fat Ingredients:

Animal Fat

Bacon Fat

Beef Fat

Butter

Chicken Fat

Cocoa Butter

Coconut Oil

Cream and Cream Sauces

Egg and Egg Yolks

Hardened Fat or Oil

Hydrogenated Fat or Oil

palm or coconut oil

High Sodium Ingredients:

Salt

Monosodium Glutomate

Brine (Salt and Water)

Broth

Sources of Sugar:

Sucrose	Corn Syrup	Maple Syrup
Syrup	Fructose	Invert Sugar
Molasses	Brown Sugar	
Dextrose	Honey	

Acceptable Ingredients:

Carob Powder	Diglycerides	Non-fat Milk
Cocoa	Hydrolyzed Ingredients	

Oils- Corn, Safflower, Sunflower, Cottonseed, Soybean, Sesame, Canola and Peanut

DEGREE OF SATURATION OF COMMON FATS AND OILS

Poly-Unsaturated:	**Safflower Oil**
	Sunflower Oil
	Soybean Oil
	Corn Oil
	Cottonseed Oil
	Sesame Oil
	Tub Margarine (liquid safflower oil)
	Mayonnaise (8 mg. chol./Tbsp)*
	Mayonnaise-type (4 mg. chol./Tbsp.)*
	Imitation (diet) Margarine
	Tub Margarine (liquid corn oil)
Mono-Unsaturated:	**Canola Oil**
	Peanut Butter
	Stick Margarine (liquid corn oil)
	Olive Oil
	Peanut Oil
	Avocado
Saturated:	**Vegetable Shortening (hydrogenated)**
	Lard (12 mg. chol./Tbsp.)*
	Animal Fat*
	Palm Oil
	Butter (31 mg. chol./Tbsp.)*
	Cocoa Butter and Coconut Oil

***These fats also contain cholesterol.**

CONVENIENT CALORIE CUTTERS: EATING ON THE RUN

Date: February 20, 21

Materials: handouts, overheads, recipe, cooking utensils, food

Objective: Following this class participants will be able to make basic recipe modifications for calorie cutting and will also be able to make more informed choices when eating out.

I Introduction

The average American is estimated to eat out at least one of every three meals. It is very easy to see how this can happen with our fast pace society and ever growing number of women in the work force. Today we will discuss some basic tips for making eating on the run, at home or away, healthier.

II Eating out

A. Preplan to control your intake and minimize last minute decisions.

1. Be selective about the restaurant (500 club as an example)
2. Select a restaurant with a varied menu
3. Call ahead for special requests or special diets
4. Balance your days intake in preparation for a special meal
5. Avoid starving yourself before going out

6. Have a low calorie snack before leaving home

7. Consider your beverage (discuss the calorie content of alcohol)

B. Be assertive

1. Order first

2. Ask questions

3. Don't be intimidated by the menu

4. Cut down on portion sizes

a. choose appetizers as a main course

b. order a la carte

c. share and order

5. Order dressing or sauces on the side

III Tips for menu reading

A. Look for "low-fat" terms

1. steamed, in its own juices, garden fresh, broiled, roasted, and poached

B. Some low-fat, low-cholesterol methods are still high in sodium

1. pickled, in cocktail sauce, smoked, in broth, in tomato base

C. High saturated fat and cholesterol and maybe salt

1. buttery, buttered, in butter sauce, sauted, fried, panfried, crispy, braised, creamed, in cream sauce, own gravy, hollandaise, au gratin, parmesan, in cheese sauce, escalloped, marinated, stewed, basted, prime, hash, pot pie

IV Putting it to use

A. Activity

1. Ask everyone to break into groups of four.

2. Pass out a restaurant menu to each group.

3. Have the group plan a low calorie meal, with special requests, using the menu provided.

4. Have one group member be the reporter and share what they selected for their meal.

V Food preparation at home

A. Recipe modification

1. Discuss ways to modify recipes (trim techniques handout)

2. Activity (on overhead)

a. show a recipe with the calories calculated for all ingredients

b. have the group suggest modifications to lower the calories in the recipe

c. make suggested modifications and recalculate the calories

VI Prepare a low-fat recipe

A. Prepare stir-fry chicken and vegetables with preprepared ingredients.

B. Taste test the stir-fry and a variety of other low-fat products (crackers, cheeses, jellies)

VII Conclusion

When eating in any situation preplanning will help you make controlled choices. Remember that even when you are trying to lose weight the degree to which you elect to modify recipes or menu selections are your choice. Your goal should be to make the best choices most often.

STIR-FRY CHICKEN AND VEGETABLES

2 bags frozen vegetables

(1 pkg. mixed broccoli, cauliflower, and carrots)

(1 pkg. oriental mix)

1 can water chestnuts

1 pkg. stir-fry mix (cabbage, sprouts and celery)

fresh mushrooms

1/4 cup soy sauce

2 teaspoons cornstarch

1/2 pound meat (chicken or pork)

2 tablespoons oil

Cut chicken into 1-inch pieces. Set aside. Blend soy sauce into cornstarch. Set aside.

Defrost frozen vegetables and dry with a paper towel to prevent spattering. Preheat wok over high heat; add oil. Add the frozen vegetables and cook for 2 minutes. They will become translucent for a minute or two, and then their natural color will intensify. Then add the stir-fry mix and cook for 2 minutes more or until the vegetables are crisp. Remove the vegetables. Add more oil if needed. Stir-fry chicken for 2 minutes or until done. Stir soy mixture into the chicken. Cook and stir until thickened and bubbly. Stir in vegetables; cover and cook 1 minute more.

TRIM TECHNIQUES FOR RECIPES

1. Brown meat using nonstick spray coating father than butter.
2. Substitute lean top round steak for higher-fat beef.
3. Use lean ground beef (80% or more lean).
4. Brown meats on and oven rack so fat drains away.
5. Try replacing high-fat pork sausage with a seasoned lean ground turkey mixture.
6. Cook noodles without added cooking oil.
7. Use and egg white instead of a whole egg to eliminate calories from the egg yolk.
8. Substitute low-fat yogurt for dairy sour cream.
9. Substitute skim milk for cream and save 225 calories per cup.
10. Substitute less low-fat cottage cheese for higher-fat ricotta cheese and save 225 calories per cup.

Lean Meat Cookery

DRY HEAT METHODS

	Helpful Hints	Lean BEEF Cuts	Lean PORK Cuts
 BARBECUE	Trim fat and cook at low to moderate temperatures	Steaks-¼" or thicker Sirloin Tenderloin Top Loin (T-bone) Top Round (if marinated)	Chops (rib, loin, sirloin) between ¼" and 2" thick Tenderloin Loin Roast Fresh Ham Steaks Fresh Ham Roast
 BROIL	Use for cuts ¼" to 2" thick	Same cuts as used for barbecuing	Loin Chops Tenderloin Fresh Ham Steaks
 PANBROIL	Pour fat from pan as it accumulates Use cuts under ¼" thick	Steaks-¼" or less Sirloin Tenderloin Top Loin (T-bone) Top Round (do not cook past medium	Chops - Top Loin Butterfly Sirloin Fresh ham steaks
 ROAST	Roast on a rack out of juices. Use a meat thermometer.	Top Round Roast Tip Roast Eye Round Roast (do not cook past medium)	Loin Roast Sirloin Roast Fresh ham steaks
 STIR-FRY	Watch the amount of oil as each tablespoon contains 120 calories	Strips from: Sirloin Tip Top Round	Strips from: loin, tenderloin or fresh ham

MOIST HEAT METHODS

	Helpful Hints	Lean BEEF Cuts	Lean PORK Cuts
 BRAISE	Brown meat and remove fat before braising	Top Round Roast and Tip Roast Arm Chuck Roast and and Steak	Pork Shoulder Loin Chops Fresh Ham - Roast, Steaks
 COOKING IN LIQUID	Prepare ahead-allow to cool and skim fat	Lean beef cubes for stew	
 SLOW COOKER	Skim fat before eating	Same cuts as used for braising	Same cuts as used for braising

Low to moderate cooking temperatures are best whatever the cooking method. The higher the temperature, the greater the shrinkage or cooking loss. Meat cooked to well done (170°F) will shrink more than that cooked to medium (160°F). Beef and pork are more uniformly cooked and tender when cooked slowly as high temperatures tend to toughen meat protein. Many cuts can be prepared by either dry or moist heat, providing variety.

Iowa Beef Industry Council

Iowa Pork Producers Association

SUPERMARKET SAFARI

Date: February 27,28

Materials: food label examples, transparencies, handouts

Objective:

The participants will be able to interpret label information to make healthier food choices. They will also become more familiar with the supermarket basic layout to help with more efficient shopping.

I Introduction

The Surgeon General's 1988 report points out that diet is associated with five of the top ten leading causes of death in the U.S.: coronary heart disease, certain cancers, strokes, diabetes, and atherosclerosis.

II Label Reading

A. What can the label tell you?

1. nutritional information

a. serving size

b. servings per container

c. calories per serving

d. protein, fat, and carbohydrate information

e. percentage of the U.S. RDA of specific vitamins and minerals

2. manufacturer information

B. What does the label tell you about the source of calories?

1. calories per gram

   protein=4 calories per gram

   carbohydrate=4 calories per gram

   fat=9 calories per gram

2. activity

   calculate examples for the class on the overhead

C. General label information

1. When you are shopping compare various forms of the same food. Premixed, frozen, or prepared foods can vary greatly in their saturated fat, cholesterol, and sodium content.

2. Ingredients are listed with the item in the greatest amount listed first. The ingredient in the least amount is listed last.

3. To avoid an excessive intake of saturated fat or sodium, limit your use of products that list fat or sodium as the first or as a frequent ingredient.

4. Polyunsaturated vs. saturated fat

   a. P/S ratio to evaluate margarines, salad dressings, and vegetable oils.

   b. To evaluate the P/S ratio in margarines look for one that has at least a 2:1 ratio. (transparency examples)

5. Total fat

   a. To determine percentage of calories from

fat in a product multiply the fat calories by 9 and divide this by the total calories.

b. This can best be demonstrated by a cheese label (show example)

III Supermarket tour

A. Store outline

1. The outside aisles contain basic food groups=fresh produce, dairy products, bread, meat, fish and poultry.

2. The inside aisles contain the canned, boxed and processed foods and mixes.

B. Areas to point out on the tour:

1. Beverages:

a. Low fat beverages contain 2 grams of fat or less per 8 ounces.

b. Avoid those made with coconut oil, palm oil, imitation chocolate or milk chocolate.

c. Most vegetable juices contain added salt.

d. Buttermilk is low fat but higher in sodium.

2. Breads:

a. Avoid breads that contain higher proportions of saturated fat such as biscuits, croissants, crescent rolls, danish cheese and egg breads.

b. In preparation of products from mixes use only acceptable ingredients.

3. Crackers and chips:

   a. Read the label for saturated fats.

   b. Low fat crackers contain 3 grams or less of fat per ounce.

   c. Read the label for sodium.

4. Dairy:

   a. Most cheeses are high in fat and sodium.

   b. Milk

   compare fat content of whole, 2%, 1%, skim

   c. Yogurt

      -nonfat = 1gm fat per 8oz

      -1% fat = 2-3gm fat per 8oz

      -2% fat = 4-5gm fat per 8oz

   d. Dairy frozen desserts:

   Low fat contain 3gms of fat or less per 4oz

   e. Egg substitutes

   f. Margarines:

   Read the label for liquid oil as the first ingredient.

   g. Deli:

      -Some processed meats such as lean ham and Canadian bacon are low-fat but high sodium

      -Turkey and chicken franks are not always lower in fat than beef.

      -Avoid salads made with creamy dressings.

-Look for 95% fat-free lunch meats.

5. Meats:

   a. Select lean, well-trimmed cuts: flank steak, round steak or roast, sirloin or tenderloin, loin pork chops, 85% lean ground beef.

   b. "select" cuts have less fat than "choice" or "prime"

6. Poultry:

   a. Remove skin before cooking.

   b. Most chicken and turkey nuggets, patties, and rolls are made with ground skin and are high in sodium.

7. Frozen foods:

   a. Look for frozen fish without breading to limit fat and sodium.

   b. Look for frozen dinners with less than 15gms of fat, 400 calories and 800mg sodium.

   c. Plain frozen vegetables have less fat and sodium than those in sauces.

8. Canned foods:

   a. Check sodium levels in foods if you are sodium restricted.

   b. Dry coffee creamers are mostly saturated fat and sugar.

9. Fruits and vegetables

   a. Select form and grade according to your intended use.

   b. Look for canned and frozen packaged in water or natural juice rather than syrup.

10. Packaged products:

   a. Read for palm, palm kernal or coconut oil high on the ingredient list.

   b. Most microwave popcorns are high in fat and sodium.

   c. Graham crackers, animal crackers, gingersnaps and fig bars are lower in fat than other cookies.

IV Closure

Plan ahead for shopping to be an informed and less of an impulse shopper.

FOOD LABELING TERMS

Terms regulated by the FDA:

Low Calorie-These foods contain no more than 40 calories per serving.

Reduced Calorie-These foods must meet the same requirements as low calorie or reduced calorie foods. They can be low in sodium only, not calories. In that case, they will still be labels diet but so not need to meet the requirements of low calorie or reduced calorie foods.

Sodium-Free-These foods must have less than 5mg of sodium per serving.

Very-Low Sodium-Foods that have no more than 35mg of sodium per serving.

Low Sodium-Foods that contain no more than 140mg of sodium per serving.

Reduced Sodium-sodium levels that have been reduced by at least 75%.

Enriched or Fortified-Products that contain added vitamins, minerals or protein.

Imitation-The product is nutritionally inferior - that is, lower in protein, vitamins, or minerals.

Terms found on meat and poultry:

Extra Lean-These foods contain less than 5% fat.

Lean and Low Fat-Contain less tan 10% fat.

Lite, Leaner, and Lower Fat-Contain at least 25% less fat tan similar products.

Terms not required of that are misleading:

Light or Lite-When applied to food products other than meat or poultry can mean anything from a lighter color or texture to less sodium, calories or fat.

Sugar-Free or Sugarless-Although these foods cannot contain sucrose (table sugar) they can have other sweeteners including honey, corn syrup, fructose or mannnitol.

Low Salt-Not always low sodium due to other ingredients.

WHAT IS NUTRITION LABELING?

U.S. government regulations require that all enriched or fortified food, and food for which a nutrition claim is made, include nutrition information on the label. Information on the label is divided into two categories: "Nutrition information per serving" (serving size, servings per container, calories per serving, protein, carbohydrate, fat in grams per serving) and "Percentage of the U.S. Recommended Daily Allowances (U.S. RDA)." If any nutrition information is printed on the label, the amounts of Vitamins A, D, thiamine, riboflavin and niacin must be listed as a percentage of the U.S. RDA. Two minerals, calcium and iron, also must be listed. Protein must be shown as a percentage of the U.S. RDA, as well as in weight by grams, as indicated on the sample label. As many as 12 additional vitamins and minerals may be listed if the manufacturer desires.

The U.S. RDA are the amounts of protein, vitamins and minerals used as standards in nutrition labeling. Most people will get an adequate amount of each nutrition of the Recommended Daily Allowance if the food they eat meets these U.S. RDA standards. Special U.S. RDA's for infants and young children are used for baby and junior-type food.

To assist you even further in getting the most nutritive value for your money, producers may also choose to identify nutrients in foods that don't require labeling. For example, fresh meats, poultry, fish, fruits and vegetables are not usually labeled. Producers may also list information about saturated fat polyunsaturated fat, cholesterol, sodium and additional vitamins.

A SAMPLE LABEL AND WHAT IT TELLS YOU:

Smiling Bessie Skim Milk
Grade A Pasteurized & Homogenized
Nutrition Information Per Serving

Serving size	1 cup
Servings per container	1
Calories	90
Protein	8 grams
Carbohydrates	11 grams
Fat	1 gram

Percentage of U.S. RDA

Protein	20	Niacin	0
Vitamin A	10	Calcium	30
Vitamin C	4	Iron	0
Thiamine	6	Vitamin D	25
Riboflavin	25		

Contains skim milk & Vitamins A & D

Make comparisons based on the serving size you actually use.

NUTRITION POTPOURRI

Date: March 6,7

Materials: overheads, handouts

Objective:

Following the class the participants will have a better understanding of new food products on the market to better prepare them to make wise food choices.

I Introduction

If you are among the two out of three Americans who do not smoke or drink excessively, your choice of diet can influence your long term health prospects more than any other action you might take. The Surgeon General's Report on nutrition acknowledges that dietary factors do play a role in some of the leading causes of death for Americans.

II US Dietary Guidelines

A. eat a variety of foods

B. maintain healthy weight

C. choose a diet low in fat, saturated fat, and cholesterol

D. choose a diet with plenty of vegetables, fruits, and grain products

E. use sugars only in moderation

F. use salt and sodium only in moderation

G. if you drink alcoholic beverages, do so in moderation

III What's new in food?

A. It's the total diet that makes a difference not simply one or two foods.

B. fat substitutes

1. Products are being put out on the market to aid in decreasing total fat intake. Studies have found that even though Americans are drinking more diet beverages, we are still eating more sugars. As a whole the American population is not getting thinner. What will happen with fat substitutes then? Will Americans continue to choose sweets and fats since they can now be lower in calories? Will they continue to neglect good nutrition of the four basic food groups especially fruits and vegetables?

2. There are two new fat substitutes soon to be out on the market.

a. olestra (overhead on composition, calories, uses, and possible problems)

b. simplesse (overhead on composition, calories, uses and possible problems)

c. show overhead on comparison of products made with simplesse versus a traditional product

d. Why is this such a benefit?

We are pushing to decrease total fat intake today. However, a recent study reported in

February 2, 1990 JAMA found the following:

(1.) Increased consumption of olive oil (monounsaturated fat) was associated with decreased levels of blood pressure, blood glucose, and blood cholesterol in males and females.

(2.) Polyunsaturated fats lower levels of blood cholesterol and blood glucose but not blood pressure.

(3.) Butter consumption will increase blood pressure, serum cholesterol, and blood glucose.

e. Prudent Dietary Guidelines

-protein= 13% or more of calories

-carbohydrate= 57% or more of calories

-sugars= 20% or less of calories

-fats= 30% or less of calories

-10% each saturated fats, polyunsaturated, and monounsaturated

sodium= 2000mg per day

cholesterol= 300mg per day

3. Sugar Substitute (overheads)

   a. saccharin

   b. aspartame

   c. acesulfame-k

   d. altimate

   e. sucralose

IV Fiber

A. Not only oatbran is a good source of fiber

B. Review fiber information sheet

V Sodium

A. >300mg of sodium in a product is considered high

B. read labels

C. avoid the salt shaker

D. salt substitutes

E. seasoning

VI Group questions

Time to answer general questions from the group such as specific product questions or recipe and label analysis.

VII Closure

Keep in mind that "all foods are good, in moderation."

HOLIDAY EATING

Date: March 13,14

Materials: knife, margarine, plate, handouts and black board

Objective:

Following the class participants will be able to make basic healthy changes in holiday eating habits.

I Introduction

Holidays can pose a real problem for the person who is trying to watch their weight, but there is hope. You need to be willing to modify some old habits and create some new ones.

II Review of recommended distribution of calories

A. 1. 50% carbohydrate

2. 30% fat

3. 20% protein

B. Review calories per gram

example:

margarine

$$1500 \times .30 = 450 \text{ calories} \qquad 450 \div 9 = 50\text{gm} \qquad 50 \div 5 = 10\text{tsp}$$

III Functions of fat

A. In the body

1. insulator

2. carries essential fatty acids

3. needed for healthy skin

4. fat soluble vitamins

5. keeps us satisfied longer after a meal

B. In foods

1. flavor

2. blends other flavors that are soluble in fat, such as those of spices, herbs, and vanilla

3. modifies texture

4. food emulsions such as mayonnaise

5. keeps baked goods tender

IV Typical American holiday diet

A. The typical woman in the US consumes about 5000 pounds of fat in her life. The typical male consumes about 7000 pounds.

B. What is the source of all this fat?

C. Demonstration

1. Have the group guess the number of teaspoons of fat in each food item on the sample menu.

2. Slice a teaspoon of margarine for each teaspoon in the food items. Pile the fat on a plate as you go through the menu.

3. Ask the class to suggest lower fat alternatives for the high-fat foods.

V Tips for holiday survival

A. Modify holiday treats to be lower in fat and sugar.

B. Ask before you eat, "Am I really hungry?"

C. Share low calorie holiday treats with co-workers.

D. Avoid standing by the food at gatherings.

E. If you receive food gifts, consider giving some away or freezing part.

F. If you are in charge of the food be sure a low-fat alternative is available.

G. Give nonfood treats for yourself or others, like a message, hike, book, or whatever appeals to you.

H. Turn candy and cookie making time into time for nonfood projects like wreaths or dough art.

I. Take a daily walk.

J. Change the holiday focus to things like snowman building, hiking, or helping serve a holiday meal in the community.

K. Make at-home meals especially low-fat so that higher fat foods at social events can be enjoyed without guilt.

L. Keep holiday munchies out of sight.

M. Remember many beverages can be high in calories.

N. Control portion sizes.

IV Closure

Remember, you are in charge of what you eat regardless of other people's comments so focus on making the healthiest choices most often.

EASTER DINNER

4 oz. Baked Ham

1/2 cup Potato Au Gratin

4-6 Asparagus Spears

1 serving Molded Salad

1 Dinner Roll

1 tsp. Butter/Margarine

1 serving Strawberry Shortcake

Approximately: 840 calories
20% protein
52% carbohydrate
28% fats

SALAD BAR

3 cups	Chopped Lettuce
2-3 each	Tomato Wedges
1/4 cup	Cauliflower
2 Tbsp.	Sliced Mushrooms
1/3-1/2 cup	Three-Bean Salad
1/4 cup	Pickled Beets
6 each	Cucumber Slices
2 Tbsp.	Chopped Green Onion
1/4 cup	Grated Carrots
1/4 cup	Chopped Hard Cooked Eggs
1 Tbsp.	Bacon Bits
1/4 cup	Shredded Cheese
1/4 cup	Potato Salad
1/3 cup	Cole Slaw
4 Tbsp.	Croutons
4 Tbsp.	Blue Cheese Dressing

Approximately:	850 calories
	15% protein
	40% carbohydrate
	45% fat

SAMPLE INTAKE FOR TYPICAL AMERICAN

BREAKFAST	Teaspoons of fat	Lower fat alternatives
1 fried egg		
2 strips bacon		
1 slice toast		
1 t. margarine		
2 t. jam		
1 cup orange juice		
SNACK		
1 cup coffee, black		
1 doughnut		
LUNCH		
Sandwich:		
2 slices rye bread		
4 oz. turkey		
1 Tbsp. Mayonnaise		
1 oz. bag potato chips		
1 apple		
glass of water		
SNACK		
8 wheat thin crackers		
12 oz. soda pop		
DINNER		
Cheeseburger:		
1 hamburger bun		
4 oz. ground beef		
1 oz. cheddar cheese		
1 Tbsp. mayonnaise		
15 french fries		
2 Tbsp. catsup		
Tossed Salad:		
lettuce		
1 Tbsp. dressing		
3/4 cup ice cream		
1 cup whole milk		
SNACK		
1 slice toast		
1 Tbsp. peanut butter		
1 cup whole milk		

The objective is to have no more than 20 teaspoons of fat. To keep calories constant, replace the fat with bread, grains and potatoes. (11 teaspoons of fat is equal to 7 slices of bread.)

Approximate Nutrient Composition: 3400 calories, 15% protein, 45% fat, 40% carbohydrate, 625 mg cholesterol