

NURSES AS HEALTH ROLE MODELS IN
NORMAL WEIGHT MAINTENANCE

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We hereby recommend that the thesis prepared under
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To my favorite person and best friend,

B. Ward Lane

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TABLE OF CONTENTS

	Page
DEDICATION	iii
ACKNOWLEDGMENTS	iv
TABLE OF CONTENTS	v
LIST OF TABLES	viii

Chapter

1.	INTRODUCTION	1
	Problem of Study	1
	Justification of Problem	2
	Conceptual Framework	4
	Assumptions	7
	Hypotheses	7
	Definition of Terms	9
	Limitations	11
	Summary	13
2.	REVIEW OF LITERATURE	15
	Nurses' Knowledge of Nutrition	15
	Studies Related to Living	
	Habits of Nurses	24
	Studies Related to	
	Several Living Habit	
	Areas	24
	Studies Related to	
	Nutritional Practices	35
	Studies Related to	
	Cigarette Smoking	
	Habits	39
	Opinions Concerning the Nurse	
	as a Health Role Model	57
	Summary	61

	Page
3. PROCEDURE FOR COLLECTION AND TREATMENT OF DATA	63
Setting	63
Population and Sample	64
Protection of Human Subjects	66
Instrument	66
Description	66
Panel of Experts	72
Pilot Study	73
Data Collection	73
Treatment of Data	76
4. ANALYSIS OF DATA	79
Description of Sample	80
Age	80
Basic Clinical Educational Credentials	82
Location of Basic Nursing Education Program	82
Higher Educational Degrees	84
Years of Nursing Experi- ence	84
Management Positions	87
Nutrition-Related Educa- tional Responsibilities	87
Health Impairments	89
Ideal Weight	90
Perceived Overweight	91
Obese Family Members	91
Findings	91
Hypothesis 1	91
Hypothesis 2	93
Hypothesis 3	94
Hypothesis 4	95
Hypothesis 5	96
Hypothesis 6	97
Hypothesis 7	97
Hypothesis 8	98
Hypothesis 9	98
Additional Findings	99

	Page
Distribution of Questionnaire Scores	99
Relationship between Scores on the Adherence Sections . . .	99
Other Findings Related to Exercise and Nutrition Habits	101
Respondent Performance in Knowledge Base Sub-categories	101
Summary	102
5. SUMMARY OF THE STUDY	108
Summary	108
Discussion of Findings	112
Conclusions and Implications	122
Recommendations for Further Study	124
APPENDIX A	126
APPENDIX B	128
APPENDIX C	130
APPENDIX D	132
APPENDIX E	134
APPENDIX F	150
REFERENCES	171

LIST OF TABLES

Table		Page
1.	Age Distribution in Weight Groups	81
2.	Location of Basic Clinical Educational Facility and Questionnaire Score Levels (Mean and Standard Deviation) . . .	83
3.	Distribution of Higher Degrees in Weight Groups	85
4.	Distribution of Years of Experience in Weight Groups	86
5.	Nutrition-Related Teaching Responsi- bilities and Questionnaire Scores	88
6.	Nutrition-Related Teaching Responsi- bilities and Questionnaire Scores	89
7.	Distribution of Obese Family Members in the Weight Groups	92
8.	Distribution of Knowledge Base Scores in the Weight Groups	93
9.	Distribution of Adherence Maintenance Scores in the Weight Groups	94
10.	Distribution of Adherence Reduction Scores in the Weight Groups	95
11.	Distribution of Role Model Opinion Scores in the Weight Groups	96
12.	Overall Distribution of Questionnaire Scores	100
13.	Respondent Performance in Knowledge Base Subcategories	103

CHAPTER 1

INTRODUCTION

Nurses by tradition are associated with health promotion. Hence, the assumption follows that nurses are in a position to influence public opinion concerning a health related matter, such as obesity. This study explored the nurses' capacity to assume the position of normal weight role model in relation to the three variables of (a) knowledge of the role demands, (b) motivation to implement the knowledge into personal practice, and (c) ability derived through past socialization to assume the position as referenced by opinions toward the position.

Problem of Study

The two specific questions identified for this study were:

1. Did a difference exist between normal weight nurses and obese nurses in: (a) knowledge base concerning weight reduction and weight maintenance, (b) personal adherence to a weight reduction and weight maintenance regimen which utilized the knowledge base, and (c) opinions concerning the nurse as a health role model?

2. Were there significant relationships among:
(a) knowledge base concerning weight reduction and weight maintenance, (b) personal adherence to a weight reduction and weight maintenance regimen which utilizes the knowledge base, and (c) opinions concerning the nurse as a health role model?

Justification of Problem

Obesity researchers have estimated that 10%-30% of the American population is 30% or more above normal weight (Gumby, 1978). Research study reviews on obesity by Bray (1976), Gumby (1978), and Bierman (1979) implicated obesity as a contributing factor to numerous physical and social ills: cardiovascular problems, diabetes mellitus, respiratory insufficiency, thromboembolic disease, toxemia of pregnancy, renal impairment, cholelithiasis, increased anesthetic risk, increased surgical morbidity and mortality, endometrial carcinoma, menstrual disturbances, osteoarthritis, dermal abnormalities, hernias, varices, depression, and social discrimination. There are no published studies which indicate that nurses are excluded from the ranks of the obese to any greater extent than other members of society. In addition, there is a dearth of information

concerning the nutritional habits utilized by nurses to maintain or lower their weight. The American Dietetic Association (Food Facts, n.d.) warned against pseudo-scientists who promote fad dietary habits by (a) the distortion of small fragments of valid nutritional research or (b) the proclamation of "personal findings" from studies conducted without following scientific research methods. More information is needed to indicate if nurses are able to distinguish nutritional fact from nutritional fantasy.

Obesity is the most common human metabolic disorder (Bierman, 1979). Bray (cited in Gumby, 1980), chairperson of the Second International Congress on Obesity, stated that the solution to the obesity problem, in part, depends on influential people, in the public and private sectors, who can change those aspects of the American life style which contribute to obesity. Bray specifically mentioned government funded public education, insurance premiums which provide incentive for body leanness, lower calorie values in processed foods, and normal weight exemplified by those who are in a position to influence public opinion.

Since nurses by tradition are associated with health promotion, they are in a position to influence public

opinion on a health related matter, such as body weight control. There is a scarcity of information concerning the influence of nurses' personal living habits on the living habits of others, either clinically or socially. This study increased research knowledge on the concept of role modeling by nurses through exploration of three aspects of nurses' capacity to serve as normal weight role models: (a) knowledge of the necessary information required to serve in the position, (b) motivation to implement the knowledge base into personal practice, and (c) the ability derived through past socialization to assume the position as referenced by opinions toward the position.

Conceptual Framework

The conceptual framework for this study focused on the concept, role model. Kemper (1968) defined role model as a referent group, or more likely, a referent person, who displays technical proficiency or developed ability which another individual lacks, or feels that he or she lacks, but which the individual can learn by observing the model and comparing his or her own behavior with that of the model. Thus, individuals can judge the adequacy of their role performance by comparing their performance against that of the role model.

Kelley (1952) stated that a reference group is any group which influences an individual's attitudes. The reference group (or person) has two principle functions: (a) the normative function and (b) the comparison function. The normative function is concerned with setting values or norms and with defining the roles an individual assumes. The individual may not willingly comply with the norms, but the person's behavior indicates reference to the norms. The comparison function holds that a reference group or person serves as a standard or reference point against which the individual can compare and make judgments about the adequacy of his or her own performance as well as the performance of others.

Kemper (1968) divided the comparison function into four concepts: equity, legitimator, accommodator, and role model. The first three concepts deal with, respectively: (a) the fairness of the individual's fate, (b) the legitimacy of the individual's behavior and opinions, and (c) the individual's cooperative or competitive responses in relation to other individuals' behavior. Unlike these three concepts, the role model concept does not influence attitude formation, but is more concerned with the learning of abilities required

to perform behavioral aspects indicative of attitude conformity. Kemper stated that the need for a role model increases in direct proportion to the complexity of the task to be learned.

Brim (1960) stated that an individual's capacity to assume a role is dependent upon the variables of:

- (a) knowledge of what is expected from role occupants;
- (b) physical, emotional, and cultural ability to perform the expectations; and
- (c) the motivation to perform.

The reference group normative function and comparison function concepts of Kelley (1952), the role model concept of Kemper (1968), and the role-learning concept of Brim (1960) provide the conceptual framework for this study. The study focused on the nurses' capacity to assume the normal weight modeling role in terms of a knowledge base concerning nutrition and exercise habits as well as a motivational level sufficient to implement the knowledge based information into personal habits. Another focus of the study was concerned with the nurse's ability to assume the normal weight role model position in relation to cultural norms, attitudes, and beliefs as evidenced by opinions toward the position.

Assumptions

The study was based on the following assumptions:

1. Nurses are role models in health-related personal habit areas.
2. Role models illustrate how to perform in a given role.
3. Actual learning of the role depends on interaction with someone occupying the role.
4. Both ability and motivation to assume a role are related to the cultural aspects of an individual's past socialization.
5. Knowledge of demands and expectations of a role is necessary before a role can be assumed.

Hypotheses

The following hypotheses were tested:

1. There will be no significant difference in the scores of normal weight nurses and the scores of obese nurses on the knowledge based weight reduction and weight maintenance questionnaire.
2. There will be no significant difference in the personal adherence scores of normal weight nurses and the personal adherence scores of obese nurses on the knowledge based weight maintenance regimen.

3. There will be no significant difference in the personal adherence scores of normal weight nurses and the personal adherence scores of obese nurses on the knowledge based weight reduction regimen.

4. There will be no significant difference in the scores of normal weight nurses and scores of obese nurses on the health role model opinion scale.

5. There will be no significant relationship between knowledge base scores and personal adherence scores on the knowledge based weight maintenance regimen.

6. There will be no significant relationship between knowledge base scores and personal adherence scores on the knowledge based weight reduction regimen.

7. There will be no significant relationship between knowledge base scores and scores on the health role model opinion scale.

8. There will be no significant relationship between scores on the knowledge based weight maintenance regimen and scores on the health role model opinion scale.

9. There will be no significant relationship between scores on the knowledge based weight reduction regimen and scores on the health role model opinion scale.

Definition of Terms

The following terms were defined for this study:

1. Normal weight determination--the respondent's frame size was determined by the answer to question 13 in the questionnaire. The respondent's height was measured during the weighing process. Normal weight was calculated through the use of the American Dietetic Association's (1977) weight-for-height chart outlined in the following steps:

Step 1. Allow 100 pounds for first 5 feet of height.

Step 2. Add 5 pounds for each additional inch. This figure was the determined weight for the medium frame.

Step 3. Small frame weight was determined by subtracting 10% from the figure obtained in Step 2. Large frame weight was determined by adding 10% to the figure obtained in Step 2.

2. Normal weight nurse--a nurse whose weight was within 20% of her normal weight determination.

3. Obese nurse--a nurse whose weight was 20% or more above her normal weight determination.

4. Underweight nurse--a nurse whose weight was 10% or more below her normal weight determination.

5. Knowledge base--scores determined by answers to questions designed to address nutrition and weight control knowledge. High scores on a scale of 0-44 indicated greater knowledge than low scores on the scale. Knowledge base scores indicated the level of knowledge concerning the role demands of the normal weight exemplar position.

6. Personal adherence as measure of motivation--scores determined by answers to questions designed to address personal nutrition and weight control habits. High scores on a scale of 0-9 indicated greater adherence than low scores on the scale. Personal adherence scores indicated the level of the motivation factor in relation to the implementation of the knowledge base into personal practice.

7. Opinion of the nurse as a health role model--scores determined by a survey which contained questions designed to elicit nurses' opinions concerning the nurse as someone who demonstrates developed ability in personal health-related habits. Thus, other people can learn by observing the nurse's behavior and comparing their behavior with the nurse's example. High scores on a scale of 6 to 36 indicated more favorable opinions toward the

nurse as a health role model than low scores on the scale. Opinion scores indicated the level of ability to assume the normal weight exemplar position in relation to past socialization regarding the position.

8. Caloric value of an exercise--caloric values for physical activity listed in the publications of Pollock, Wilmore, and Fox (1978) and Stuart and Davis (1972) were the values used for determination of caloric expenditure in the exercise programs of this study.

Limitations

Factors which influenced conclusions drawn from the study were:

1. A host of extraneous, secondary variables may have influenced the study variables: cultural background, age, educational differences, weight and nutritional habits of key family members and friends, financial means, levels of social and physical stress, job description, recreational interests, experience in weight control programs, state of health, degree of satisfaction with life style, knowledge of self, and emotional aspects of personality.

2. There was some danger that the data were biased, since the study subjects were self-selected on a volunteer basis (Kerlinger, 1964).

3. The questionnaire instrument utilized in the study was new and only the face and content validity were determined.

4. The determined normal and obese weights were estimates for height and frame size, since science does not have a universal research-determined means to calculate normal weight (Bray, 1976).

5. Skeletal frame size was a self-reported item. In addition, science does not have a universal research-determined means to calculate normal skeletal frame size.

6. All nurses may not have considered obesity to be a health hazard. There are studies which indicate that weights in excess of contemporary standards may not be detrimental to health (Gumby, 1980). In addition, other researchers indicated that remaining above normal weight may be less harmful than wide fluctuations in body weight through repeated reducing attempts (Bray, 1976).

7. All nurses may not have accepted the contemporary estimate of the obese threshold at 20% above normal weight.

8. The scores for the instrument sections of adherence as a measure of motivation were determined through self-reported data.

9. The caloric value of exercise expenditures was taken from charts which were related to the caloric cost of exercise expenditures in reference people. Study participants may differ from the reference people in the variable areas of sex, weight, and physical conditioning.

Summary

Obesity is the most common human metabolic disorder (Bierman, 1979). There are no published studies which indicate that nurses are less prevalent in the ranks of the obese than any other segment of general society. In addition, little research knowledge exists concerning the influence of nurses' living habits on the living habits of others.

The conceptual framework for this study focused on the four concepts of Kemper's (1968) role model, Kelley's (1952) normative and comparison functions of reference groups, and Brim's (1960) role-learning. A descriptive correlational study was designed to examine the relationships among the variables of knowledge of role demands, motivation to implement the knowledge base into personal habits, and ability derived through past socialization to assume the position as referenced

by opinions toward the position of normal weight role model.

CHAPTER 2

REVIEW OF LITERATURE

The review of literature related to this study was divided into the following categories: (a) research studies concerning nurses' knowledge of nutrition, (b) studies which investigated the living habits of nurses, and (c) studies which focused on opinions of nurses concerning the nurse as a health role model. Although a review of studies pertaining to the nurses' knowledge of the relationship between physical exercise and body weight was pertinent here, a dearth of research currently exists in that area. Furthermore, nurses' knowledge of this relationship cannot be extrapolated from knowledge of the general public, since published studies concerning the public's knowledge of the relationship between physical activity and body weight are also lacking.

Nurses' Knowledge of Nutrition

Four studies were reviewed in relation to nurses' knowledge of nutrition. The four studies were those of Cook (1980), Harrison, Sanchez, and Young (1969), Poplin (1980), and Vickstrom and Fox (1976).

The two purposes of the study by Cook (1980) were to assess the effect of a 1-day program in nutrition on the knowledge base of registered nurses and to assess the effects of the program on the nurses' attitude toward the Food and Drug Administration (FDA). The instruments were administered to a sample of 86 registered nurses. No other descriptors of the sample were given.

The questionnaire consisted of a 90-item section on nutrition and a 33-item, 5-point Likert attitude scale. Cook did not indicate the source of the instrument and whether or not the instrument was pilot-tested or statistically tested for reliability. The instrument was administered prior to the nutrition program to determine pre-program nutritional knowledge and attitudes toward the FDA. The instrument was administered again 1 week after the program.

Findings of the Cook study were: (a) posttest knowledge scores were higher than pretest knowledge scores; (b) attitudes toward the FDA moved in a positive direction from the pretest measurement to the posttest measurement; and (c) the nurses' age, date of graduation, and years of working experience had little effect on either the pretest or posttest scores.

In a study by Harrison et al. (1969), a questionnaire was developed to assess the nutritional knowledge of public health nurses. The questionnaire was administered during staff meetings to 144 nurses employed in seven local public health facilities located in the state of Michigan.

The sample nurses' age range was 21-63 years with a mean of 37 years. Educational credentials of the nurses included 6.9% master's degree graduates, 40.5% baccalaureate degree graduates, 45.4% diploma graduates, 5.9% associate degree graduates, and 2.1% licensed practical nurses. Harrison et al. stated that the percentage of baccalaureate degrees in this sample was slightly higher than that of the general population of the United States. The type of nursing education for the sample was age-related with the majority of the baccalaureate degrees found among the younger nurses, while most of the diploma graduates were nurses over 30 years of age. The master's degree graduates were mostly in the older age groups.

The questionnaire was pilot-tested utilizing a group of public health nurses, a group of graduate students in nutrition, and a group of women of the same

age and with the same educational credentials as the sample, but the women were not in the health field professionally. Questions which did not differentiate between the groups or were unclear to the respondents in the pilot-test were eliminated. In its final form, the questionnaire contained 67 items designed to test nutritional knowledge. The 67 items were divided into four broad categories of nutritional knowledge:

(a) useful tools for planning and evaluating the nutritional adequacy of diets; (b) physiologic considerations which may affect nutrient needs or food ingested; (c) psychologic and social considerations which may influence food ingestion; and (d) information concerning various aspects of individual nutrients such as food source, functions in the body, digestion, and metabolism. Answers to all 67 items were in one of the three following forms: (a) true, (b) false, and (c) don't know. The authors did not indicate that the instrument was statistically tested for reliability.

The range of total correct responses for the questionnaire was 23.8% to 85% with a mean of 62% and a median of 67.9%. The questionnaire scores of the baccalaureate degree nurses were significantly

higher than the scores of the diploma or associate degree graduates. However, working experience negated the educational difference in knowledge scores significantly in all the item categories except in the category of psychological and social aspects of food intake. The effect of working experience on knowledge scores was significant, especially if the working experience was in a large public health agency which employed a dietitian in an advisory capacity. Approximately 50% of the nurses recognized the Food and Nutrition Board of the National Research Council as a reliable nutritional resource, and the nurses, in general, were not knowledgeable concerning the philosophy of the Recommended Dietary Allowances.

Poplin (1980) developed and administered a 10-item questionnaire to five groups of various health professions students in a 2-year college and two groups of lay persons for the purpose of investigating the health professions students' ability to answer questions about nutrition posed by the general public. The student groups were composed of registered nursing, dental hygiene, early childhood specialist, dental assistant, and licensed vocational nursing students. The number

of subjects in the various student subgroups was: 101 registered nursing, 23 dental hygiene, 27 early childhood specialist, 11 dental assistant, and 62 licensed vocational nursing students. All of the student subgroups were taken from the same college student body, and therefore, the scores may only have indicated differences in the nutritional education for the various schools within that particular college. The questionnaire was administered to all of the students present at regularly scheduled class meetings.

The lay group was comprised in part by volunteers who answered the doorbell in a neighborhood which was above the socioeconomic median. Another segment of the lay group was composed of members of local health clubs. Volunteers were recruited to respond to the questionnaire as they entered the health clubs over a 2-hour period. The total number of general public respondents was 65. No other sample descriptors were given for the groups.

Seven of the 10 items in the questionnaire were taken from the article, "What's Your Nutrition I.Q.?" (1977) and Dugdale, Chandler, and Baghurst (1979). Poplin (1980) devised the remaining three items, and did

not indicate that the instrument was tested for reliability and validity.

Study findings revealed that the scores of the students in all groups increased in proportion to the amount of nutritional education in the students' experience. The registered nursing and dental hygiene students scored significantly higher than all of the other student groups and the general public. However, the registered nursing students' mean overall score was 68.7% and the dental hygiene students' overall mean score was 87.9%.

Vickstrom and Fox (1976) devised a questionnaire to assess nurses' knowledge and attitudes related to nutrition. The population sample was obtained by mailing questionnaires to all of the 1,536 members of the Nebraska Nurses' Association. A total of 867 (56%) of the questionnaires was returned, and 500 of the returned questionnaires came from hospital employed nurses. The 500 hospital employed nurses comprised the study sample which the authors estimated to be 7% of Nebraska's employed nurse population.

The sample nurses' age range was 21-69 years with a mean of 38 years. Nursing experience ranged from 1

month to 45 years with a mean of 14 years. The group was comprised of 75% diploma graduates and 25% bachelor degree graduates.

Questionnaire items were taken from two previously tested instruments by Epright, Fox, Fryer, Lamkin, and Vivian (1970) and Petersen and Kies (1972). In addition, Vickstrom and Fox (1976) added several true-false items. The instrument was presented to a panel of experts and revised according to the panel's recommendations. The instrument was pilot-tested and revised according to analysis results. Vickstrom and Fox did not indicate that the instrument was statistically tested for reliability nor did they state the level of significance established for the study.

The final form of the instrument contained 30 knowledge questions, 28 attitude statements, a ranking question regarding the role of the dietitian, and demographic items. Questionnaire knowledge items were presented along with a choice of three answers: (a) true, (b) false, and (c) undecided. In addition to receiving points for each correct answer given, the respondent also received various numbers of points related to the respondent's degree of certainty that

the answer selected was correct. The highest possible score on the knowledge section was 210 points. In order for a respondent to earn 210 points, all items were answered correctly, and the respondent checked the category which indicated maximum confidence that the answer was correct for each of the items. Attitudes were measured by checking one of five categories of answers in relation to opinion statements: (a) strongly agree, (b) agree, (c) undecided, (d) disagree, and (e) strongly disagree.

Findings of the study by Vickstrom and Fox indicated: (a) nurses thought that nutritional education was highly important in nursing classes, (b) the level of nutritional knowledge was low (mean score of 112 out of 210 points), (c) nurses were uncertain about the degree of accuracy of their answers, (d) nurses had more knowledge of basic nutrition principles than knowledge of specific aspects of applied nutrition, (e) knowledge scores were inversely proportional to age and years of nursing experience, (f) diploma graduates had lower knowledge scores than degree graduates, and (g) high nutritional knowledge scores correlated positively with the nurse's perceived role in patient education. The nurses' low

scores on the knowledge items were partially due to the low degrees of certainty indicated for the answers. The nurses actually checked the correct answers for 77% of the knowledge items. However, the nurses' low confidence in the accuracy of their answers lowered the scores.

Four studies were described in this section in relation to nurses' knowledge of nutrition. Overall, the nurses' level of knowledge in nutrition was low as measured by these studies.

Studies Related to Living Habits of Nurses

Studies in this section were subdivided into three categories: (a) studies which explored several living habit areas, (b) studies related specifically to nutritional practices, and (c) studies related specifically to cigarette smoking habits.

Studies Related to Several Living Habit Areas

Three studies reviewed in relation to nurses' health practices were concerned with habits in several areas. The three studies include those of Evans (1979), Freedman (1981), and Pantaleo (1977).

The purpose of the study by Evans (1979) was to investigate physical fitness practices of nurses. Data were collected at a monthly meeting of a district nurses' association and at a regularly scheduled class meeting for graduate nursing students in a metropolitan area of the Southwestern United States. The sample was comprised of 41 nurse volunteers with current state licenses.

Demographic findings revealed that the nurses' age range was 23-52 years with a mean of 31.3 years. The sample contained 5 male nurses and 42 female nurses. Twenty-eight (60%) of the sample held bachelor's degrees, and 19 (40%) held master's degrees. The range of working experience was 1-28 years with a mean of 9.4 years. Twenty-seven (57%) of the nurses were married. Diagnosed diseases were listed by 15 (32%) of the nurses. Medications were taken by 28 (60%) of the nurses and included birth control pills, Motrin, Premarin, Lotrimin, anti-histamines, Coumadin, and aspirin. Birth control drugs were used by 8 (17%) of the sample. The mean number of days missed at work over the past year was 2.2 days with a range of 9-14 days.

Evans developed a 93-item questionnaire which addressed demographic data, nutrition, rest, exercise, relaxation, and medical awareness. Some of the questionnaire items and areas of study were taken from Pantaleo (1977). The instrument was presented to a panel of experts to determine content validity and pretested for reliability, using the test-retest methods. A reliability coefficient of .98 was computed.

Findings of the study revealed that the overall mean score was 41 points of a possible 65 points on the physical fitness questionnaire. The nurses were placed into one of three categories according to their score: (a) high with 90% or more positive responses, (b) medium with 80%-89% positive responses, and (c) low with 79% or below of possible responses. None of the respondents were in the high group, and only 3 respondents were in the medium group. In this sample, 44 respondents were in the low group.

The nurses scored highest on the sleep section of the questionnaire, and the lowest on the exercise section. The highest overall scores as well as the highest scores on the sections of nutrition, exercise, and medical awareness were scored by nurses 40 years

and older. Nurses with children scored higher in most categories than nurses without children. Married nurses had higher scores in all categories except relaxation than the unmarried nurses. Baccalaureate graduates and master's graduates scored about the same in all categories except exercise. Those nurses with master's degrees scored higher in the exercise section than nurses with bachelor degrees.

The range of scores in the nutrition section was 2-14 points with a mean of 9.1 points. The highest possible score was 17 points. When respondents were asked if they utilized the basic four nutritional tool, 32 (70%) of the respondents answered affirmatively. However, 31 of these 32 respondents ate less than the minimum number of daily servings recommended by the basic four food group tool. Twenty-four of the nurses (51%) ate breakfast, and the respondents drank a mean of 3.2 cups of coffee a day with a range of 0-10 cups. Daily vitamin usage was present in 40% (19) of the sample. Evans reported that she had difficulty in differentiating the obese and normal weight subjects and that the division of subjects according to weight did not follow a systematic procedure.

The highest number of points overall was scored in the sleep section. Nurses lost the most points in this section in relation to the number of hours slept per night (7 or less). Sleeping at least 7 hours per night was prevalent in 45% (21) of the sample group. The mean was 6.7 with a range of 5 to 8 hours sleep.

The lowest number of points scored overall was in the exercise section. The study found that 76% (36) of the sample did not participate in a regular exercise program. Forty-four nurses (94%) scored in the low category on the exercise items. Responses to the item concerning weight control revealed that 28 (59%) used exercise in conjunction with dietary measures in slimming regimens.

In the relaxation section, 89% of the subjects stated that overall they were happy with their present lives. The study found that 36 (78%) of the nurses were satisfied with present jobs and that 41% (19) of the nurses had changed jobs within the past year.

Questions in the medical awareness section generally dealt with illness prevention habits and routine examinations. The study revealed the following information in relation to annual examinations: (a) 89% (37)

of the subjects had general physical exams, (b) 70% (33) of the subjects had a dental exam, and 43% (20) of the subjects had an eye exam. Monthly breast self-examinations were performed by 48% (20) of the subjects and 88% of the female nurses had a Pap smear within the past year. The study found that 22% (6) of the nurses smoked cigarettes and 17% (8) of the nurses drank alcohol excessively in relation to the number of drinks taken in one sitting.

Freedman (1981) conducted a study to evaluate the validity and reliability of Evans' (1979) questionnaire and to investigate the living habits of nurses. The sample was comprised of 52 registered nurses who were employed in a designated institution in a metropolitan area of Southeast Texas. All nurses who were working in the institution on the data collection days were included in the study.

Demographic data revealed that the age range was 23-57 years with a mean of 36.45 years. The majority of the nurses were Caucasian and female. Of the sample, 67.3% (35) were married, and 67.3% (35) had children. Nursing experience ranged from 1-34 years with a mean of 12 years. Seventy percent (41) of the sample stated that they had no current illnesses.

Two instruments were used in this study: (a) Evans' Questionnaire on Physical Fitness developed in 1979, and (b) the Health and Ways of Living Questionnaire from California (Breslow, 1972). Evans study was described previously in this chapter. Freedman altered Evans' questionnaire slightly in the following areas: (a) another answer choice was added to one item; (b) all items which were not scored were deleted, with the exception of demographic items, and (c) one item which asked for two pieces of information was divided into two separate questions.

The Health and Ways of Living Questionnaire was developed in California by Human Population Laboratory. The reliability and validity of the California instrument was discussed in a report by Breslow (1972). Freedman stated that the tool was reliable and valid. The sections of the questionnaire which addressed living habits were the only parts of the California tool utilized in the study. Findings revealed that the scores on the Evans questionnaire were significantly related to scores on the California instrument.

The nurses' overall scores on the Evans tool in this study ranged from 28-56 with a mean of 42.59.

The highest possible score was 62. When the 52 nurses were categorized by percentage of correct answers, 2 (3.8%) were in the high group, 12 (22.9%) were in the medium group, and 38 (73.3%) were in the low group. The highest scores for the sample were in the rest section and the lowest scores were in the exercise section. In general, health habits practiced in one area did not correlate well with health practices in another area. However, exercise scores were significantly correlated with nutrition scores ($r = .299$, $p = .02$). Age, years of nursing experience, marital status, and basic professional education were unrelated to health habits in this sample.

Findings from the sections on nutrition, exercise, and cigarette-smoking habits were: (a) the range of scores in the nutrition section was 2-16 out of a possible 18 points with a mean of 9.8 points; (b) in the exercise section, 47 (90.4%) of the respondents scored in the low group, 34 (65.4%) of the respondents exercised to control weight and younger nurses exercised more than older nurses, and (c) 19 (36.5%) smoked cigarettes.

The purpose of the study by Pantaleo (1977) was to examine the living habits of nurses. The sample consisted of 90 registered and practical nurse volunteers selected randomly from the 356 employed nurses at Illinois Masonic Medical Center in Chicago. The mean age of the sample was 33.7 years. No other sample descriptors were presented.

Pantaleo devised a 34-item questionnaire utilizing two previously used instruments: (a) 1969 health survey by the United States Department of Health (1974), and (b) the instrument used in the National Opinion Research Center University of Chicago (1972) study. A reliability coefficient of .74 was computed using the pretest and posttest scores of 30 hospital administrators. Pantaleo did not indicate that the developed instrument was examined for validity. The questionnaire addressed: (a) how nurses perceived their health; (b) weight control; (c) alcohol consumption; (d) cigarette smoking; and (e) length of time between examinations such as routine physical, eye, Pap smear, dental, electrocardiogram (EKG), chest x-ray, and breast exams.

Eighty-two percent of the sample thought they were in excellent health. Findings related to the frequency of health examinations revealed that the following

percentages of the sample had received the indicated exam within the past year: (a) 62.5% had routine physicals, (b) 89.7% had chest x-rays, (c) 47% had eye exams, (d) 60% had Pap smears, (e) 60% had breast exams, and (f) 33% had dental exams. Since the mean age of the sample was 33.7, few of the nurses had EKGs within the past year. Weight findings were limited to increases and decreases over the past year. The majority of the nurses did not gain or lose weight.

Study findings regarding alcohol consumption were related to how often the nurses drank alcoholic beverages: (a) 36% drank once in a while, (b) 4% drank once a month, (c) 5% drank several times each month, (d) 9% drank several times each week, (e) 4% drank every day, (f) 10% did not drink, and (g) 32% did not respond to the question on alcohol consumption. Findings related to cigarette smoking revealed that 54% of the nurses stated that they did not smoke in the past, and 59% stated that they presently smoked.

The three studies described in this section examined several areas of living habits to determine the health practices of nurses. All three studies indicated that the nurses were not practicing healthful living habits.

Living habits investigated in the studies included practices in the areas of nutrition, exercise, routine physical examinations, cigarette smoking, alcohol consumption, sleep, general health, and body weight control.

The studies by Evans (1979), Freedman (1981), and Pantaleo (1977) obtained data concerning the body weights of their respondents. However, Evans (1979) stated that she did not follow systematic guidelines to determine obese and normal weight subjects, and Freedman (1981) did not indicate that she modified Evans' instrument to include systematic guidelines in relation to weight categories. Therefore, the findings of Evans and Freedman related to respondents' weights were not reported in the review of literature in this section. Pantaleo (1977) stated that she was unable to determine the normal weight and obese categories due to the subjectiveness necessary to determine skeletal frame size. However, Pantaleo did report that the majority of her nurse sample did not gain or lose weight over the past year.

Studies Related to Nutritional Practices

Two other studies focused on nurses' nutritional practices in addition to the studies of Evans (1979) and Freedman (1981). The purpose of the study by Kurtz (1975) was to investigate nurses' opinions concerning the joint objectives regarding nutrition determined by the National League for Nursing (NLN) and the American Dietetic Association (ADA). The study sample was comprised of full-time employed administrators and staff nurses in a 275-bed hospital located in Indiana. Kurtz stated that limitations of the study involved age representation, a one-hospital setting, and the influence of an affiliated nursing school.

The instrument contained 16 items: (a) six items for demographic data, (b) nine items were condensed forms of the NLN-ADA objectives which did not mention the source of the items, and (c) the final item requested the respondent to state whether or not the objectives pertained to dietitians rather than nurses. Kurtz did not indicate that the instrument was tested for reliability or validity.

The finding of the Kurtz study related to the current study is in relation to the questionnaire item

which asked: "To what extent do you modify [your] own dietary habits in terms of known nutrient requirements for age?" The question was answered in the following manner by the 36 respondents: (a) 14 answered frequently, (b) 14 answered occasionally, and (c) 8 answered seldomly.

Willett, Sampson, Bain, Rosner, Hennekens, Witschie, and Speizer (1981) conducted a study to determine the use of vitamin supplements by registered nurses. In order to obtain a sample representative of the nurse population in the United States, 2,000 nurses were randomly selected from 95,000 nurses who answered another study questionnaire in 1978. Each of the 2,000 nurses received a questionnaire through the mail, and 1,742 of these nurses returned fully completed questionnaires. The sample consisted of 1,742 female registered nurses, aged 30-60 years, who lived in 10 of the largest states

Willett et al. described their instrument as a "detailed dietary questionnaire" which inquired about the usage of multivitamin, vitamin A, vitamin C, or vitamin E preparations. The researchers did not indicate whether or not the questionnaire was pilot-tested or statistically tested for reliability. Respondents were asked to indicate the number of supplements used

per week, the number of years of use, and the dosage size. Nurses who used supplements intermittently, such as vitamin C for colds, were considered non-users in this study. The daily dose of vitamins A, C, and E were determined by multiplying the number of supplements used per week by the dosage size of each supplement and dividing that sum by 7. The respondents were required to list their current weight and height along with the number of hours a week spent in vigorous physical activity.

Study results revealed that the following percentages of the sample reported use of vitamin supplements:

(a) multivitamins 38%, vitamin A 4%, vitamin C 23%, and vitamin E 15%. Most nurses who used vitamins A, C, and E had used the supplements for less than 5 years. However, a substantial number of nurses had used vitamin A, C, and E supplements for 10 years or longer. The most common dosage involved the use of one pill or capsule of these supplements daily. However, 20% (67) of the nurses who used vitamin C supplements were using 1 gram or more a day. The mean dose for A, C, and E was well above Recommended Dietary Allowances (1980) for each vitamin preparation. The use of multivitamin preparations was spread throughout the age span of the

sample, whereas the use of vitamins A, C, and E increased with advancing age. Usage of any one of the four types of vitamins was strongly associated with use of the other types of vitamins. Vitamin usage was unrelated to obesity or physical activity in this sample. (The researchers did not report any other information gathered in the study in relation to body weights or physical activity habits).

Nurses who lived in California had a higher incidence of usage of all four vitamin preparations than nurses who lived in other regions. Even when the different regions were standardized for age, the California segment of the sample still had a higher incidence of vitamin usage. However, the researchers reported that the use of vitamin supplements was substantial in all regions.

The review of literature indicated that nurses had low scores in nutritional practices in the studies of Evans (1979), Freedman (1981), Kurtz (1975), and Willett et al. (1981). Both Evans (1979) and Willett et al. (1981) reported widespread use of vitamin supplements among their samples.

Studies Related to Cigarette Smoking Habits

The majority of studies which investigated nurses' health practices focused on smoking habits. The purposes of the study by Ashley (1981) were to investigate: (a) cigarette smoking habits among senior year university students, (b) the students' knowledge of the disease consequences of smoking, and (c) the students' attitudes toward role modeling and smoking control measures. The sample was comprised of 31 nursing students, 219 medical students, 73 dentistry students, 63 physical and occupational therapy students, 95 pharmacy students, 46 physical and health education students, 109 arts and science students, and 73 science and engineering students. The students were all enrolled in the University of Toronto in Canada. Volunteers were recruited from the classrooms. Ashley did not describe the questionnaire, relate its sources, or indicate that the tool was tested for reliability and validity.

Ninety-seven percent of the nursing students were female, and the mean age for all nursing students was 22.9 years. Findings indicated that 6% of the 31 nursing students were current smokers, 13% were ex-smokers,

and 81% had never smoked. Current smokers were defined as those students who smoked at least one cigarette per day. The following percentages of the student nurses indicated that smoking was a major factor in the specified diseases: (a) lung cancer 90%, (b) cancer of the mouth 39%, (c) cancer of the larynx 39%, (d) chronic bronchitis 58%, (e) emphysema 55%, and (f) coronary heart disease 32%. Ninety percent of the student nurses stated that they had received specific lecture and classroom materials related to cigarette smoking and health.

Belanger, Hennekens, Rosner, and Speizer (1978) initiated a longitudinal study in 1976 to investigate the use of various contraceptive methods in women. The sample was comprised of 122,690 volunteer female, married, registered nurses who lived in the 11 states which licensed the largest number of registered nurses. Belanger et al. did not describe their instrument or indicate that it was tested for reliability and validity.

One of the preliminary findings of the study concerned the current smoking rate of the respondents. Of the 122,690 nurses, 34.5% or more than one-third of the respondents currently smoked cigarettes. In addition to the current smokers, 24.3% of the respondents stated that they had smoked cigarettes in the past.

The study of Burk and Nilson (1975) had five general purposes: (a) to examine nursing students' smoking habits; (b) to determine the students' reasons for acquiring the habit of smoking; (c) to determine the students' opinions toward non-smokers' rights, role modeling, sale of cigarettes and smoking on the hospital premises; and (d) to determine the students' knowledge of the relationship between cigarette smoking and certain diseases. The sample was comprised of 421 first-year students in nine nursing and practical nursing schools in Maine. Burk and Nilson did not state the source of their questionnaire nor did they indicate that the tool was tested for reliability and validity.

Students who smoked in the nine schools ranged from 23.9%-65.0% of the freshmen population with a mean of 37.5%. The majority of the smokers (50.6%) began smoking between ages 15 to 17 years. Of the sample, 3.5% began smoking prior to age 12. By the age of 20, 91.2% of the smokers had begun to smoke. In relation to the amount smoked per day, 77% smoked one pack or less, while 23% smoked between 21 and 40 cigarettes. The percentage of students who had attempted to stop smoking at least one time was 78.3%, and 13.5% of

these had attempted to quit 5 times. Concern for health was the major reason cited by 47.9% for their attempts to quit smoking.

When the students were asked why nurses smoke, 54.5% cited "inability to break the habit" as their answer, and another 22.3% cited "pressure of work." The following percentages of the sample reported cigarette smoking as a major contributing factor in the stipulated disease: (a) lung cancer 74.9%, (b) pulmonary emphysema 52.4%, (c) chronic bronchitis 52.4%, (d) laryngeal cancer 48.9%, and (e) oral cancer 45.1%.

In 1959, 1,000,000 men and women above the age of 30 years from 25 states were recruited to volunteer for a longitudinal study by the American Cancer Society (Garfinkel, 1976). All of the volunteers answered an initial questionnaire and then answered four more questionnaires over the following 13 years. All five questionnaires were answered by a total of 9,488 female, registered nurses. Garfinkel did not discuss the questionnaire in this publication.

Findings indicated that the percentage of nurses who smoked in 1959, 36.3%, had declined to 25.9% in 1972. However, in the 1972 study, nurses still smoked

more than other females in the general society (19.5%). The nurses tended to be younger than other women in the study, but when the results were adjusted for age, the nurses still smoked more than other women in the study.

A question regarding cigarette smoking was added to the 1976 population census taken in New Zealand (Hay, 1980). Of the nurses who answered the census form, 25,641 were female and 1,682 were male. The nurses in this study were of registrerd and non-registered status.

The survey revealed that 36% of the female nurses smoked and 49% of the male nurses smoked. Of the nurses who smoked, 28% smoked more than 20 cigarettes per day, and 45% were less than 20 years of age. The highest percentage of smokers as well as the heaviest smokers were found in the nurses working on psychiatric divisions. The lowest percentage of smokers was found among nurses who worked with pregnant women and infants.

The purpose of the study by Hillier (1973) was to investigate cigarette smoking habits among English student nurses. The sample description was somewhat ambiguous in the published study. Hillier stated that 300 randomly selected female student nurses affiliated

with three separate English hospital facilities received a questionnaire through the mail. There was an 84% response rate to the questionnaire. At that time, 20 students were randomly selected for a 90-minute interview. Sickness and absence records were also analyzed. The age range of the sample was 16-24 years. The sample was divided into several social classes. However, the researcher did not list the criteria for the social class divisions. Neither the questionnaire nor the interviewing tools were discussed.

Hillier found that 63.6% of the students were currently non-smokers. However, more than one-half of the current non-smokers had smoked at some time during their life. The majority of the non-smoking nurses listed financial and aesthetic reasons for not smoking; only 12.5% listed health as the major reason for not smoking.

The majority of the students who smoked cigarettes (71%) smoked less than 12 cigarettes per day. Hillier stated that she found a statistically significant correlation between the number of current cigarettes smoked per day and the age of the student at inception of the smoking habit. Those students who began to smoke prior to age 17 years were heavier smokers than the students who began to smoke after age 17. In addition, a greater

proportion of heavier smokers was found in the upper school years. Of the smokers, 56% began to smoke regularly after they entered nursing school, and 44% stated they were currently smoking more than they smoked the previous year. Smokers were absent from work an average of 21.0 days over the past year as compared to 8.4 days for non-smokers. Sickness records revealed that smokers had considerably more respiratory illnesses than non-smokers.

Hillier stated that the students were not knowledgeable about the harmful effects of smoking since the students correctly answered only 4 of 8 questions concerning smoking-related diseases. When the responses of the smokers and the non-smokers were combined, less than half of the sample thought that cigarette smoking was a serious threat to health.

Questions concerning smoking habits of the parents of the students revealed that the same percentage of fathers smoked for both the smoking and non-smoking groups. However, smoking students were more likely to have mothers who smoked, and the heavier smoking students tended to be those who had both parents smoking cigarettes.

The purpose of the study by Murray, Swan, and Mattar (1981) was to investigate the cigarette smoking habits of beginning student nurses in relation to: (a) background social factors and (b) conceptions of professional nursing. The sample was comprised of 56 volunteer students of a class of 58 at the Nightingale School of Nursing in London. Although the researchers stated that only one student refused to answer the questionnaire, data were reported for 56 students only. The students had been in school for 2 months prior to the data collection day.

The questionnaire asked for information regarding family members who smoked, friends who smoked, age, university degrees, and previous nursing experience. In addition, the tool contained a 5-point opinion scale which asked the students to rank the importance of certain qualities, rewards, and benefits of nursing. Murray et al. did not indicate that the instrument was tested for validity or reliability.

Demographic data revealed that: (a) 10 (18%) of the sample smoked at least 10 cigarettes per week; (b) 3 (5%) of the sample smoked less than 1 cigarette per day; (c) 26 (46%) of the sample had smoked at least 1

cigarette in their lifetime; (d) 2 (4%) of the sample smoked regularly at sometime in their life, but currently were non-smokers; and (e) 15 (40%) of the sample had never smoked in their lifetimes. Only the 10 students who smoked 10 cigarettes per week were considered to be smokers in this study. Three of the students were male and none of the students were married. In regard to the age variable, 15 of the students were 18 years old, with the remaining 41 students aged 19 years and older. Thirteen of the students had university degrees, and 32 of the students had previous nursing experience. Of the sample, 40 students had at least one family member who smoked, and 50 had friends who smoked.

The study findings indicated that a smoking student tended to be one who was older, had family members and friends who were smokers, and had fewer educational credentials. Students who stated that they had long-term aspirations toward a nursing career were less likely to be smokers than those who had short-term aspirations. Eight of the 10 smokers thought that the majority of nurses smoked cigarettes, as compared to 30 of the 46 non-smokers. When the sample was asked why nurses smoke, the majority of the non-smokers thought the

reasons were to relieve stress associated with a career in nursing while the majority of the smokers thought the reasons were not related to the nursing profession, but more related to the reasons that the general public smoked.

The two purposes of the study by Tagliacozzo and Vaughn (1982) were to investigate: (a) nurses' smoking behavior and (b) the relationship between the smoking behavior and work-related stress. A questionnaire was sent to the 933 members of the Michigan Nurses Association who were involved in direct patient care. Completed questionnaires were returned by 448 nurses. In order to deal with non-respondent bias, the researchers contacted by telephone a random sample of 96 of the nurses who did not return the questionnaire to learn about their smoking status.

Tagliacozzo and Vaughn defined the categories of smoker, former smoker, and non-smoker by the following criteria: (a) smokers were those who had smoked at least 100 cigarettes in their lifetimes, (b) former smokers were those who had smoked 100 cigarettes in their lifetimes but who were not smoking at the time of the study, and (c) non-smokers were those who had

never smoked or who had smoked less than 100 cigarettes in their lifetimes. The sample consisted of 19.9% (89) smokers, 21.9% (94) former smokers, and 59.1% (265) non-smokers.

The nurses' age range was 20-62 years with a median of 29 years. Approximately 50% of the nurses were either not married or separated from their spouses. Educational credentials included 53.4% baccalaureate degrees in nursing, 35.2% diploma graduates, and 11.4% associate degrees. Approximately one-half of the sample had 5 years or less nursing experience, and 62% of the respondents currently worked 40 hours or more per week.

The 26-item questionnaire was devised by the researchers and utilized some of the items from three published sources: (a) Olesen and Davis' Post Baccalaureate Studies of Nurses (n.d.), (b) Kahn's Job Tension Index (1964), and (c) Lysaght's study on operating room nurses (1979). The 26 items were divided into two major subgroups entitled job-related stress and role-related stress. The respondents were asked to check one of the six following categories in relation to how often a certain situation annoyed them: (a) almost never, (b) rarely, (c) sometimes, (d) rather often, (e) almost all the time, and (f) does not apply.

Items in which the respondent checked the category, does not apply, were discarded. The respondent received 1-5 points for each of the other five categories respectively. The overall score was calculated by summing the points and dividing that sum by the number of items. The researchers did not indicate that the instrument was statistically tested for reliability or tested for validity.

Study findings revealed that the percentage of smokers in this sample was 19.9% and the number increased to 23.6% after adjustment for non-respondents. Respondents who smoked were classified as light smokers, moderate smokers, and heavy smokers according to how many cigarettes they smoked per day. Of the sample, 41% were light smokers (10 cigarettes or less), 43% were moderate smokers (11-20 cigarettes), and 16% were heavy smokers (more than 20 cigarettes). Low-tar cigarettes were smoked by 72% of the smoking group with 26% smoking regular cigarettes, and 2% smoking both kinds of cigarettes.

The percentage of current smokers who had attempted to stop smoking was 77%. Although heavier smoking tended to increase with age, the trend was not statistically

significant. Of the married nurses, 13.7% smoked while 25.4% of the unmarried nurses smoked. The work situation was perceived to be more stressful to the smoker than to the non-smoker.

Indications from this study were that the nurse, who perceived more stress in relation to work and who was more likely to smoke, was one who was younger than 29 years, had a Bachelor of Science in Nursing degree, was single, worked more than 40 hours per week, and worked on rotating shifts.

The nursing population of the United States contains a large percentage of nurses who smoke cigarettes. Seven studies involving many geographical areas were described in this section in relation to American nurses who smoked (Belanger et al., 1978; Burk & Nilson, 1975; Evans, 1979; Freedman, 1981; Garfinkel, 1976; Pantaleo, 1977; Tagliacozzo & Vaughn, 1982). Every one of the seven samples had a greater percentage of female nurse smokers than the percentage of female smokers found in the general United States population by the study of the American Cancer Society (Garfinkel, 1976).

Studies outside the United States indicated that smoking is prevalent among New Zealand nurses (Hay,

1980) and among English student nurses (Hillier, 1973; Murray et al., 1981). Ashley (1981) found a lower percentage of smokers in her sample of Canadian student nurses than the percentages of smokers found in students of the United States and Great Britain (Burk & Nilson, 1975; Hillier, 1973; Murray et al., 1981).

Four studies on smoking indicated that nurses' smoking habits began prior to or during nursing school. Burk and Nilson's (1975) study, which utilized a sample of 421 nursing students in Maine, found that 37.5% of the students were current smokers and that the majority of the students began to smoke prior to age 17 years. Hillier (1973) found that 56% of her sample of English nursing students began to smoke regularly after they entered nursing school. Of Murray et al.'s (1981) sample of nursing students, 65% either were smoking currently or had smoked at some time in their past. Even in the study which involved the sample with the lowest percentage of students who smoked, 19% were smoking currently or had smoked at some point in their past (Ashley, 1981).

When non-smoking students in Hillier's (1973) sample were asked their reasons for not smoking, the majority listed financial or aesthetic reasons, with only 12.5% listing health as a major reason for not smoking. When

Burk and Nilson's (1975) sample was asked the reasons why nurses smoke, the majority of the students stated that nurses smoke because they were unable to stop the habit and that nurses utilized smoking as a means to cope with work pressures. Non-smoking students in Murray et al.'s (1981) study also stated that nurses smoke to relieve work stress associated with practicing the profession of nursing. However, the smoking students in the same study stated that nurses smoke for the same reasons that the general public smoked and not in relation to stress of the nursing profession.

A high percentage of nurses smoke more than 20 cigarettes per day. Tagliacozzo and Vaughn (1982) found that 16% of the 448 nurses in their sample smoked more than a pack of cigarettes per day. Twenty-eight percent of the nurses in New Zealand who smoked, smoked more than a pack per day (Hay, 1980). Of the student nurse samples of Burk and Nilson (1975) and Hillier (1973), 29% respectively smoked 20 cigarettes or more per day. Both Hillier (1973) and Tagliacozzo and Vaughn (1982) found that age tended to be positively correlated with the number of cigarettes smoked per day. Older nurses were more likely to smoke more cigarettes per day.

The studies reviewed indicated that student nurses who smoked were more likely to have parents and friends who smoked. Hillier (1973) reported that both the smoking and non-smoking groups in her sample had the same percentage of fathers who smoked. However, the students who smoked were more likely to have mothers that smoked, and the students who smoked the most cigarettes in a day were those who had both parents smoking. Murray et al.'s (1981) study indicated that a student nurse who smoked was more likely to have family members and friends that smoked.

Two studies revealed that a high percentage of the nurse smokers had attempted unsuccessfully on more than one occasion to stop smoking. In Tagliacozzo and Vaughn's (1982) study and Burk and Nilson's (1975) study, 77% and 78% respectively of the samples had attempted to stop smoking. In addition, 72% of Tagliacozzo and Vaughn's sample attempted to decrease their smoking habit by smoking only low tar cigarettes. Most of the nurses who smoked listed health concerns as the reason for their desire to quit smoking (Burk & Nilson, 1975; Hillier, 1973; Tagliacozzo & Vaughn, 1982).

Student nurses were not knowledgeable concerning the harmful effects of cigarette smoking on health.

Less than 50% of Hillier's sample thought that cigarette smoking posed a serious threat to health. In Ashely's (1981) study and Burk and Nilson's (1975) study, only 58% and 52% respectively of the samples knew that cigarette smoking was a major cause of chronic bronchitis. In Hillier's (1973) study, the students scored a mean of 4 points of a range of 0-8 in relation to questionnaire items concerning the harmful effects of cigarette smoking.

Conflicting study findings were reported in relation to nurses who smoked and educational credentials. Tagliacozzo and Vaughn (1982) found that nurses with baccalaureate degrees were more likely to be in the smoking group, while Murray et al. (1981) indicated that nurses with fewer educational credentials tended to be cigarette smokers. Murray et al. also reported that smokers tended to be those students who had recently decided to pursue a career in nursing as opposed to the non-smoking group who had long-term aspirations toward a nursing career. In addition, a higher percentage of the smoking group, when compared with the non-smoking group, thought that the majority of professional nurses smoked.

Two studies investigated the relationship between smoking and employment in different hospital divisions (Hay, 1980; Tagliacozzo & Vaughn, 1982). Both studies found that the hospital division which employed the greatest percentage of smoking nurses was the psychiatric division, whereas the pediatrics division employed the lowest percentage of smoking nurses.

One study investigated the relationship between stress and cigarette smoking. Talicacozzo and Vaughn (1982) reported findings which indicated that nurses who smoked tended to feel more stress associated with work. Their study indicated that nurses who felt more stress and who smoked were those who were younger than 29 years, were unmarried, held a Bachelor of Science in Nursing degree, worked more than 40 hours per week, and worked rotating shifts.

Finally, two studies investigated the relationship between cigarette smoking and absenteeism from work. Evans (1979) found no relationship between health practice scores and days absent from work due to illness. However, Hillier (1973) found that nurses who smoked were absent a mean of 21 days as compared with the absentee rate for non-smokers of a mean of 8.4 days.

Opinions Concerning the Nurse as
a Health Role Model

Four studies investigated nurses' opinions concerning the nurse as a health role model. The four studies include those of Ashley (1981), Burk and Nilson (1975), Hillier (1973), and Murray, Swan, and Mattar (1981).

The purposes of the study by Ashley (1981) were to investigate: (a) smoking habits, (b) knowledge concerning the disease-related effects of smoking, (c) attitudes toward the exemplar role, and (d) attitudes toward restrictions on smoking. The sample was comprised of senior university students in Toronto who were enrolled in the colleges of nursing, medicine, dentistry, physical and occupational therapy, pharmacy, physical education, arts and science, and science and engineering. The study was described earlier in this chapter.

The findings of the study related to the opinions of the student nurses toward smoking revealed that 71% of the sample believed that cigarettes should not be sold in hospitals, and 53% were against the sale in drug stores. Only 57% of the sample thought that mass media advertisements which promote cigarette smoking should be strictly forbidden. Seventy-one percent thought that

the government should increase the price of cigarettes, while 100% believed that the government should become further involved in public education regarding smoking and health. The following percentages of nursing students believed that smoking should be banned in these public areas: (a) stores 74%, (b) airplanes 57%, (c) theaters 55%, and (d) restaurants 42%.

Opinions of the nursing students concerning attitudes toward professional roles in relation to smoking revealed: (a) 63% of the sample thought that nurses should be exemplars or role models for non-smoking, (b) 52% of the sample thought that nurses should be community advisors against smoking, (c) 52% of the sample thought that nurses should be lobbyists against smoking, and (d) 53% of the sample thought that nurses should be involved in research related to smoking behavior and illness..

In a study by Burk and Nilson (1975), the research purposes were to determine student nurses' opinions toward: (a) the sale of cigarettes on hospital premises, (b) smoking on hospital premises, and (c) the nurse as a role model in relation to smoking behavior. The study, which utilized a sample of 421 nursing students from nine

schools of Maine, was described previously in this chapter.

When the students were asked if nurses had a role in the education of patients concerning cigarette smoking, 94.3% of the smokers and 97.3% of the non-smokers stated that the nurse did have an educational role. Of the students, 71.5% of the smokers and 86.9% of the non-smokers thought that nurses should discourage patients from smoking.

The students' opinions regarding restrictions on smoking in hospitals and other public health facilities revealed the following: (a) 84.8% of smokers and 78.9% of non-smokers thought that smoking should only be allowed in designated areas of the buildings, (b) 6.3% of the smokers and 2.3% of the non-smokers thought that hospitals should not restrict smoking at all, and (c) 8.9% of smokers and 18.7% of non-smokers thought that smoking should be prohibited in hospitals. Finally, when the students were asked if nurses should set a good example by not smoking in public, 45% of the smokers and 66.9% of the non-smokers replied affirmatively.

The research purpose of a study by Hillier (1973) was to investigate cigarette smoking habits among English student nurses. Hillier's study was described earlier in this chapter.

A significant finding of the study was in relation to the students' perceived responsibilities as health role models in relation to cigarette smoking behavior. Neither the cigarette smoking group nor the non-smoking group thought that nurses were responsible for exemplar roles in relation to cigarette smoking behavior. Both groups were only moderately in favor of a ban on cigarette smoking in public places, such as theaters. However, when the ban on smoking in public places touched their own living spheres to a marked degree, such as prohibition of smoking in the hospital, both groups disapproved of the ban.

Murray et al. (1991) investigated the relationship between the two variables of: (a) student nurses' conception of the nursing profession and (b) the students' social background in relation to cigarette smoking. The study, which involved 56 students enrolled in the Nightingale School of Nursing in London, was described earlier in this chapter.

One of the items on the questionnaire asked the students whether or not they had always wanted to be nurses. A greater percentage of the non-smoking group had long-term aspirations toward a nursing career than those in the smoking group. Another finding of the study indicated that more respondents in the smoking group thought that the majority of nurses smoked as compared with the responses of the non-smoking group. The study also found that smoking students placed less value on the professional aspects of nursing than the value level ascribed to professional nursing by the non-smokers.

Four studies were described which concerned nurses' opinions regarding the nurse as a health role exemplar. Findings of Ashley (1981), Burk and Nilson (1975), and Hillier (1973) indicated that both non-smoking and smoking student nurse groups placed a low level of importance on the non-smoking exemplar role for nurses.

Summary

Review of the literature related to this study was divided into the following categories: (a) research studies concerning nurses' knowledge of nutrition,

(b) studies which investigated the living habits of nurses, and (c) studies which focused on opinions of nurses concerning the nurses as a health role model. Four studies were reviewed in relation to nurses' knowledge of nutrition. All four studies indicated that the nurses' knowledge of nutrition was low. The 13 studies which investigated the living habits of nurses indicated that nurses were not practicing healthful living habits. Four studies which investigated nurses' opinions concerning the nurse as a health role exemplar had populations comprised of student nurses. All four studies indicated that the student nurses placed a low level of importance on the health habit exemplar role for nurses.

CHAPTER 3

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

This study was descriptive correlational in nature and utilized nonprobability accidental sampling methods. Polit and Hungler (1978) stated that the primary objective of a descriptive correlational study is to describe existing relationships among variables rather than explore the cause and effect relationship. The study focused on the relationships among the variables of knowledge of role demands, motivation to implement the knowledge base into personal habits, and ability derived through past socialization to assume the role as referenced by opinions toward the position of normal weight role model.

Setting

The study setting was in a Southwestern city of the United States with a residential population greater than 300,000. The questionnaire was administered in a room apart from the work areas in a large, general, privately-owned hospital. An area of the room was

screened off to provide privacy for the weighing process. The research committee of the hospital facility selected the two data collection days and determined the hours in these days when participants and the room would be available for study purposes. The room was open for questionnaire administration for 6 hours on one day and 4 hours on another day. Respondents came to the room when the time involved in answering the questionnaire least interfered with patient care.

Population and Sample

The target population was comprised of female, non-pregnant, registered nurses employed in a large metropolitan area in the Southwestern portion of the United States. A survey conducted by the state nursing board indicated that the majority of working nurses in the location of this study was employed in the hospital situation (Board of Nurse Examiners for the State of Texas, 1979). Since the majority of working nurses was employed in the hospital situation, the sample consisted of volunteer subjects who worked in a large hospital in the location of the study. Specifically, the sample was comprised of volunteer, female, nonpregnant, registered nurses who worked in a large hospital of a Southwestern city with a residential population greater than 300,000.

Hospital working schedules which listed the names of all registered nurses on duty by nursing division were used to select potential respondents for the study. The names of all male nurses were removed from the list of potential respondents for the purpose of strengthening study control through homogeneity of subjects. In addition, the names of nurses who aided in organizing the study and had read the questionnaire were removed from the list.

The number, 8, was selected by blindly placing a finger on a table of random digits (Polit & Hungler, 1978). Beginning with the eighth name listed on each hospital division time schedule, every third nurse listed thereafter received a request to participate in the study. A total of 151 nurses received a request to participate. The participation requests were delivered to potential respondents by hospital division supervisors as requested by the hospital's research committee. In the situations where a hospital division supervisor was selected as a potential respondent, a secretary in the nursing service office delivered the participation request to that supervisor. A total of 46 nurses, 30% of those who received request letters, participated in the study.

Protection of Human Subjects

Prior to initial recruitment of subjects, permission to conduct the study was obtained from the Research Review Committee (Appendix A) and from Texas Woman's University graduate school (Appendix B). Permission was also obtained from the participating agency (Appendix C).

The return of the questionnaire was construed as informed consent to participate in the research study. An explanation to subjects was included in the volunteer recruitment letter (Appendix D). The explanation included information related to purpose and expected benefits of the research, risks or discomforts associated with participation, the participant's right to withdraw at any time, and possible influence of study participation on the working situation.

Instrument

Description

The instrument (Appendix E) devised for the study was developed by the investigator and has not been used in any previous study. The instrument consists of four parts which treated: (a) descriptive characteristics of the sample subjects, (b) determination of the adherence

scores as a measure of motivation concerning implementation of knowledge into personal practices, (c) determination of knowledge scores, and (d) determination of role model opinion scores. Data which support the inclusion of items in the first three sections of the instrument are presented in Appendix F.

The descriptive characteristics portion of the questionnaire is comprised of 19 items numbered 1-13, 31, and 22A-E. These items were incorporated into the study for the following reasons: (a) to aid in the identification of variables which have been shown through past studies to influence body weight, (b) to identify other possible sources of sampling bias which will influence generalization of study findings, (c) to provide the basis for determining normal weight for the purposes of this study, and (d) to provide descriptive information of the sample related to reduction adherence scores.

The maintenance adherence portion of the questionnaire was comprised of items 14-20. The reduction adherence portion includes items 22F-K. Both maintenance and reduction adherence questions addressed personal exercise and dietary habits and were designed

to focus on the role modeling variable of motivation related to implementation of knowledge into personal practice.

The range of scores for the maintenance adherence section was 0-9. Points in this section were credited in the following manner.

Item 14 concerned the frequency, intensity, and duration of exercise sessions over the 7 day period prior to the data collection day. The range of possible points on the item was 0-3. The respondent earned 1 point when the exercise intensity equaled 900 or more calories over the 7 day period. The respondent was credited with 1 point when the duration of one or more exercise sessions was 20 minutes or longer. The respondent earned 1 point when she participated three or more times in her exercise program over the 7 day period.

Item 15 concerned the frequency of exercise sessions over a 7 day period. The item was worth 1 point. The respondent earned the point when she met one of the following conditions: (a) yes was checked and a point was credited in item 14 or (b) no was checked and the respondent listed an exercise frequency of three or more times over a 7-day period.

Item 16 concerned the duration of exercise sessions. The item was worth 1 point. The respondent earned the point when she met one of the following conditions: (a) yes was checked and a point was credited in item 14 or (b) no was checked and the respondent listed a duration of 20 minutes or more.

Item 17 concerned the intensity of exercise sessions. The item was worth 1 point. The respondent earned the point when one of the following conditions was met: (a) yes was checked and a point was credited in item 14 or (b) no was checked and the respondent listed exercise activity equal to 900 or more calories over a 7-day period.

The respondent received 1 point on question 18 when a category containing three or more daily meals was checked.

The respondent received 1 point on question 19 when she checked categories which (a) indicated the use of the basic four tool, (b) use of food exchange tables, or (c) listed a plan under other which has a known reference to Recommended Dietary Allowances (1980).

Item 20 concerned the variety of food intake. The item was worth 1 point. The respondent earned the point when all four yes brackets were checked.

The range of scores for the reduction adherence section was 0-9. Points in this section were credited in the following manner.

The respondent received a credit of 1 point on question 22F when she placed a check in one of two categories: (a) desserts and sweets or (b) none.

The respondent received a credit of 1 point on question 22G when she placed a check in one of the following categories: (a) basic four food tool, (b) food exchange tables, or (c) other when a plan was included which used the Recommended Dietary Allowances (1980) as a guide.

Item 22H concerned the variety of food intake. The item was worth 1 point. The respondent earned the point when all four yes brackets were checked.

The respondent received 1 point on item 22I when she checked a category containing three or more daily meals.

Item 22J concerned the frequency, intensity, and duration of exercise sessions over any 7-day period during the slimming regimen. The range of possible points on the item was 0-3. The respondent earned 1 point when the exercise intensity equaled 900 or more calories over the 7-day period. The respondent was

credited with 1 point when the duration of one or more exercise sessions was 20 minutes or longer. The respondent earned 1 point when she participated three or more times in her exercise program over the 7-day period.

Item 22K concerned regained pounds following a reduction regimen. The range of possible points on the item was 0-2. The respondent earned 1 point when she checked the category which indicated that she had regained less than one-fourth of the pounds lost. The respondent earned 2 points when she checked the category which indicated that she did not regain any of the pounds lost. Respondents did not earn points on this item if the weight loss was less than 1 pound, or if they had followed the slimming regimen less than 1 week.

The third portion of the questionnaire was concerned with determining the knowledge base scores and was comprised of items 23-66. The table of specifications used to determine the content of these items was based on knowledge of: (a) the calorie, (b) nutritional assessment tools and nutrients, (c) common misconceptions regarding weight loss and nutrition, (d) basic principles

of behavior modification, and (e) the relationship of physical activity and body weight. The range of scores for the knowledge section is 0-44. Each questionnaire item contained only one correct answer. The respondent received 1 point per item when she checked the correct answer.

The fourth part of the questionnaire, the role model opinion section, was comprised of items 67-72. These items were in the form of a Likert scale which contained three positively worded statements and three negatively worded statements. All of the statements focused on the role modeling variable of cultural ability to learn a role in relation to past socialization. The range of scores in the role model opinion section was 6-36. The respondent received the maximum number of points when she checked: (a) the column labeled "strongly agree" in relation to statements listed in questionnaire items 67, 70, and 71; and (b) the column labeled "strongly disagree" in relation to statements listed in questionnaire items 68, 69, and 72.

Panel of Experts

The face and content validity of the instrument was assessed through the administration of the questionnaire

to a group of six practicing dietitians. The instrument was modified when two or more of the dietitians stated that a question or response was incorrect, inappropriate, or unclear in meaning. In accordance with the advice of the panel of experts, two items on the knowledge base section of the questionnaire were deleted.

Pilot Study

The questionnaire, along with an instruction sheet, was given to a group of 10 graduate nursing students. The students were asked to evaluate the questionnaire for clarity and readability. In addition, the amount of time necessary for the students to complete the questionnaire was noted. Nine of the students completed the questionnaire in 20 minutes or less. Items were changed or modified on the questionnaire when two or more of the students stated that the item was unclear or difficult to read. One item in the section related to descriptive characteristics of the sample was modified.

Data Collection

Prior to data collection day, permission to conduct the study in the hospital setting was obtained

from the research committee of the hospital. The research committee selected the hospital room setting, the two study dates, and the hours of the day for the administration of the questionnaire. In addition, the committee designated a hospital employee who would be responsible for procuring and delivering a weight and height measuring scale, as well as a portable blackboard to serve as a screen.

The researcher obtained the hospital division working schedules for the data collection days and removed the names of all male registered nurses and all nurses who aided in organizing the study. Beginning with the eighth nurse on each division working schedule, every third nurse was selected, and a volunteer recruitment letter was addressed to her. When all of the letters were addressed, the envelopes were given to a secretary in the nursing service office for delivery to the division supervisors.

An assistant, proficient in the weighing and height-measuring process, was located and hired for the days of the study. A typewritten description of the assistant's duties was given to the individual.

One-half hour before the appointed data collection time, the scale, screen, and chairs were positioned in the data collection room. A sign containing directions to the weighing area was posted.

The researcher distributed copies of the questionnaire with written instructions as participants entered the room. The researcher remained in the room during the questionnaire administration. When the respondents finished the questionnaire, they were directed to the weighing area by written instructions attached to the questionnaire and a sign in the front of the room.

The privacy of the weighing area was secured by a large portable blackboard used as a screen. The research assistant attended the weighing area. Respondents were asked to remove their shoes, empty their pockets, and remove extra clothing in the nature of sweaters and coats. In the respondent's presence, the research assistant recorded the weight and height at the top of the first page of the questionnaire, folded and sealed the pages, and buried the paper among other completed questionnaires. The assistant was instructed not to discuss or make any comments concerning

the weights to the respondents or anyone outside of the study.

Treatment of Data

Treatment of data in relation to Hypotheses 1, 2, 3, and 4 involved the comparison of the scores of normal weight and obese subjects in relation to the dependent variables of knowledge base, adherence, and opinions. The statistical significance of differences between the two groups was measured by means of the t-test for independent groups (Polit & Hungler, 1978).

Treatment of data in relation to Hypotheses 5, 6, 7, 8, and 9 involved correlation of interval data. The product moment correlation coefficient was computed to describe the relationship between the variables of knowledge base, adherence, and opinion scores (Polit & Hungler, 1978).

Demographic data were summarized using descriptive statistics. The descriptive statistical test, Spearman's rho (Polit & Hungler, 1978), was computed to describe three relationships among the variables which involved ordinal data.

In addition, several relationships among the demographic variables were investigated using inferential statistical tests. The chi-square test was used on eight occasions when investigation of the variable relationships involved testing the significance of different proportions of data in a contingency table (Polit & Hungler, 1978). The analysis of variance test was used on two occasions when investigation of the variable relationships involved testing the significance of differences between the means of more than two groups (Polit & Hungler, 1978). The t-test for independent groups was used to test the significance of the difference between the means of the two teaching-responsibility groups in relation to the dependent variable of scores on the questionnaire (Polit & Hungler, 1978).

In the category of other findings, description of the relationship between the variables of scores on the maintenance adherence section and scores on the reduction adherence section involved treatment of interval data. The relationship between the two adherence sections was described with the use of the Spearman's rho statistic (Polit & Hungler, 1978).

For this study, the significance level was set at .05. Analysis was performed on the Texas Woman's University computer.

CHAPTER 4

ANALYSIS OF DATA

The two specific questions identified for the present study were:

1. Did a difference exist between normal weight nurses and obese nurses in: (a) knowledge base concerning weight reduction and weight maintenance, (b) personal adherence to a weight reduction and weight maintenance regimen which utilizes the knowledge base, and (c) opinions concerning the nurse as a health role model?

2. Were there significant relationships among:
(a) knowledge base concerning weight reduction and weight maintenance, (b) personal adherence to a weight reduction and weight maintenance regimen which utilizes the knowledge base, and (c) opinions concerning the nurse as a health role model.

The content of this chapter is organized into four sections: (a) description of the sample, (b) hypotheses findings, (c) additional findings, and (d) summary of findings.

Description of Sample

This sample was comprised of 46 volunteer, female, nonpregnant, registered nurses who were on duty during at least one of the two data collection days. The location of the study was in a hospital facility within a Southwestern metropolitan area of the United States with a population greater than 300,000. Of the sample, 15 (32.6%) of the respondents were obese, and 31 (67.4%) were normal weight. None of the 46 respondents was underweight.

Age

Cross tabulation revealed that the age distribution between the normal weight group and the obese group was similar (Table 1). Calculations using the Spearman rank correlation coefficient (Polit & Hungler, 1978) revealed no significant relationships between age and questionnaire scores on the knowledge section ($r_s = .008$, $p = .48$), the adherence maintenance section ($r_s = -.06$, $p = .34$), the adherence reduction section ($r_s = .12$, $p = .25$), or the opinion section ($r_s = .14$, $p = .17$).

Table 1

Age Distribution in Weight Groups

Weight Group	20-30 years	31-40 years	41-50 years	51-60 years	over 60 yrs.	Row Total
Normal Weight	11 (35.5%)	12 (38.7%)	5 (16.1%)	2 (6.5%)	1 (3.2%)	31 (67.4%)
Obese	7 (46.7%)	5 (33.3%)	2 (13.7%)	1 (6.7%)	0	15 (32.6%)
Totals	18 (39.1%)	17 (37.0%)	7 (15.2%)	3 (6.5%)	1 (2.2%)	46 (100.0%)

Basic Clinical Educational Credentials

Of the sample, 13 (28.3%) nurses held a baccalaureate degree in nursing, 18 (39.1%) nurses held an associate degree, and 15 (32.6%) of the nurses were diploma school graduates. Calculations using chi-square (Polit & Hungler, 1978) indicated that the distribution of educational credentials was similar in the obese and normal weight groups ($\chi^2 (2) = 4.47$, $p = .11$).

An analysis of variance was computed to determine whether or not educational credentials were significantly related to the score levels on the knowledge section of the questionnaire. Analysis of variance calculations indicated that no significant difference existed among the various educational backgrounds in relation to questionnaire scores, $F (2, 43) = 1.9$, $p = 1.6$.

Location of Basic Nursing Education Program

Computation utilizing the analysis of variance (Polit & Hungler, 1978) revealed no significant difference between the mean scores of nurses educated in clinical facilities of various geographical locations (Table 2).

Table 2

Location of Basic Clinical Educational Facility
and Questionnaire Score Levels
(Mean and Standard Deviation)

Questionnaire Section	Metro Area of Study (<u>n</u> =16)	Another Region in State (<u>n</u> =5)	Another State (<u>n</u> =23)	Outside U.S.A. (<u>n</u> =2)	Probability
Knowledge	27.7 (4.2)	28.2 (4.5)	28.3 (2.9)	24.5 (.70)	<u>p</u> = .53
Adherence maintenance	4.5 (2.5)	3.8 (.83)	4.0 (2.4)	4.0 (.0)	<u>p</u> = .91
Opinion	29.3 (2.8)	27.0 (4.5)	26.2 (4.8)	29.0 (4.2)	<u>p</u> = .15
Adherence reduction	3.6 (1.7)	3.5 (2.6)	3.5 (1.8)	2.0 (0)	<u>p</u> = .89

Note. F (2, 43) = 1.9, p = 1.6.

Higher Educational Degrees

Of the sample, 18 (39.1%) of the respondents either held degrees higher than their basic educational preparation or were in school seeking higher degrees (Table 3).

Calculations utilizing chi-square indicated that the distribution of higher degrees, or aspiration toward a higher degree, was similar in the two weight groups ($\chi^2 (1) = .06, p = .81$).

Years of Nursing Experience

The chi-square statistic was computed to determine whether or not a significant difference existed between the weight groups in relation to the variable of years of nursing experience (Table 4). Chi-square calculations indicated that the distribution of years of experience was similar in the two weight groups ($\chi^2 (4) = .61, p = .96$).

The Spearman rank correlation coefficient (Polit & Hungler, 1978) was calculated to determine the significance of a relationship between the variables of: (a) years of nursing experience and (b) scores on the four sections of the questionnaire. The calculations indicated a nonsignificant relationship between years

Table 3
Distribution of Higher Degrees in
Weight Groups

Weight Groups	Higher Degree	
	No	Yes*
Normal weight	18 (58.1%)	13 (41.9%)
Obese	<u>10</u> (66.7%)	<u>5</u> (33.3%)
Total	28	18

*Includes nurses who are presently in school seeking a higher degree.

of experience and the following four questionnaire sections: (a) knowledge base ($r_s = -.22$, $p = .07$); (b) adherence maintenance ($r_s = -.21$, $p = .80$); (c) adherence reduction ($r_s = -.19$, $p = .14$); and (d) opinion ($r_s = -.07$, $p = .31$). Although the relationship was not statistically significant, calculations did reveal a tendency toward a negative relationship between years of nursing experience and knowledge base scores ($r_s = -.22$, $p = .07$). Nurses with fewer years of experience tended to score higher on the knowledge base section of the questionnaire than nurses with more years of experience.

Table 4

Distribution of Years of Experience in Weight Groups

Weight Groups	Less than 1 year	1-5 years	6-10 years	11-20 years	more than 20 years	Row Total
Normal weight	2 (6.5%)	12 (38.7%)	5 (16.1%)	9 (29.0%)	3 (9.7%)	31 (67.4%)
Obese group	<u>1</u> (6.7%)	<u>5</u> (33.3%)	<u>2</u> (13.3%)	<u>6</u> (40.0%)	<u>1</u> (6.7%)	<u>15</u> (32.6%)
Totals	3 (6.5%)	17 (37.0%)	7 (15.2%)	15 (32.6%)	4 (8.7%)	46 (100.0%)

Management Positions

Of the respondents in the normal weight group, 18 (58.1%) were in management, whereas 4 (26.7%) of the obese group were in management. While the difference between the obese group and the normal weight group was not statistically significant, the calculation indicated a tendency toward more normal weight nurses in the management ranks than obese nurses ($\chi^2 (1) = 2.83, p = .09$).

Nutrition-Related Educational Responsibilities

At some point in their careers, 25 nurses in the sample had responsibility for patient education involving nutritional guidance (Table 5). Calculations utilizing the t -test for independent groups (Polit & Hungler, 1978) revealed no significant difference between the mean scores of the teaching group and the nonteaching group on the questionnaire. Although the difference between the mean scores was not statistically significant, a trend toward higher scores on the reduction adherence section was noted for nurses who had nutrition-related educational responsibilities at some point in their careers (Table 6).

Table 5
Nutrition-Related Teaching Responsibilities and
Questionnaire Scores

Teaching Groups	Number of Nurses	Questionnaire Score Means (SD)		
		Knowledge Level	Adherence Maintenance	Opinion
No teaching responsibilities	21	27.2 (3.5)	4.2 (2.6)	27.9 (4.1)
Teaching responsibilities	25	<u>28.5 (3.6)</u>	<u>4.1 (2.0)</u>	<u>27.2 (4.5)</u>
<u>t-test</u> probability		<u>p = .23</u>	<u>p = .86</u>	<u>p = .61</u>

Table 6
Nutrition-Related Teaching Responsibilities
and Questionnaire Scores

Teaching Groups	Number of Nurses	Questionnaire Score
		Means (SD) Adherence Reduction
No teaching responsibilities	17	2.89 (1.3)
Teaching responsibilities	16	3.9 (2.2)
t-test probability		$p = .096$

Calculations using chi-square did not reveal a significant difference between the two weight groups in relation to teaching responsibilities in nutrition ($\chi^2 (1) = .00, p = 1.0$). Of the sample of 46 nurses, 17 (54.8%) of the normal weight nurses and 8 (53.3%) of the obese nurses had educational responsibilities involving nutritional guidances at sometime during their career.

Health Impairments

Of the sample of 46 respondents, 3 (6.5%) of the respondents listed health impairments which influenced food selection. The health impairments listed included hypoglycemia, gastrointestinal problems, and

mitral valve prolapse. Two of the three respondents with health impairments were obese. Chi-square calculations indicated that the difference between the two weight groups in relation to the health impairments was not statistically significant ($\chi^2 (1) = .44$, $p = .51$).

Ideal Weight

When the respondents were asked to list their ideal weights, 78.3% of the sample listed ideal weights which were within 10% of the American Dietetic Association's (1977) estimate for ideal weight based on height and frame size. Although there was a tendency for the obese group to list their ideal weights above the 10% margin, the difference was not statistically significant ($\chi^2 (1) = 2.91$, $p = .087$).

Calculations using the Spearman rank correlation coefficient indicated that there was no significant relationship between the variables of age and the length of time since the respondents last weighed their ideal weights ($r_s = .16$, $p = .14$).

Perceived Overweight

Of the sample of 46 nurses, 17 (37%) of the respondents stated that they had never been overweight in their lifetimes. Of these respondents, 2 were categorized as obese in this study. The two respondents were 26% and 28% above their ideal weights for height and frame size according to the American Dietetic Association's (1977) formula for determining ideal weight.

Obese Family Members

Of the normal weight group ($n = 31$), 13 (41.9%) had obese family members. Of the obese weight group ($n = 15$), 13 (86.7%) had obese family members. Calculations using chi-square (Polit & Hungler, 1978) indicated that the distribution of obesity among specific family members was similar for both weight groups (Table 7).

Findings

Hypothesis 1

Hypothesis 1 stated: There will be no significant difference in the scores of normal weight nurses and the scores of obese nurses on the knowledge based weight reduction and weight maintenance questionnaire.

Table 7
Distribution of Obese Family Members in the
Weight Groups

Family Member	Normal Weight Group (<u>n</u> = 31)	Obese Weight Group (<u>n</u> = 15)	χ^2 with 1 degree of freedom	<u>p</u> value
Spouse	6 (19.4%)	3 (20.0%)	0	1.0
Children	5 (16.1%)	1 (6.7%)	.18	.67
Father	6 (19.4%)	3 (20.0%)	0	1.0
Mother	8 (25.8%)	6 (40.0%)	.40	.52
Siblings	6 (19.4%)	7 (46.7%)	2.5	.11

Hypothesis 1 was tested through calculation utilizing the t-test for independent groups (Polit & Hungler, 1978). The mean scores were 28.3 for the normal weight group and 27.3 for the obese weight group (Table 8). The difference between the groups was not statistically significant ($t(44) = .88$, $p = .38$); therefore, Hypothesis 1 was retained.

Table 8
Distribution of Knowledge Base Scores
in the Weight Groups

	Normal Weight Group ($\underline{n} = 31$)	Obese Weight Group ($\underline{n} = 15$)
Mean	28.3	27.3
Standard Deviation	3.64	3.43

Hypothesis 2

Hypothesis 2 stated: There will be no significant difference in the personal adherence scores of normal weight nurses and the personal adherence scores of obese nurses on the knowledge based weight maintenance regimen. Hypothesis 2 was tested through calculation utilizing the t-test for independent groups (Polit & Hungler, 1978). The mean scores were 4.2 for the

normal weight group and 4.1 for the obese group (Table 9). The difference between the two groups was not statistically significant ($t_{(44)} = .22$, $p = .82$; therefore, Hypothesis 2 was retained.

Table 9
Distribution of Adherence Maintenance
Scores in the Weight Group

	Normal Weight Group ($n = 31$)	Obese Weight Group ($n = 15$)
Mean	4.2	4.1
Standard Deviation	2.36	2.08

Hypothesis 3

Hypothesis 3 stated: There will be no significant difference in the personal adherence scores of normal weight nurses and the personal adherence scores of obese nurses on the knowledge based weight reduction regimen. Hypothesis 3 was tested through calculation utilizing the t -test for independent groups (Polit & Hungler, 1978). The mean scores were 3.7 for the normal weight group and 3.0 for the obese group (Table 10). The difference between the two groups was not

statistically significant ($t_{(31)} = 1.14$, $p = .26$); therefore, Hypothesis 3 was retained.

Table 10
Distribution of Adherence Reduction
Scores in the Weight Groups

	Normal Weight Group ($n = 18$)	Obese Weight Group ($n = 15$)
Mean	3.7	3.0
Standard Deviation	1.84	1.77

Hypothesis 4

Hypothesis 4 stated: There will be no significant difference in the scores of normal weight nurses and scores of obese nurses on the health role model opinion scale. Hypothesis 4 was tested through calculation utilizing the t -test for independent groups (Polit & Hungler, 1978). The mean scores were 27.8 for the normal weight group and 27.4 for the obese weight group (Table 11). The difference between the two groups was not statistically significant ($t_{(43)} = .25$, $p = .80$); therefore, Hypothesis 4 was retained.

Table 11
Distribution of Role Model Opinion
Scores in the Weight
Groups

	Normal Weight Group (<u>n</u> = 31)	Obese Weight Group (<u>n</u> = 14)
Mean	27.8	27.4
Standard Deviation	4.27	4.12

Hypothesis 5

Hypothesis 5 stated: There will be no significant relationship between knowledge base scores and personal adherence scores on the knowledge based weight maintenance regimen. Hypothesis 5 was tested through calculation utilizing the product moment correlation coefficient (Polit & Hungler, 1978). The calculation indicated that the relationship between knowledge base scores and maintenance adherence scores was not statistically significant ($\underline{r} = .0484$, $\underline{p} = .749$); therefore, Hypothesis 5 was retained.

Hypothesis 6

Hypothesis 6 stated: There will be no significant relationship between knowledge base scores and personal adherence scores on the knowledge based weight reduction regimen. Hypothesis 6 was tested through calculation utilizing the product moment correlation coefficient (Polit & Hungler, 1978). Although a tendency toward a positive relationship between the variables was noted, the calculation indicated that the relationship between knowledge base scores and reduction adherence scores was not statistically significant ($r = .3087$, $p = .081$); therefore, Hypothesis 6 was retained.

Hypothesis 7

Hypothesis 7 stated: There will be no significant relationship between knowledge base scores and scores on the health role model opinion scale. Hypothesis 7 was tested through calculation utilizing the product moment correlation coefficient (Polit & Hungler, 1978). The calculation indicated that the relationship between knowledge base scores and opinion scores was not statistically significant ($r = .0438$, $p = .775$). Therefore, the hypothesis was retained.

Hypothesis 8

Hypothesis 8 stated: There will be no significant relationship between scores on the knowledge based weight maintenance regimen and scores on the health role model opinion scale. Hypothesis 8 was tested through calculation utilizing the product moment correlation coefficient (Polit & Hungler, 1978). The calculation indicated that the relationship between the maintenance adherence scores and the opinion scores was not statistically significant ($r = .1512$, $p = .322$); therefore, the hypothesis was retained.

Hypothesis 9

Hypothesis 9 stated: There will be no significant relationship between scores on the knowledge based weight reduction regimen and scores on the health role model opinion score. Hypothesis 9 was tested through calculation utilizing the product moment correlation coefficient (Polit & Hungler, 1978). The calculation indicated that the relationship between the reduction adherence scores and the opinion scores was not statistically significant ($r = .0214$, $p = .908$); therefore, the hypothesis was retained.

Additional Findings

Distribution of Questionnaire Scores

The mean scores for the four questionnaire sections were (a) knowledge base, 27.9; (b) maintenance adherence, 4; (c) reduction adherence, 3.3; and (d) role model opinion, 27.2 (Table 12). One respondent failed to complete the role model opinion section of the question. The respondent, who was categorized as obese in this study, left item number 69 blank.

Relationship between Scores on the Adherence Sections

Computation with the Pearson correlation coefficient (Polit & Hungler, 1978) revealed a statistically significant positive relationship between scores on the adherence maintenance section and scores on the adherence reduction section of the questionnaire ($r = .51$, $p = .002$). Hence, the nurses in this study who followed research guidelines for exercise programs in slimming regimens to lose weight were the nurses who also followed the exercise guidelines during non-slimming periods to control weight or improve physical attractiveness and well-being. In addition, nurses in slimming regimens who followed the practices of eating three or more meals

Table 12
Overall Distribution of Questionnaire Scores

Questionnaire Section	Number of Respondents	Score Range	Mean	Total Possible Points
Knowledge Base	46	20 (45%) - 36 (82%)	27.9 (64%)	44
Maintenance Adherence	46	1 (11%) - 9 (100%)	4 (44%)	9
Reduction Adherence	33	1 (11%) - 7 (77%)	3.3 (37%)	9
Role Model Opinion	45	20 (55.5%) - 36 (100%)	27.2 (75.6%)	36

per day, evaluating their food intake through a tool generally accepted by the American Dietetic Association, and eating a variety of food items were the nurses who normally followed these same practices during non-slimming periods.

Other Findings Related to Exercise and Nutrition Habits

In this study, the obese and normal weight groups were similar in relation to the number of nurses who participated in exercise programs. Of the sample, 6 (40%) of the obese nurses and 12 (35%) of the normal weight nurses stated that they participated in some type of exercise program in off-work hours.

In relation to nutritional habits, study findings indicated that 29 (63%) of the sample evaluated the nutritional adequacy of their diets through the use of a tool generally accepted by the American Dietetic Association, and 28 (61%) ate at least three meals per day.

Respondent Performance in Knowledge Base Subcategories

Items in the knowledge base section of the questionnaire addressed five broad areas: (a) common misconceptions concerning nutrition and general weight control

information, (b) principles of behavior modification related to weight control, (c) nutritional tools with special emphasis on the philosophy behind the Recommended Dietary Allowances (1980), (d) physical exercise, and (e) the calorie and its relation to weight loss. The lowest number of correct responses was associated with the group of items which addressed the calorie and its relation to weight loss (Table 13).

Summary

The sample was comprised of 46 volunteer, female, nonpregnant registered nurses who were on duty during at least one of the two data collection days. The location of the study was in a hospital facility within a Southwestern metropolitan area of the United States with a population greater than 300,000. Of the sample, 15 (32.6%) of the respondents were obese, and 31 (67.4%) were normal weight. The distribution of the following variables was similar for both weight groups: (a) age, (b) educational credentials, (c) aspirations toward a higher degree, (d) years of nursing experience, (e) educational teaching responsibilities, (f) the presence of health impairments, and (g) the presence of obese family members.

Table 13

Respondent Performance in Knowledge Base Subcategories

Subcategory	Number of Items (<u>n</u> = 44)	Range of Correct Answers per Item	Mean of Correct Answers per Item
Common misconceptions	12	7 (16%) - 44 (96%)	24.4 (53.2%)
Behavior modification	11	24 (52%) - 45 (98%)	39 (85%)
Nutritional tools	8	11 (24%) - 43 (93%)	33 (72%)
Physical exercise	6	16 (35%) - 40 (89%)	30 (66.5%)
Calorie	7	8 (19%) - 27 (64%)	16.8 (39%)

Tendencies were noted ($p < .10$) for statistically significant relationships between the following demographic variables: (a) a negative relationship between years of experience and score levels on the knowledge section of the questionnaire ($r_s = -.22$, $p = .07$); (b) more normal weight nurses than obese nurses were in the management ranks ($\chi^2 (1) = 2.83$, $p = .09$); (c) higher scores on the reduction adherence section of the questionnaire and the presence of educational responsibilities involving nutrition ($t (31) = -1.72$, $p = .096$); and (d) the obese group of respondents listed higher ideal weights for height and frame size than the normal weight nurses ($\chi^2 (1) = 2.91$, $p = .087$).

Relationships between the following demographic variables were investigated and found to be statistically nonsignificant: (a) age and questionnaire score levels; (b) educational credentials and questionnaire score levels; (c) location of basic clinical educational facility and questionnaire score levels; (d) years of nursing experience and score levels on the adherence and opinion sections of the questionnaire; (e) past or present teaching responsibilities involving nutrition and score levels on the adherence maintenance,

knowledge, and opinion sections of the questionnaire; and (f) age and length of time since the respondents last weighed their ideal weights.

Another finding from the demographic data involved perception of the overweight state. Two respondents, classified as obese in this study, stated that they had never been overweight in their lifetimes. The two respondents were 26% and 28% above their ideal weight levels as measured by the criteria of this study.

All nine of the null hypotheses were retained. Study findings indicated that no significant differences existed in this sample between the normal weight and obese nurses in relation to score levels on the four sections of the questionnaire. In addition, study findings indicated that significant relationships did not exist for this sample between the following sections of the questionnaire: (a) knowledge base and adherence maintenance, (b) knowledge base and adherence reduction, (c) knowledge base and role model opinions, (d) adherence maintenance and role model opinion, and (e) adherence reduction and role model opinion. Although a relationship between the score levels on the knowledge base section

and the adherence reduction section was not statistically significant, a tendency toward a positive relationship was noted ($\underline{r} = .3087$, $\underline{p} = .081$).

Overall score ranges on the four sections of the questionnaire were: (a) knowledge base, 20 (45%) to 36 (82%) of a possible 44 points with a mean of 27.9 (64%); (b) adherence maintenance, 1 (11%) to 9 (100%) of a possible 9 points with a mean of 4 (44%); (c) adherence reduction, 1 (11%) to 7 (77%) of a possible 9 points with a mean of 3.3 (37%); and (d) role model opinion, 20 (55.5%) to 36 (100%) of a possible 36 points with a mean of 27.2 (75.6%).

The single statistically significant finding of the study involved the relationship between the score levels on the adherence maintenance questionnaire section and the score levels on the adherence reduction section of the questionnaire. The nurses in this study who followed research guidelines for exercise programs in slimming regimens to lose weight were the nurses who also followed the exercise guidelines during non-slimming periods to control weight or improve physical attractiveness and well-being. In addition, the nurses in this study who normally followed the practices of eating three or more

meals per day, evaluating their food intake using a tool generally accepted by the American Dietetic Association, and eating a wide variety of food items, were the nurses who followed these practices during a slimming regimen.

Other findings from the adherence sections concerned exercise participation and information regarding nutritional habits. The obese and normal weight groups were similar with regard to participation in exercise programs. Of the sample of 46, 18 (39%) of the respondents participated in off-duty exercise programs. Twenty-nine (63%) of the respondents evaluated the nutritional adequacy of their diets through the use of a tool generally accepted by the American Dietetic Association, and 28 (61%) ate at least three meals per day.

Scores on the knowledge section were the lowest in relation to items which addressed knowledge concerning the calorie, and the highest scores were in relation to the items which addressed principles of behavior modification.

CHAPTER 5

SUMMARY OF THE STUDY

The contents of this chapter include a presentation of the research questions, hypotheses, conceptual framework, and the procedure for the collection and treatment of data in the present study. In addition, the present study is summarized; the findings are discussed; and the conclusions, implications, and recommendations are presented.

Summary

Two specific questions were identified for the present study:

1. Did a difference exist between normal weight nurses and obese nurses in: (a) knowledge base concerning weight reduction and weight maintenance, (b) personal adherence to a weight reduction and weight maintenance regimen which utilized the knowledge base, and (c) opinions concerning the nurse as health role model?
2. Were there significant relationships among:
(a) knowledge base concerning weight reduction and weight maintenance, (b) personal adherence to a weight

reduction and weight maintenance regimen which utilized the knowledge base, and (c) opinions concerning the nurse as a health role model?

The conceptual framework for this study focused on the four concepts of Kemper's (1968) role model, Kelley's (1952) normative and comparison functions of reference groups, and Brim's (1960) role-learning.

Nine hypotheses were formulated to direct the research design:

1. There will be no significant difference in the scores of normal weight nurses and the scores of obese nurses on the knowledge based weight reduction and weight maintenance questionnaire.

2. There will be no significant difference in the adherence scores of normal weight nurses and personal adherence scores of obese nurses on the knowledge based weight maintenance regimen.

3. There will be no significant difference in the personal adherence scores of normal weight nurses and personal adherence scores of obese nurses on the knowledge based weight reduction regimen.

4. There will be no significant difference in the scores of normal weight nurses and scores of obese nurses on the health role model opinion scale.

5. There will be no significant relationship between knowledge base scores and personal adherence scores on the knowledge based weight maintenance regimen.

6. There will be no significant relationship between knowledge base scores and personal adherence scores on the knowledge based weight reduction regimen.

7. There will be no significant relationship between knowledge base scores and scores on the health role model opinion scale.

8. There will be no significant relationship between scores on the knowledge based weight maintenance regimen and scores on the health role model opinion scale.

9. There will be no significant relationship between scores on the knowledge based weight reduction regimen and scores on the health role model opinion scale.

A descriptive correlational study was designed which utilized nonprobability accidental sampling methods (Polit & Hungler, 1978). The sample was comprised of 46 female, volunteer, nonpregnant, registered nurses who were on duty in a hospital facility. The location

of the study was in a large, general, privately owned hospital facility in a metropolitan area of the Southwestern United States which had a population greater than 300,000 persons.

Each of the 46 respondents answered a questionnaire which contained items pertaining to: (a) demographic data; (b) knowledge of information concerning weight reduction, nutrition, and exercise; (c) self-report information on daily nutritional and exercise habits; and (d) opinions concerning the nurse as a health role model. Treatment of data included the use of descriptive and inferential statistics.

All nine null hypotheses were retained. The retention of the nine hypotheses was subject to error associated with the size of the sample (Polit & Hungler, 1978). The t-test calculations revealed no significant difference between the normal weight group and the obese weight group in relation to: (a) knowledge level concerning the role demands of the normal weight health role model, (b) motivational level concerning implementation of the role demand knowledge into personal practice, and (c) ability to occupy the position of normal weight health role model as measured by opinions

toward the position formed through past socialization. In addition, calculations using the product moment correlation coefficient (Polit & Hungler, 1978) also revealed a lack of evidence to indicate that significant relationships existed with this sample among the variables of knowledge, motivation, and opinions.

Discussion of Findings

In general, the nurses in this study lacked knowledge concerning the role demands of the normal weight exemplar position as evidenced by low scores in relation to knowledge concerning: (a) the calorie, (b) common nutritional misconceptions, (c) nutritional tools or guidelines, and (d) exercise. The nurses were more knowledgeable concerning principles of behavior modification related to food intake as evidenced by higher scores in that section of the questionnaire. There are no published studies to compare with this one which investigated nurses' knowledge of the relationship between physical activity and body weight. The finding of low scores in nutritional knowledge in this sample was in agreement with the findings of low nutritional knowledge in the samples of nurses in four published studies: Cook (1980), Harrison et al. (1969), Poplin (1980), and

Vickstrom and Fox (1976). Thus, there is research evidence which indicates that nurses in general may not be sufficiently equipped to occupy the position of normal weight health role model with respect to knowledge of the role demands concerning healthful practices in nutrition and physical activity.

Nurses had low scores in personal nutritional and physical exercise practices in the present study as well as in the studies of Evans (1979) and Freedman (1981). In addition, the studies of Kurtz (1975) and Willett et al. (1981) also indicated that nurses' nutritional practices were not following research-related guidelines. Thus, study findings indicated that nurses were not following personal practices in nutrition and physical exercise activities which research deems important to health.

Although the present study did not find a significant relationship between knowledge of the role demands and motivation to implement the knowledge into personal practice, there was some evidence to support the premise that when nurses are knowledgeable concerning healthful practices in nutrition and exercise, they tend to implement the knowledge into personal practice. A tendency

was noted in the present study for the nurses who scored high in the knowledge section of the questionnaire to also be the nurses who implemented knowledge concerning nutrition and exercise into personal practice during slimming regimens ($r = .3087$, $p = .081$). In addition, the nurses who implemented the knowledge of healthful nutritional and exercise practices during slimming regimens were also the nurses who implemented the practices during nonslimming periods ($r = .51$, $p = .002$). Perhaps the nurses' overall low scores in nutrition and exercise practices were related to a lack of knowledge rather than to a lack of motivation to implement the knowledge.

One further finding from the present study also supported the premise of inadequate knowledge base rather than inadequate motivational levels to implement the knowledge base. The nurses who had past or present teaching responsibilities involving nutrition tended to be more likely to implement research-related guidelines in nutrition and exercise activity into personal practice than the nurses without a history of teaching responsibility in nutrition ($t(31) = -1.72$, $p = .096$). Thus, nurses who were exposed to the research guidelines

during teaching preparations were more likely to implement the guidelines into personal practice.

Several demographic variables were investigated in relation to nurses' nutritional knowledge in this study as well as in the published literature. Among these variables were basic clinical educational preparation, age, years of nursing experience, and the nurses' perceived role in patient education.

Harrison et al. (1969) and Vickstrom and Fox (1976) found that nurses with baccalaureate degrees scored significantly higher on nutritional knowledge questionnaires than nurses who were diploma graduates. However, the present study indicated that basic educational backgrounds were not significantly related to questionnaire score levels.

In Vickstrom and Fox's (1976) sample, a greater percentage of the younger respondents scored higher on the knowledge questionnaire when compared with the older nurses' scores. In contrast, Cook (1980), Harrison et al. (1969), and the present study found that the age variable was not significantly related to knowledge scores.

Vickstrom and Fox's (1976) study findings indicated an inverse relationship between nutritional knowledge scores and the number of years of nursing experience.

Vickstrom and Fox stated that the decline of nutritional knowledge associated with increasing years of nursing experience was most likely related to the increasing span of time since completion of the basic nursing educational program. Another study in Tennessee (cited in Vickstrom & Fox, 1976) noted that nurses receive little continuing education in nutrition after completion of the basic nursing educational program. Although the relationship was not statistically significant ($r_s = -.22$, $p = .07$), a tendency was also noted toward an inverse relationship between nutritional knowledge scores and the number of years of nursing experience in the current study. Conversely, Harrison et al.'s (1969) study indicated that nutritional knowledge increased in proportion to the number of years of nursing experience in the respondents' history, most especially if the nursing experience was in a large public health facility which employed a dietitian in an advisory capacity. Cook (1980) found that the number of years of nursing experience was unrelated to pretest knowledge scores on her questionnaire.

Vickstrom and Fox (1976) found that nutritional knowledge correlated positively with the nurses' perceived role in patient education involving nutrition.

In the present study, past or present teaching responsibilities involving nutrition were not significantly related to knowledge scores.

A review of the literature revealed another area in which nurses had low scores in both knowledge and personal practice habits. This area concerned nurses and cigarette smoking habits. The studies reviewed indicated that a considerable number of nurses smoked cigarettes. Every one of the seven American samples in the literature review had a greater percentage of female nurse smokers than the percentage of female smokers found in the United States population by the study of the American Cancer Society (Garfinkel, 1976). In addition, a high percentage of nurses smoked more than 20 cigarettes per day (Burk & Nilson, 1975; Hay, 1980; Hillier, 1973; Tagliacozzo & Vaughn, 1982). Three studies investigated student nurses' knowledge of the threat to health posed by cigarette smoking, and all three studies found a low level of knowledge related to cigarette smoking habits and disease (Ashley, 1981; Burk and Nilson, 1975; Hillier, 1973).

Overall, the nurses in the present study were only moderately convinced that the living habits of nurses,

healthful or unhealthful, appreciably influenced the living habits of other members of the society. Findings from published studies involving samples of student nurses also indicated that the students placed a low level of importance on the health model exemplar role for nurses (Ashley, 1981; Burk & Nilson, 1975; Hillier, 1973).

Of the sample of 46 respondents in the present study, 15 (32.6%) were obese and 31 (67.4%) were normal weight. Several demographic variables were investigated in relation to the weight groups in this study as well as in the published literature. Among these variables were socioeconomic status, age, concept of normal weight, and physical exercise habits.

Studies by Garn, Bailey, Cole, and Higgins (1977), Goldblatt, Moore, and Stunkard (1965), Kohrs, Wang, Eklund, Paulsen, and O'Neal (1979), Silverstone, Stunkard, and Gordon (1969), and Stunkard, d'Aquili, Fox, and Fillion (1972) indicated that socioeconomic status and social mobility have a significant correlation with obesity. Socioeconomic status and social mobility factors in these studies were determined by occupational position, educational level, and salary.

Referents for socioeconomic status and social mobility in the present study were focused on higher salary levels usually associated with administrative or management positions and the attainment, or aspirations toward attaining, a degree higher than the basic nursing educational preparation. Findings of the present study indicated that the distribution of degrees higher than the basic nursing educational preparation, or the aspirations toward a higher degree, were similar for both the obese group and the normal weight group in the sample of the present study. However, although the difference between the two weight groups was not statistically significant, a tendency was noted in the present study for more normal weight nurses than obese nurses to occupy management or administrative posts ($\chi^2 (1) = 2.83$, $p = .09$). Thus, whatever the characteristics or attributes are which contribute to the attainment of administrative or management positions, the normal weight nurses appeared to be more socially mobile than obese nurses toward the higher economic status associated with these positions.

Cross sectional and longitudinal study reviews by Bray (1976) and Forbes and Reina (1970) indicated that

there is a steady increase in the percentage of body fat and a decrease in lean body mass beginning with the second decade of life and continuing through the fifth and sixth decades. The findings of the present study revealed that the age distribution in the weight groups was similar.

There is no universally accepted definition of obesity among researchers (Bray, 1976). In addition there is wide disagreement concerning the degree of body fat which denotes an unhealthy state (Gumby, 1980). An individual's concept of what constitutes normal weight is highly influenced by family members and significant others (Garn et al., 1979; Rosenthal & Marx, 1979; Stuart & Davis, 1972). Therefore, the possibility existed that the obese nurses in the present study did not necessarily view their weight level as excessive or unhealthy. Indeed, two respondents, classified as obese in this study, stated that they had never been overweight in their lifetimes. In addition, although the difference was not statistically significant ($\chi^2 (1) = 2.91, p = .087$), a tendency was noted for the obese group of respondents to list higher ideal weights for height and frame size than the normal weight nurses.

The nurses' image of normal weight, learned through past socialization, provides the basis for judgments concerning excessive weight in self as well as in family members, social contacts, and patients. This study asked for self-report data concerning the presence of obese members in the families of the nurses. Findings indicated that the normal weight group and the obese group were similar in respect to the presence of obese family members. However, the possibility existed that the obese nurses who listed a heavier ideal weight for themselves, also evaluated the ideal weights of family member by this same subjective scale. As a result, family members who would have been obese by the American Dietetic Association's (1977) standards may have been listed as normal weight by the respondents. Reviews of the literature by Bray (1976) and Stuart and Davis (1972) indicated that obese members of society are more likely to have obese parents and siblings.

Several research studies strongly indicated that the energy imbalance in obesity is related to lower activity levels rather than to increased calorie intake (Chirico & Stunkard, 1960; Johnson, Burke, & Mayer, 1956; Mayer, Roy, & Mitra, 1956; Rose & Mayer,

1968; Stefanki, Heald, & Mayer, 1959). In the current study, the obese group and the normal weight group were similar with respect to participation in off-duty exercise programs.

Several findings from the present study were discussed in this section. The findings discussed include nurses' nutritional knowledge level, nurses' personal practice in nutrition and exercise, nurses' opinions concerning the nurse as a health role model, nurses' body weights, and demographic data. Findings from the present study indicated that nurses may be unable to assume the position of normal weight health role model because they are not knowledgeable concerning the role demands, they do not implement role knowledge into practice, and they lack the ability to occupy the position in terms of opinions toward the position formed through past socialization.

Conclusions and Implications

The following conclusions were drawn from the study:

1. The nurses were not knowledgeable concerning research-related guidelines in nutrition and physical activity.

2. The nurses were not implementing research-related guidelines in nutrition and physical activity into personal practice.

3. The few nurses who routinely practiced nutritional and exercise habits which reflected research-related guidelines also followed the guidelines during slimming regimens.

4. The nurses did not have strong convictions concerning the nurse as a role model for healthful living practices.

5. The obese nurses were more likely to conceptualize ideal weights at a heavier level than the normal weight nurses.

The following implications were derived from the conclusions:

1. The knowledge base of nurses related to research guidelines in nutrition and physical exercise should be increased by exposure to the guidelines during the basic nursing educational programs as well as through continuing educational programs after graduation.

2. Nurses should be more likely to develop the ability to assume the exemplar health model position if they are exposed during professional socialization

to the potential consequences of loss of professional stature and credibility associated with promoting the philosophy of health and yet living by another philosophy as evidenced by the absence of healthful living habits.

Recommendations for Further Study

Recommendations for further research include the following:

1. Further assessment of the relationships between nurses' knowledge of healthful living habits, motivational levels required to implement the knowledge into personal practice, and attitudes toward the importance of personal healthful practices.
2. Assessment of the availability and quality of post-graduate educational programs in nutrition and physical exercise.
3. Assessment of the value ascribed to the health model exemplar role of nurses by faculty members in the basic nursing educational programs.
4. Assessment of the general public's perception of the nurse as a health role exemplar.

5. Investigation of the physical, psychological, and sociocultural variables related to the ability of obese members of society to occupy various socioeconomic positions.

6. Further assessment of the heavier image of ideal weight held by the obese nurses in relation to the ideal weight image held by the normal weight nurses.

7. Assessment of the reliability of the instrument utilizing the test-retest method.

APPENDIX A

Prospectus for Thesis
Approval Form

This proposal for a thesis by Patricia Lane
_____ and entitled Nurses as Health Role
Models in Nutrition and Weight Control

has been successfully defended and approved by the members
of the Thesis Committee.

This research is x is not _____ exempt from approval by the Human Subjects Review Committee. If the research is exempt, the reason for its exemption is: _____

Classified as Category I research

Thesis Committee: Beth Claydon-Wallace, Chairperson
Rose M. McQuinn, Member
Jane Dawson, Member

Date: 3/12/82

Dean, College of Nursing

Date: _____

APPENDIX B



Texas Woman's University

P.O. Box 22479 Denton, Texas 76204-8177 (817) 361-2300 Metro 454-1757 Tex. Area 4-1

THE GRADUATE SCHOOL

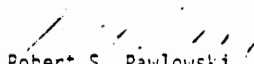
September 30, 1992

Mrs. Patricia Lane
6162 Northaven
Dallas, TX 75230

Dear Mrs. Lane:

I have received and approved the Prospectus for your research project. Best wishes to you in the research and writing of your project.

Sincerely yours,


Robert S. Pawlowski
Provost

ap

cc Dr. Anne Gudmundsen
Dr. Beth Vaughan-Wrobel

APPENDIX C

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE _____

GRANTS TO Patricia Lane, R.N.

a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem.

Nurses as Health Role Models in Normal Weight Maintenance.

The conditions mutually agreed upon are as follows:

1. The agency (~~may~~) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (~~may~~) (may not) be identified in the final report.
3. The agency (~~wants~~) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (~~unwilling~~) to allow the completed report to be circulated through interlibrary loan.
5. Other Agency would like a complete copy of thesis

Date: 9/15/82

Patricia Lane
Signature of Student

Signature of Agency Personnel
Scott P. Chapman - U.S. Army
Signature of Faculty Advisor

*Fill out & sign three copies to be distributed as follows:
Original - Student; First copy - Agency; Second copy - TWU College of Nursing.

APPENDIX D

Volunteer Recruitment Letter

Hello,

My name is Pat Lane and I am a graduate student at Texas Woman's University. I am conducting a research study on nurses' health habits. One hundred and fifty nurses in your medical center were randomly selected to participate in the study.

I am requesting nonpregnant volunteers to answer a questionnaire and have their weights recorded. Questionnaire answers and weight listings will be anonymous. Not even the researcher will know the respondent's identity. The study will present group data instead of individual data.

Participation in the study is on a volunteer basis. Respondents have the right to withdraw from the study at any time. Participation in the study will not influence the respondents' employment or work in this hospital. Answering the questionnaire will consume approximately 20 minutes of the respondent's time.

Potential benefits of the study are: (a) the study will further nurses' professional self-knowledge, (b) the study will provide the basis for future research, and (c) the study will provide direction for nursing education.

When the study is completed, a bound copy of the thesis will be placed in the hospital library.

If you wish to participate, please come to Room _____ during the hours of _____

Sincerely yours,

Pat Lane, R.N.
Texas Woman's University

APPENDIX E

COMPLETION AND RETURN OF THIS QUESTIONNAIRE WILL BE CONSTRUED AS INFORMED
CONSENT TO PARTICIPATE IN THIS STUDY

QUESTIONNAIRE

Instructions: Please check (✓) the correct response to the items below:

1. What is your basic nursing education?
 - ☐ Diploma
 - ☐ Associate Degree
 - ☐ Bachelor Degree
2. Where was your basic clinical nursing educational institution located:
 - ☐ This metropolitan area
 - ☐ Another region in this state
 - ☐ Another state
 - ☐ Outside the U.S.A.
3. Are you currently in school seeking a higher degree?
 - ☐ No
 - ☐ Yes
4. How many years have you practiced nursing?
 - ☐ Less than 1 year
 - ☐ 1 through 5 years
 - ☐ 6 through 10 years
 - ☐ 11 through 20 years
 - ☐ more than 20 years
5. Do you currently hold a management position at the head nurse level or higher?
 - ☐ No
 - ☐ Yes
6. Are you now or have you ever been responsible for patient education concerning nutrition?
 - ☐ No
 - ☐ Yes
7. What is your age?
 - ☐ Less than 20 years
 - ☐ 20 through 30 years
 - ☐ 31 through 40 years
 - ☐ 41 through 50 years
 - ☐ 51 through 60 years
 - ☐ more than 60 years

8. Do you have a health impairment which necessitates a special diet or in any way influences your food choices:
- ☐ No
 - ☐ Yes
9. Have you ever been overweight?
- ☐ No
 - ☐ Yes
10. Do you have any family members who are overweight?
- ☐ None
 - ☐ Spouse
 - ☐ Children
 - ☐ Father
 - ☐ Mother
 - ☐ Siblings
11. What is your "ideal" weight (the weight at which you think you look your best)?
- ☐ Less than 90 pounds
 - ☐ 90 through 100 pounds
 - ☐ 101 through 109 pounds
 - ☐ 110 through 119 pounds
 - ☐ 120 through 129 pounds
 - ☐ 130 through 139 pounds
 - ☐ 140 through 149 pounds
 - ☐ 150 through 159 pounds
 - ☐ 160 or more pounds
12. When did you last weigh your "ideal" weight?
- ☐ Now
 - ☐ Less than 1 year ago
 - ☐ 1 to 5 years ago
 - ☐ 6 to 10 years ago
 - ☐ More than 10 years ago
 - ☐ Never have weighed my "ideal" weight
13. What is your skeletal frame size?
- ☐ Small frame
 - ☐ Medium frame
 - ☐ Large frame
14. Do you include some form of exercise in your off-work hours?
- ☐ No
 - ☐ Yes -- For each usual exercise session, list (a) the kind of exercise (walking, running, swimming, isometric, etc.) and (b) the distance covered (how far you walk, swim, run, etc.) or how many times you performed a particular exercise (jump rope for 100 skips, do 25 deep-knee bends, etc.). Remember this question concerns exercise performed in off-work hours.

14. (continued)

A. Kind of Exercise	B. Distance Covered or Exercise Times per Session

15. Did you participate in off-work exercise activity or activities during the past 7 days?☐ No☐ Yes -- How many exercise sessions did you participate in during the past 7 days? Indicate the kind of exercise you performed during the sessions. Indicate the average number of minutes you participated in continuous exercise activity during the exercise sessions.

Number of Exercise Sessions	Type of Exercise	Average Number of Minutes of Continuous Exercise per Session

16. Was this past week a typical week for you in terms of exercise session frequency in off-work hours?☐ Yes☐ No -- How many times per week do you usually participate in off-work exercise? List the kind of exercise.

Usual Frequency of Exercise Session	Kind of Exercise

17. Was this past week a typical week for you in terms of average number of minutes of continuous exercise per each session?☐ Yes☐ No -- What is the usual average number of minutes you spend in continuous exercise in each session? List the kind of exercise.

17. (continued)

Average Number of Minutes of Continuous Exercise	Kind of Exercise

18. How many meals per day (excluding snacks) do you consume?

- ☐ 1-2
☐ 3-4
☐ more than 4

19. How do you evaluate the nutritional adequacy of your daily food intake?

- ☐ Food intake is not usually evaluated for nutritional adequacy
☐ Food intake is evaluated by a nutritional guideline utilizing the basic 4 food groups
☐ Food intake is evaluated by a nutritional guideline utilizing the food exchange tables
☐ Food intake is evaluated utilizing the carbohydrate count tables
☐ Other, please specify _____

20. The following question is related to your food item choices during the past 7 days. Did you consume 3 or more different food items in each of the following groups during the past 7 days?

- ☐ Yes ☐ No Milk group (whole or skim milk, buttermilk, baked custard, yogurt, ice cream, other sour or sweet creams, and cheeses including cheddar, American, gouda, blue, roquefort, cottage, swiss, and camembert).
- ☐ Yes ☐ No Grain group (macaroni, noodles, spaghetti, crackers, and breads and cereals made of wheat, bran, rye, rice, corn, and oats).
- ☐ Yes ☐ No Meat group (beef, veal, pork, lamb, fish, shellfish, poultry, eggs, dry beans, dry peas, nuts).
- ☐ Yes ☐ No Fruit and vegetable group (fruits or juices of apple, orange, banana, grape, melon, berries, grapefruit, plum, peach, apricot, fig, pear, pineapple, raisin, and prune, as well as avocado, potato, broccoli, carrot, cauliflower, green beans, asparagus, okra, squash, lettuce, spinach, cabbage, celery, cucumber, green pepper, tomato, beets, brussel sprouts, pumpkin, corn, green Peas, and onions.

21. Have you ever been on a self-imposed or medically imposed reducing diet?

- ☐ No
- ☐ Yes

* If your answer is no, please go to Question #23.

* If you have ever been on a reducing diet, please answer the following questions about your most recent reducing plan:

22. A. When did you begin the reducing plan?

- ☐ Less than 1 week ago
- ☐ 1 to 4 weeks ago
- ☐ 5 weeks to 6 months ago
- ☐ 7 months to 1 year ago
- ☐ Longer than 1 year ago

B. Are you currently engaged in your most recent reducing plan?

- ☐ No
- ☐ Yes

C. What measures did the dietary plan utilize to decrease the quantity of food ingested? If you are currently engaged in your most recent reducing attempt, this question refers to your current plan.

- ☐ Calorie counting
- ☐ Food exchange counting
- ☐ No formal planning--just a cutback in usual food amounts
- ☐ Only a few specific types of foods were permitted
- ☐ Foods were restricted according to carbohydrate content
- ☐ Plan included preplanned menus
- ☐ Other, please specify _____

D. How long did you follow the reducing dietary plan? If you are currently engaged in your most recent reducing attempt, this question refers to your current plan.

- ☐ Less than 1 week
- ☐ 1-2 weeks
- ☐ 3-4 weeks
- ☐ 5-6 weeks
- ☐ 7 weeks to 6 months
- ☐ 7 months to 1 year
- ☐ More than 1 year

E. How much weight did you lose? If you are currently engaged in your most recent reducing endeavor, this question refers to this endeavor.

- ☐ Less than 1 pound
- ☐ 1-5 pounds
- ☐ 6-10 pounds
- ☐ 11-15 pounds
- ☐ 16-20 pounds
- ☐ 21-25 pounds
- ☐ 25-50 pounds
- ☐ More than 50 pounds

22. (continued)

F. Did the dietary plan restrict or deny food choices in one or more of the following categories? If the answer is yes, please indicate the categories in which food choices were restricted:

- ☐ Desserts and sweets--less than 1 daily serving
- ☐ Bread and grain products--less than 4 daily servings
- ☐ Milk and dairy products--less than 2 daily servings
- ☐ Meats--less than 2 daily servings
- ☐ Fruits and vegetables--less than 4 servings per day
- ☐ Food choices were not restricted in any of the categories

G. How was the nutritional soundness of the reducing diet evaluated?

- ☐ Diet plan was evaluated by a nutritional guideline utilizing the basic four food groups
- ☐ Diet plan appeared nutritious
- ☐ Diet plan stated that it was nutritionally sound
- ☐ Diet plan was not evaluated for nutrition
- ☐ Diet plan was evaluated by a nutritional guideline utilizing the food exchange tables
- ☐ Diet plan was evaluated for nutritional soundness by evaluating the carbohydrate content
- ☐ Other, please specify _____

H. The following question is related to your food item choices during any 7-day period while you were following the diet. Did you consume 3 or more different food items in each of the following groups during any 7-day period while you were following the diet?

- ☐ Yes ☐ No Milk group (whole or skim milk, buttermilk, baked custard, yogurt, ice cream, other sour or sweet creams, and cheeses including cheddar, American, gouda, blue, roquefort, cottage, swiss, and camembert).
- ☐ Yes ☐ No Grain group (macaroni, noodles, spaghetti, crackers, and breads and cereals made of wheat, bran, rye, rice, corn, and oats).
- ☐ Yes ☐ No Meat group (beef, veal, pork, lamb, fish, shellfish, poultry, eggs, dry beans, dry peas, nuts).
- ☐ Yes ☐ No Fruit and vegetable group (fruits or juices of apple, orange, banana, grape, melon, berries, grapefruit, plum, peach, apricot, fig, pear, pineapple, raisin, and prune, as well as avocado, potato, broccoli, carrot, cauliflower, green beans, asparagus, okra, squash, lettuce, spinach, cabbage, celery, cucumber, green pepper, tomato, beets, brussel sprouts, pumpkin, corn, green peas, and onions).

22. (continued)

I. How many meals per day (excluding snacks) did you consume?

- ☐ 1-2
☐ 3-4
☐ more than 4

J. Did your reducing plan include exercise?

- ☐ No
☐ Yes -- indicate the number of exercise sessions you participated in over any 7-day period along with the kind of exercise and how many minutes of continuous exercise activity per each session.

Kind of Exercise Activity	Distance Covered per Session (walking, running, etc.) or How many exercise Maneuvers Were Per- formed Each Session (isometric, rope- jumping, etc.)	Number of Sessions per Week	Average Number of Minutes of Continuous Activity per Each Session

K. Have you regained the pounds you lost on your reducing plan?

- ☐ Regained some of the pounds lost
☐ Regained all of the pounds lost
☐ Gained back more than the pounds lost
☐ Have not regained the weight lost

Instructions: Please check (✓) the statements listed below as either true or false.

True False

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 23. An adult can gain weight and remain overweight on a relatively moderate caloric intake. |
| <input type="checkbox"/> | <input type="checkbox"/> | 24. Of the three major categories of nutrients: fat, carbohydrate, and protein, only the excess calories derived from fat and carbohydrate are stored as fat in the body. |
| <input type="checkbox"/> | <input type="checkbox"/> | 25. There is medical justification for rapid weight loss programs for most overweight people. |
| <input type="checkbox"/> | <input type="checkbox"/> | 26. Weight loss is possible with any dietary plan that restricts calories. |
| <input type="checkbox"/> | <input type="checkbox"/> | 27. Dietary programs which cause initial large weight losses are more likely to succeed in long term weight control because they promote enthusiasm and motivation. |
| <input type="checkbox"/> | <input type="checkbox"/> | 28. The carbohydrate count table is one method used to reduce food intake and balance the diet nutritionally. |
| <input type="checkbox"/> | <input type="checkbox"/> | 29. The basic four food groups can be used to evaluate the nutritional adequacy of a diet. |
| <input type="checkbox"/> | <input type="checkbox"/> | 30. Food portion sizes on the exchange lists are the same as basic four food serving sizes. |
| <input type="checkbox"/> | <input type="checkbox"/> | 31. A reducing dietary plan should include a minimum of two meals per day. |
| <input type="checkbox"/> | <input type="checkbox"/> | 32. Most authorities recommend a weight loss goal of 1 to 2 pounds as the maximum safe number of pounds to lose per week in a medically unsupervised program. |
| <input type="checkbox"/> | <input type="checkbox"/> | 33. Persons receiving less than the daily dietary recommended allowances are not necessarily malnourished. |
| <input type="checkbox"/> | <input type="checkbox"/> | 34. The minimum number of servings listed in the basic four plan is deficient in several nutrients for most people. |
| <input type="checkbox"/> | <input type="checkbox"/> | 35. A dietary intake below the recommended allowances over a period of time increases the likelihood of a nutritional deficiency. |
| <input type="checkbox"/> | <input type="checkbox"/> | 36. Daily dietary recommended allowances are the same as daily dietary requirements. |

True False

- () () 37. A low carbohydrate diet promotes more fat loss than a diet containing equal calories but with a high carbohydrate content.
- () () 38. United States law requires that all commercially sold breads must be enriched with the vitamins and minerals lost through processing.
- () () 39. Meals which contain iced tea can decrease the absorption of iron present in that meal.
- () () 40. Foods containing carbohydrates are necessary in any dietary program in order to prevent the catabolism of tissue protein.
- () () 41. Sweets and desserts have a place in a reducing diet.
- () () 42. Ethnic foods are usually caloric-ridden and should be omitted.
- () () 43. Serum hemoglobin measurement is a sensitive indicator of the body's iron stores.
- () () 44. Eating a wide variety of foods decreases the probability of meeting dietary nutritional requirements.
- () () 45. Of the two forms of Vitamin A, retinol and carotene, only the retinol form is toxic with excessive intake.
- () () 46. Eating behavior is always preceded by a decision to eat.
- () () 47. Involvement of significant others increases the probability that people will succeed in changing their eating habits.
- () () 48. The eating environment can be controlled through planning.
- () () 49. Behavior modification related to eating habits is dependent upon knowledge of one's eating patterns.
- () () 50. Boredom increases appetite.
- () () 51. Appetite can be conditioned to appear at certain times during a 24-hour period.
- () () 52. Hunger is a known threat to dieter's success.
- () () 53. Vigorous exercise before a meal increases appetite for that meal.

True False

- () () 54. Spot reducing, or exercising a specific body region, firms up that region by decreasing the amount of fat there.
- () () 55. When sodium is given to an exercising person without giving an adequate volume of water, significant hypernatremia can occur.

Instructions: Please check (✓) the one best answer in the questions below:

56. It is generally agreed among nutritionists that this is the lowest calorie level that can be nutritionally complete for long-term unsupervised use:
- ☐ 900 calories per day
 - ☐ 1000 calories per day
 - ☐ 1100 calories per day
 - ☐ 1200 calories per day
 - ☐ 1300 calories per day
 - ☐ 1400 calories per day
 - ☐ 1600 calories per day
57. One pound of fat equals:
- ☐ 27500 calories
 - ☐ 3200 calories
 - ☐ 3500 calories
 - ☐ 4000 calories
58. An estimate of the daily calories needed to maintain weight at its present level in a moderately active person is:
- ☐ 5-10 calories/pound/day
 - ☐ 15-20 calories/pound/day
 - ☐ 25-30 calories/pound/day
59. How many calories would it be necessary to eliminate in order to lose 2 pounds of fat per week by diet alone?
- ☐ 250 calories per day
 - ☐ 500 calories per day
 - ☐ 750 calories per day
 - ☐ 1000 calories per day
 - ☐ 1500 calories per day
60. Denise needs 2000 calories to supply her body's energy needs. She successfully implements a reducing diet of 1200 calories for 2 weeks and loses 5 pounds. Denise goes on a 2-day vacation. She doesn't eat to excess, but consumes 2000 calories per day. At the end of her vacation, she weighs 2 pounds more than she did before beginning her vacation. Which of the following most likely applies to Denise:
- ☐ Denise has regained 2 pounds of fat, making her total diet loss to date 3 pounds.
 - ☐ Denise has gained 2 pounds of water and has neither gained nor lost in her move toward her weight goal.
 - ☐ Denise has regained 1 pound of fat and 1 pound of water.

61. Candice wishes to lose 10 pounds. She needs 2000 calories per day to supply her body's energy needs. Candice selects a 12-day dietary plan which alternates 1 day of fasting with 1 day of a 500 calorie diet. At the end of 12 days, Candice lost 10 pounds. After reaching her goal, Candice began her maintenance diet of 2000 calories. In 2 days, she gained 6 pounds. Which of the following most likely applies to Candice?
- ☐ Candice lost 6 pounds of fat during the 12 day dietary regimen.
 - ☐ Candice lost 8 pounds of fat during the 12 day dietary regimen.
 - ☐ Candice lost 10 pounds of fat and her body is adjusting to the maintenance diet with an expected temporary water gain.
62. Weight loss statistics place Candice into which one of the following groups?
- ☐ Candice will probably maintain her lower weight since she was motivated to reach her goal.
 - ☐ Candice will probably regain her weight within a short period of time.
63. If Candice completely fasted for 12 days, how much fat loss could she expect?
- ☐ Approximately 7 pounds
 - ☐ Approximately 9 pounds
 - ☐ Approximately 15 pounds
 - ☐ Approximately 20 pounds
 - ☐ Approximately 21 pounds
64. Which exercise plan is the most efficient in weight loss or maintenance?
- ☐ Duration: Continuous exercise of 10 minutes
Intensity: Exercise sufficient to burn 200 or more calories per session
Frequency: At least 5 times per week
 - ☐ Duration: Continuous exercise of 30 minutes
Intensity: Exercise sufficient to burn 300 or more calories per session
Frequency: At least 3 times per week
 - ☐ Duration: Continuous exercise of 1 hour
Intensity: Exercise sufficient to burn 600 calories or more
Frequency: At least 2 times per week
65. Which exercise expends the fewest calories per unit of distance of continuous exercise at a moderate pace?
- ☐ Bicycling
 - ☐ Jogging
 - ☐ Walking

66. Which of the following statements is true when an energy expenditure table states that an exercise burns 300 calories per hour?
- () The 300 calories are spent in the exercise alone and do not include the total calories burned for metabolism during that hour.
 - () The total amount of calories burned during that hour, including basal metabolism, is 300.

Please indicate the degree to which you agree with each statement by placing a check (✓) in one of the six columns following each statement.

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
67. The public expects nurses to follow healthful living habits.						
68. Whether or not nurses' personal living patterns are healthful has very little effect on the health habits of others who observe her living patterns.						
69. The observable nutritional habits of the nurse have no more influence on general society than does the nutritional habits of someone in any other occupation.						
70. It is important that nurses be aware of the health practice behavioral examples that they set for others.						
71. Nurses who smoke exhibit more approval for smoking than do other smoking members of society.						
72. The nurse's attitude and behavior toward health have little or no effect on the health practices of her friends and acquaintances.						

Thank you so much for your participation in my research study. Other nurses in your hospital will be answering the questionnaire, Therefore, I greatly appreciate your cooperation in not discussing the contents of this questionnaire with anyone for the next 2 weeks.

When the study is completed, a bound copy of the thesis will be placed in your hospital library.

At this point, would you take your questionnaire to the weighing station marked at the front of the room. Measures have been taken to insure privacy in the weighing process. After the research assistant has recorded your weight on the top of the questionnaire, the questionnaire will be sealed and placed under several other questionnaires in a box. In order to protect your anonymity, the research assistant will not be involved in the study after the weighing process and hence will not view your questionnaire again.

Once again, I wish to express my appreciation for your help with my study.

Sincerely yours,

Patricia Lane, R.N.

APPENDIX F

Content Development of Instrument

Descriptive Characteristics

Studies by Garn et al. (1977), Goldblatt et al. (1965), Kohrs et al. (1979), Silverstone et al. (1969), and Stunkard et al. (1972) indicated that socioeconomic status and social mobility have a significant correlation with obesity. Socioeconomic status and social mobility factors in these studies were determined by occupational position, educational level, and salary. Questionnaire items 1, 3, and 5 were designed to identify educational levels and the higher salary levels associated with management positions.

The hospital in which the sample was collected was affiliated with a university nursing program. In addition there are other nursing educational programs in the urban area where the study was conducted. Item 2 identified a possible source of sampling bias associated with the location of the basic nursing educational facility.

Vickstrom and Fox (1976) found nurses' nutritional knowledge was inversely related to age and years of nursing experience. This finding was in agreement with

the findings of a survey in Tennessee (cited in Vickstrom & Fox, 1976) a decade ago. Items 4 and 7 on the questionnaire identified age and nursing experience variables.

Vickstrom and Fox also found that nurses with Bachelor's degrees had more nutritional knowledge than nurses from diploma schools. Questionnaire item 1 identified the type of basic educational program.

A third finding from the study of Vickstrom and Fox indicated that the nurse's nutritional knowledge was positively correlated with the nurse's perceived role in nutritional education of patients. Item 6 requested information concerning nutritional counseling.

Cross sectional and longitudinal study reviews by Bray (1976) and Forbes and Reina (1970) indicated that there is a steady increase in the percentage of body fat and a decrease in lean body mass beginning with the second decade of life and continuing through the fifth and sixth decades. Item 7 was designed to identify age variables.

Questionnaire item 8 identified physical maladies which may have influenced choices of foods and hence

influenced scores in the weight categories as well as the adherence sections of the present study. In addition, Bray (1976) noted in his review of literature that the lowest incidence of dropouts from obesity treatment programs occurred in the diabetic population. Item 8 specifically identified the diabetic population, along with the populations who suffer from other physical impairments.

There is no universally accepted definition of obesity among researchers (Bray, 1976). In addition there is wide disagreement concerning the degree of body fat which denotes an unhealthy state (Gumby, 1980). An individual's concept of what constitutes normal weight is highly influenced by family members and significant others (Garn, Bailey, & Cole, 1979; Rosenthal & Marx, 1979; Stuart & Davis, 1972). Questionnaire items 9, 10, 11, and 12 were designed to identify subjects with conceptions of normal body weight which differ from the determined normal weight of the present study.

Item 13 asked the respondent to list her skeletal frame size. Height, weight, and frame size were utilized to determine the normal weight and obese categories in the present study.

Items 21 and 22A-E requested information related to reducing attempts in the participant's past history and specific information concerning the most recent reducing regimen. The information obtained through these items was utilized to describe the portion of the population sample who responded to the items.

Maintenance and Reduction Adherence

Obesity is the result of a positive energy balance. Regardless of the reason for the excessive nutrient intake, the body cannot add to its fat stores unless more calories are ingested than the number of calories utilized as metabolic fuel (Bray, 1976). Therefore, the two major goals of any weight reduction plan are: (a) to increase the expenditure of calories and (b) to decrease the number of calories ingested.

The importance of exercise in relation to maintenance of normal body weight is clear in the literature. Exercise alone, without dietary restriction, will decrease body fat stores and body weight (Gwinup, 1978; Kenrick, Ball, & Canary, 1972; Leon, Conrad, Hunninghake, & Serfass, 1976; Mayer & Stare, 1953). Several research studies strongly indicated that the

energy imbalance in obesity is related to lower activity levels rather than to increased calorie intake (Chirico & Stunkard, 1960; Johnson, Burke, & Mayer, 1956; Mayer, Roy, & Mitra, 1956; Rose & Mayer, 1968; Stefanki, Heald, & Mayer, 1959). In addition, several research studies demonstrated that the obese subjects consumed equal or lower caloric levels than non-obese controls (Dodd, Birky, & Stalling, 1976; Epstein, Parker, McCoy, & McGee, 1976; Hill & McCutcheon, 1975; Johnson, et al., 1956; Mayer et al., 1956; Mayer & Pudel, 1972; Rose & Mayer, 1968; Stefanki et al., 1959). When exercise is successfully implemented with dietary restriction, more weight is lost than with dietary restriction alone (Kendrick et al., 1972).

The World Health Organization (1973) estimated that most people utilize between 41% and 50% of their daily energy expenditure in activities other than sleep and work. The estimated energy expenditure during working hours ranges from 41% to 54%. Unless people change jobs frequently, the most variable time period to increase caloric expenditure occurs during the leisure hours through exercise programs (Epstein & Wing, 1980).

Pollock et al. (1978) stated that forms of exercise which require less than 5 calories per minute of energy are generally not useful in weight reduction or cardiovascular conditioning. Research studies indicated that the guidelines concerning the minimum threshold for weight loss through exercise consist of: (a) a duration of 20 minutes of continuous exercise, (b) an exercise intensity sufficient to burn 300 calories per session, and (c) an exercise frequency of 3 days per week (Oscai, 1973; Pollock, Broida, Kendrick, Miller, Janeway, & Linenerud, 1972; Pollock et al., 1978). A lower caloric expenditure per session is still effective if the frequency is increased to more than 3 days per week. A frequency of 1 or 2 days per week appears to be ineffective regardless of the duration or intensity (Pollock, Cureton, & Greninger, 1969).

The preferred forms of exercise are those forms which utilize large muscle groups, are continuous and rhythmic in nature, and are of sufficient duration to promote a negative caloric balance (Pollock et al., 1978). Examples of recommended forms of exercise include walking, jogging, running, swimming, and rope-jumping. The duration time of each exercise

session is stressed. In Gwinup's (1978) study concerning a walking program for weight loss without dietary restriction, the researcher found that no weight loss occurred through exercise alone until the walking time exceeded 30 minutes. Thus, the literature contains evidence that a chronic exercise program is of great benefit in weight control or reduction.

Dietary factors in relation to normal weight maintenance or reduction consist of: (a) the number of calories in the food intake, (b) the nutritional composition of foods selected for intake, and (c) the frequency of meals (Bray, 1976).

Fat contains approximately 3,500 calories per pound (Guyton, 1981). Although fat does not serve as the only source of metabolic fuel, other energy sources are difficult to calculate accurately, and thus the predictions of most weight loss programs for obesity are based on the caloric value of fat (Epstein & Wing, 1980). Fat represents the largest stored form of energy in the body (Guyton, 1981). Regardless of the dietary source, excessive calories derived from protein, carbohydrate, or fat intake are stored in the adipose depot.

Fat loss occurs with any weight loss regimen which decreases the number of calories normally ingested or increases the expenditure of calories greater than the intake level (Bray, 1976).

Research studies have found that dietary composition apparently makes no difference in long-term weight loss rates on diets of similar caloric intakes (Bortz, Bela, Issekutz, & Rodahl, 1966; Hood, Goodhart, & Fletcher, 1970; Kinsell, Gunning, Michaels, Richardson, Cox, & Lemon, 1964; Olesen & Quaade, 1960; Pilkington, Gainsborough, Rosenoer, & Carey, 1960; Werner, 1955). However, in the initial phases of a low carbohydrate diet, more weight is lost than on a diet of unlimited carbohydrate intake of the same caloric value. The major reason for the larger weight loss on the low carbohydrate diet is due to a greater excretion of sodium and water (Hood et al., 1970). Significantly, studies found that 10 days or more may be required to achieve water balance after beginning a low carbohydrate dietary regimen (Worthington & Taylor, 1974a, 1974b; Russell, 1962).

Although nutrition is an incomplete science, numerous studies indicated that certain levels of

nutrient intake must occur to prevent disease states (Recommended Dietary Allowances, 1980). Professional tools as well as lay population guidelines were devised to assess the adequacy of nutrient intake in order to prevent malnutrition. The most widely accepted tools are the recommended dietary allowances, food composition tables, the American Dietetic Association's exchange lists, and the basic four food grouping guidelines (Kreutler, 1980).

The National Research Council (Recommended Dietary Allowances, 1980) recommended that dietary intakes consist of a wide variety of foods for the following reasons: (a) to insure that nutrients are included in the diet which are known to be required by the human body but which research had not yet determined allowances, (b) interactions of nutrients may influence the bioavailability of the nutrients involved, (c) many foods have not been analyzed for known required nutrients, and (d) nutritional deficiencies were found most often in populations where a narrow range of foods were eaten.

Although the research studies of Bortz et al. (1966) and Finkelstein and Fryer (1971) did not indicate that the number of daily meals was significantly related to loss of weight on hypocaloric diets, several studies indicated that meal patterns which contain 3 or more meals per day improve glucose tolerance when compared with patterns consisting of 1 or 2 larger meals (Fabry, Hejl, Fodor, & Braun, 1964; Gwinup, Roush, Byron, & Kruger, 1963; Kannel, Gordon, & Castelli, 1979; Young, Hutter, Scanlan, Rand, Lutwak, & Simko, 1972). In addition, Cohn (1964), Fabry et al. (1964), Gwinup et al. (1963), Jagannathan, Connell, and Beveridge (1964), Kannel et al. (1979), and Young et al. (1972) found that serum cholesterol levels were inversely proportional to the number of daily meals.

Thus, research evidence favors a dietary food pattern which consists of: (a) three or more meals per day, (b) a wide variety of foods, (c) balanced nutritional intake in relation to the recommended dietary allowances, and (d) an intake which takes into consideration the energy needs and reserves of the individual.

Knowledge Base

Energy requirements vary with age, sex, climate, physical activity, hormone levels, body weight, and the thermic effect of food (Bray, 1976). The average range for the moderately active reference person to maintain weight at the present level is 15-20 calories per pound per day (Recommended Daily Allowances, 1980).

Health surveys reviewed by the American Medical Association (1978) indicated that Americans gain weight and remain overweight on relatively moderate intakes. The sedentary life style of the average American was the suspected major contributing factor.

The design form for questionnaire items 60 and 61 was taken from the American Medical Association's publication entitled "The Healthy Approach to Slimming" (1978).

Recommended dietary allowances (RDAs) represent the single most authoritative source of nutrient knowledge for people of the United States (Hamilton, 1978). Recommended Dietary Allowances (1980) are nutrient levels which are thought to be adequate to meet the needs of almost all healthy people.

RDAs are not requirements but rather guidelines for suggesting levels of nutrients to keep most people in good health. Since individuals require vastly different levels of each nutrient related to an assortment of variables including age, sex, and lifestyle, no average nutrient requirement can be the same for all. RDAs were formulated by the Food and Nutrition Board of the National Research Council and were based on: (a) surveys of individuals to determine the level of intake of a specific nutrient in relation to presence of disease in that population, (b) controlled feeding experiments with humans, and (c) metabolic studies of laboratory animals. A normal distribution curve was plotted following collection of data. RDAs represent the average requirement plus two standard deviations on this curve. Since the levels of the nutrients are higher than the amounts required by most healthy people, a person can consume less than the allowance and still be adequately nourished (Kreutler, 1980). However, studies have indicated that nutritional intakes of less than two-thirds of the RDA over a prolonged period of time are associated with symptoms indicative of malnutrition (Recommended Dietary Allowances, 1980).

Although shortcomings exist, the basic four food groupings is a useful tool to evaluate the nutritional adequacy of a diet, and is the simplest tool to utilize in the teaching of people most subject to malnutrition (Kreutler, 1980). The USDA promotes this tool which identifies key nutrients with the major assumption being that consumption of a wide variety of the key nutrients will probably include the ingestion of the essential minor nutrients as well. Kreutler found that 20 menus derived through the use of the basic four tool were deficient in more than 11 RDA nutrients, with 5 nutrient levels falling below 60% of the RDA. Kreutler hastened to add, however, that these findings did not necessarily denote a deficiency for all the missing nutrient levels in the menus since the RDA levels are probably set higher than the levels needed by most healthy people. King, Cohenour, Corruccini, and Scheeman (1978) suggested that the reliability of the basic four tool is enhanced when the portion serving sizes of two groups (meat and fruits and vegetables) are increased and a fifth group, which consists of fats and oils, is added.

Another tool, the exchange lists, was formulated in 1950, and revised in 1976 (Kreutler, 1980). The

exchange lists categorize foods in relation to protein, carbohydrate, and fat content. The tool is not intended for lay use without professional guidance. Meal plans utilizing these lists without professional aid may be deficient in essential nutrients. One major drawback with the tool is the serving sizes which differ from the basic four tool and from what is commonly considered a table serving.

Carbohydrates represent only one of three categories of macronutrients. Therefore, carbohydrate count tables alone cannot be utilized to assess a dietary plan for nutritional soundness.

Studies found that a minimum of 50 to 100 mg. of digestible carbohydrate is necessary in the diet to prevent catabolism of protein, ketosis, loss of electrolytes, and dehydration (Calloway, 1971; RDA, 1980). The National Research Council has recommended dietary carbohydrate levels well above the minimums listed here.

The Health and Nutrition Examination Survey (cited in Kreutler, 1980) documented through biochemical and dietary recall data that iron deficiency occurs commonly in all socioeconomic segments and age groups throughout

the United States. Iron is essential for oxygen transport to the tissue cells and for oxidation processes within the cells (Guyton, 1981). Although most of the body's iron is in the form of hemoglobin, myoglobin, and enzymes, a significant portion is in storage form, and this storage form can amount to as much as 30% of total body iron (Finch, 1971). Iron deficiency results in a decrease of the iron storage forms before the hemoglobin level begins to decline. Thus, anemia is not a sensitive indicator of iron deficiency (Recommended Dietary Allowances, 1980).

The amount of iron that is potentially available from food in a meal is dependent upon: (a) the quantity present, (b) whether the iron is heme or nonheme in form, and (c) the food combinations present in the meal (Monsen, Hallberg, Layrisse, Hegsted, Cook, Mertz, & Finch, 1978). Nonheme iron is more prevalent in American meals and represents a larger source of available iron. Disler, Lynch, Charlton, Torrance, Bothwell, Walker, and Mayet (1975) found that tannic acid in tea decreases the absorption of nonheme iron available in a meal.

Federal law does not require enrichment additions to foods (Robinson & Lawler, 1977). Approximately 85%

of white bread and rolls sold to the American public is enriched.

Vitamin A in the human diet is ingested in the forms of retinol and provitamin A carotenoids (Recommended Daily Allowances, 1980). Excessive ingestion of preformed Vitamin A (retinol) is toxic. Excessive ingestion of carotenes is not harmful but may result in a yellow coloring of skin which disappears when the intake is reduced.

The American Medical Association (AMA) states that there is no justification for rapid weight loss for most overweight people (American Medical Association, 1978). Most authorities recommend a weight loss of 1 to 2 pounds per week in a medically unsupervised weight reduction program (AMA, 1978; Kreutler, 1980). While fad diets may capture the imagination and weight loss may initially be significant, in most cases the weight loss is promptly regained due to failure to learn self-management skills necessary to deal with faulty attitudes and behavior in relation to appetite (Cohen, 1979; Stuart & Davis, 1978). Hunger and boredom are the primary reasons for discontinuing fad diets. An additional problem associated with fad

diets which complicates weight loss is that severe caloric restriction apparently produces a physiological adaptation which conserves energy (Bray, 1976). Basal metabolism can fall as much as 20%. In an individual requiring 2,000 calories for metabolic needs, this adaptation can lower the basal metabolic rate to 1,600 calories. The mechanism for energy conservation is unknown.

The most successful recommendations for weight reduction programs are those which follow the dieter's food preferences corrected for nutritional deficiencies and excessive calories ((American Medical Association, 1978; Kreutler, 1980; Nilson, 1978; Stuart & Davis, 1972, 1978). Sweets, desserts, and ethnic foods are constituents of the average American dietary composition. While many sweets and desserts may not have much nutritional value, they nonetheless add to appetite satiety factors in the diet.

Meal frequency recommendations were discussed earlier in this paper. Research studies indicated that three or more daily meals improve glucose tolerance and decrease serum cholesterol levels.

Stuart and Davis (1978) stated that behavior modification to deal with problematic eating is based upon four premises: (a) multiple factors in life influence human behavior, (b) the urge to eat is treated most effectively through the principle of indirection, (c) most of the time people eat in relation to appetite rather than hunger, and (d) eating behavior is the result of a decision to eat rather than an uncontrolled automatic response.

Self-knowledge is essential to the identification and planning of avenues to control or escape environmental forces which lead to problematic eating habits. Appetite, the psychologically learned urge to eat, can be controlled by managing the environmental antecedents to eating as well as the eating behavior itself.

Two potent antecedents to eating are psychological boredom and physiological hunger. Stuart and Davis (1978) stated that sensory deprivation or boredom is the most common emotional feeling related to problematic eating. Hunger is a powerful temporary body state which appears when there is insufficient readily available energy. Hunger results when a slimming regimen does not include preplanned meals at regular timely

intervals during the day and when the regimen restricts calories too severely. Hunger reduces self-control and can lead to an excessive intake of calories.

Stuart and Davis (1978) found that the involvement of significant others in planning the dietary management of problematic eaters enhanced the success of the weight loss program. In a sample of 200 women, 83% of the subjects who had another person involved in the weight reduction attempt lost 20% of body weight. Only 31% of those who did not have a significant other person involved in the regimen were able to accomplish the same results.

Caloric values of exercise listed in most charts are listed in terms of the gross body caloric expenditure (Bray, 1976). The approximate gross caloric expenditure for walking, running, and bicycling 1.6 Km at a moderate pace is respectively: 1.15 cal/Kg, 1.70 cal/Kg, and .60 cal/Kg (Fox, Naughton, & Gorman, 1972).

Animal studies indicated that chronic exercise programs are accompanied by a reduction in food intake (Bray, 1976; Crews, Fuge, Oscai, Holloszy, & Shank, 1969). Human studies indicated that food intakes do

not increase with moderate exercise of long duration and intakes slightly decrease with vigorous exercise of short duration (Franklin & Rubenfire, 1980; Oscai, 1973).

The study of Gwinup, Chelvan, & Steinberg (1971) related to circumference and subcutaneous fat in the right and left arms of accomplished tennis players, indicated that while muscle tissue increased in the active playing arm, there was no decrease in the subcutaneous fat. Franklin and Rubenfire (1980) stated that there is no scientific evidence which supports the premise that fatty acids perfuse out of the fat pad in an exercising body part more quickly than any other body area to meet energy needs.

Although significant quantities of sodium can be lost through sweat in the exercising athlete, water loss far exceeds the sodium loss (Recommended Daily Allowances, 1980). An athlete who consumes exogenous sodium without free access to water is at high risk to develop significant hypernatremia.

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