

THE DEVELOPMENT AND EVALUATION OF A CURRICULUM GUIDE  
FOR TEACHING BOYS FOODS AND NUTRITION  
IN HIGH SCHOOL

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A THESIS  
SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF MASTER OF SCIENCE  
IN THE GRADUATE SCHOOL OF THE  
TEXAS WOMAN'S UNIVERSITY

COLLEGE OF  
HOUSEHOLD ARTS AND SCIENCES

BY  
ELIZABETH ERWIN GIBSON, B.S.

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DENTON, TEXAS  
MAY, 1974

# Texas Woman's University

Denton, Texas

August 13, 1970

We hereby recommend that the thesis prepared under  
our supervision by Elizabeth Erwin Gibson, B.S.

entitled THE DEVELOPMENT AND EVALUATION OF A  
CURRICULUM GUIDE FOR TEACHING BOYS FOOD - -  
NUTRITION IN HIGH SCHOOL

be accepted as fulfilling this part of the requirements for the Degree of

Master of Science

## Committee:

Jessie W. Bateman  
Chairman  
Bernadine Johnson  
Betty Alford

Accepted:

Mary Evelyn Gray  
Dean of Graduate Studies

## A C K N O W L E D G M E N T S

The author expresses gratitude and sincere appreciation to those who have contributed to the formulation and completion of this study:

To Dr. Jessie W. Bateman, Professor of Home Economics Education and Chairman of the Graduate Committee, for continued assistance and guidance throughout the study;

To Dr. Bernadine Johnson, Associate Professor of Home Economics Education, for assistance throughout the study;

To Dr. Betty Alford, Assistant Professor of Home Economics, for assistance in completing the study;

Special acknowledgments of appreciation are extended to Larry Rice, co-workers, and students of MacArthur High School, for their cooperation, and encouragement during the preparation of the thesis; and

Finally, the author wishes to express grateful appreciation to her parents, sister, and sons: Mr. and Mrs. Drue Erwin, Betty Joann Bounds, Ken Grasty, and Tom Gibson,

without whose support and understanding the present study could not have been completed.



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## CHAPTER I

### I N T R O D U C T I O N

#### NEED FOR STUDY

According to Rorty (43) the prayer of millions is everywhere the same in meaning if not in language. The simple, ancient prayer for survival which Christ taught his followers stated:

Give us this day our daily bread  
And forgive us our trespasses  
As we forgive those who trespass against us.

In the United States many poor people suffer from malnutrition. Other millions of Americans more fortunate than the poor exist day by day on inadequate diets. These people suffer poor health and seldom experience perfection in mental, emotional, and physical development.

Nutritionists throughout the United States have become increasingly concerned about the dietary patterns of adolescent boys and girls. In a study conducted by Eppright and Swanson (16) adolescent food intake was more variable and less adequate than those of either younger children or adults. Balsley, Brink, and Speckman (4) concluded that

although adolescents do not often perceive malnutrition as a problem, dietary surveys have shown that the diets of many adolescents are such that they are not realizing their full potential in growth and well-being. Emerson (13) summarized studies of nutritional status which showed that adolescents had poorer diets than younger children and that teenage girls had perhaps the poorest diets of any population group.

Edwards, Hogan, and Spahr (11) emphasized that during the period when an individual makes the transition from childhood to adulthood, profound physical, physiologic, and emotional changes occur. As teenagers move toward independence, their interests, attitudes, and routines change; teenagers try to conform to their concepts of adult behavior. As they become more socially conscious, "going along" with the crowd becomes a "must."

Balsley, Brink, and Speckman (4) stated that since individual adolescents vary in the timing of growth and maturation, they also vary in their nutritional needs in relation to their stage of growth. The most obvious difference is an increased need for nutrients during the adolescent growth spurt, regardless of the age at which this occurs.

REVIEW OF LITERATURE

Need for Good Nutrition

Seoane (46) reported that children who had good food habits during elementary school may, in high school, take part in many activities that keep them away from home during meal hours. At this age teenage friends have more influence on habits formed than do members of the immediate family. This, coupled with the desire to assert independence, has caused many formerly well-fed boys and girls change to poorly fed teenagers.

Livingston (33) found summaries of nutritional surveys which indicated that adolescents received a poorer diet as compared to younger children. Adolescents should be encouraged to find other ways than food fads to seek status, independence, and sociability. They should be encouraged to seek good diets and good food as this symbol concluded Edwards, Hogan, and Spahr (11).

Seoane (46) stated when we say these young folks are poorly fed, we mean that they receive less than two-thirds of the nutrients recommended by the Foods and Nutrition Board of National Research Council. The National Research Council is made up of well-qualified researchers who get together from time to time and review the research that has bearing

on the nutrients needed by humans. The researchers consider the amount needed for abundant health for most people in this country.

Balsley, Brink, and Speckman (4) pointed out that studies of heights and weights of children during wartime famines, as well as during less severe nutritional deprivation, have shown that malnutrition delays growth and the appearance of the adolescent growth spurt. Livingston (33) indicated that children and the aged comprise the largest group within the poverty profile. These groups are particularly vulnerable to nutritional stress: children from birth to 6 years of age constituted 9 per cent of the group; children 10 to 16 years of age, 25 per cent; and adults 60 years and older accounted for 13 per cent of the total group.

In a preliminary United States Department of Agriculture report Fincher (51) reported food intake and nutritive value of diets showed the groups with average diets low in more than one nutrient were all age groups of females nine years and over, boys 12-17, and men 75 years and over. Hampton and co-workers' study (22) of students in the ninth to twelfth grade showed that the diets of many, especially the girls, were inadequate in iron and calcium and, to a lesser degree, vitamins A and C.

Spindler (47) cited factors found by the 4-H Foods and Nutrition Development Committee of 1959: five out of 10 of the girls are not getting two-thirds of the recommended allowances of calcium as compared with two out of 10 boys. Girls and boys are equally poorly nourished in vitamin C. Four out of 10 boys and girls were not receiving adequate amounts of vitamin C. Boys rate better than girls in the other nutrients listed.

At the White House Conference on Food, Nutrition and Health, one section of the panel on Food Delivery and Distribution as a System (52) stated that the problem of hunger and malnutrition is just one manifestation of a more general problem: income inadequacy. It is compelling and dramatic to focus on hunger because its effects are visible and because the thought of hungry Americans is intolerable to the bulk of Americans in a society capable of producing food in quantity, quality, and variety greater than ever before in history.

Livingston (33) emphasized that in the United States, there are two major problems: one caused by overnutrition (overeating), and one caused by undernutrition and hunger (lack of food). Both types of malnutrition affect all levels of today's society. Each individual's nutritional status results from a combination of factors.

Spindler (47) indicated the importance of the well-being of the next generation in order that the young fathers be healthy and have good eating habits. Many a child eats like his father; hence the father should set a good example in order that both boys and girls learn the importance of nutrition and develop good eating habits.

#### Meal Patterns

Lowenberg, Todhunter, Wilson, Feeney, and Savage (34) related that, in many cultures, eating is considered a private affair to be enjoyed within the confines of a family group. There are reports of places where individuals eat away from all others, even family members. For instance, in some parts of Melanesia and Polynesia, men and their wives lead separate lives; they have separate lodgings, meals, work, and property. There the rule is that men and women should never see each other eat. In some countries, workers as well as school children are given long noon hours in order that they may go home to eat with their families. In the United States, family members make great efforts to be together for Thanksgiving or Christmas dinner. There is the now oft-told tale of the Greeks, after the World War II occupation of their country, who preferred to take hot soup given to them by the Red Cross to their cold homes to eat with their families rather than eat it in the warm Red Cross



canteens. Hampton, Shapiro, and Huenemann (23) revealed that a group of seniors liked a certain meal best because it was the only one at which the whole family got together.

Huenemann, Shapiro, Hampton, and Mitchell (26) observed that teenagers tend to omit meals and to snack frequently. Approximately 90 per cent of the Negro teenagers had highly irregular eating practices which suggest a way of living and eating quite different from the traditional three-meals-a-day pattern. While reasons for this irregularity were not explored in detail, it was apparent that many youngsters were fending for themselves. Some were buying their own snacks, while others were apparently helping themselves to whatever they could find in refrigerator or cupboard. Ethnic classification appeared more closely associated than socio-economic grouping with eating patterns.

Research conducted by Hampton, Shapiro, and Huenemann (23) revealed that from a total of 25 responses to a question inquiring which meal was best liked, 19 girls said they preferred the evening meal. Of the reasons given for liking a particular meal, 12 indicated that the food or variety of foods at that meal were best liked; five indicated that the best-liked meal was more leisurely consumed than other meals. Lee (31) was of the opinion that Brazoria County teenagers

paralleled the national teenage food pattern: they skipped breakfast, feared fat, did not drink enough milk, and ate poor snacks. Hampton, Shapiro, and Huenemann (23) determined that of 25 students, 18 indicated that they thought that "teenagers don't eat the right things." Of these 18, six included, as a reason, "too busy" or "not enough time" among their answers. Lee (31) commented that the surveys of the Brazoria County food and nutrition sub-committee did not indicate that families failed to provide proper food but that, for various reasons, teenagers had poor eating habits.

Lantis (29) maintained that one effect of vending machines, and in fact of all forms of readily available self-service, that impresses him as an anthropologist is their encouragement of piecemeal eating. In a study conducted by Huenemann, Shapiro, Hampton, and Mitchell (26) the common observation was that teenagers tend to eat oftener than three meals a day. In a similar investigation reported by Edwards, Hogan, and Spahr (11) 15 per cent of the 6200 students in the study missed at least one meal during the 24-hour period of the survey. As students progressed from the seventh to the twelfth grade, the percentage of meals missed increased from 10 to 25. In one of the senior high schools, more than one-third of the tenth graders and over half of those in the twelfth grade missed a meal. Hampton, Shapiro and Huenemann

(23) maintained in their study that predominantly 17-year-old individuals are already feeling the pressures of the frantic pace of today's culture, and appear to give the impression that the "rush" and "hurry" of their lives interfere with the consumption of an adequate diet.

### Breakfast

In the early part of the Middle Ages, according to Trager (49), dinner at a feudal castle might be at nine in the morning, with supper at four in the afternoon; breakfast consisted merely of bread and ale. In later centuries breakfast evolved into a formidable meal in England, though not in France or the Mediterranean countries. The idea of the day's first meal breaking a fast is a rather poetic notion the English language shares with the Spanish déayuno and the French déjeuner, though the latter word is used also for lunch.

Hampton, Shapiro, and Huenemann (23) asserted that, for years home economists, nutritionists, dietitians, and workers in allied fields have emphasized the importance of a cheerful, well-planned breakfast time for the family, with a meal that includes one-third of the day's nutrients for each member of the family. However, Earl (10) related that teenagers of today leave their homes for school often by seven

o'clock in the morning and do not return until six or later in the evening because of the round of studies and extra-curricular activities in which they engage. Some of the boys and girls leave home without having had any breakfast; some may have a cup of coffee.

An investigation conducted by Edwards, Hogan, and Spahr (11) revealed that the majority of the students ate breakfast. The percentage of those not eating breakfast generally ranged from 3 to 15 in the various grades. More students in the tenth grade and twelfth grades missed breakfast than in the seventh and ninth grades. In one school, 24 per cent of the twelfth grade students missed breakfast on the day preceeding the survey. Studies have shown that omission of breakfast decreases work rate and is detrimental to attitudes and scholastic performance of students. Brown (5) reported that the busy pace of the high school years resulted in students skipping meals, especially breakfast. In other cases, however, breakfast became the "favorite meal," as one student said, "Early morning is the only time the family is together." Hampton, Shapiro, and Huenemann (23) further stated that of 21 completed diet records obtained for a three-day period there were 63 possible breakfast meals. Of these 63, 15 were skipped completely; but even more interesting was the fact that only 11 eggs were eaten at breakfast by the entire group

in three days. Twenty of the breakfasts eaten consisted of only two menu items of a quickly prepared variety. The implication is not that all of the 20 were nutritionally poor but that breakfast in these cases would appear to be a hurried meal. Of this small group of students studied, only one preferred breakfast, and that one specified Saturday or Sunday breakfast since it was a leisurely meal.

In a study conducted by Huenemann, Shapiro, Hampton, and Mitchell (26) both boys and girls reported eating breakfast more regularly when they were about 16 years of age, than when they were older. Also, both boys and girls in the low socio-economic group averaged fewer breakfasts and lunches than other boys and girls. Mayer (36) revealed that meals of Southern Negroes are similar to those of Whites of the same income level, though the proportions may be different. Breakfast usually consists of biscuits without a spread, a beverage (water, tea, or flavored water), an animal protein food two or three times a week, and a cooked cereal (oatmeal, rice, or grits) or a fat "meat" (fat back) the other mornings. Among protein foods used are eggs (relatively rare), brains, canned mackerel, salt herring, sausage, and fried chicken. Servings are usually very small: a serving of sausage may be less than one ounce. A small chicken may be cooked for a family of eight or ten, with the father receiving the meatier

pieces. Fruits, fruit juice, and milk are seldom consumed. Yellow cheese, considered a treat, may be served on Sunday mornings.

In his research Spindler (47) raised the question whether teenagers are poorly fed. It certainly does not mean that they cannot get enough food. Here are some of the reasons that they skip breakfast: they spend extra time dressing and must rush to catch the bus or were out late the night before and overslept; breakfast was not ready, and they did not have time to prepare it. Studies show that skipping breakfast is more common in the teenage girl than the teenage boy.

#### Lunch

Brown (5) related that lunch means one of two things to high school students; hot meals sold in the cafeteria or sack lunches from home. This study revealed that sack lunches provided varied reactions. Ten per cent of the freshmen and 35 per cent of the upperclassmen had fond memories of "brown bags and the tempting fare inside." However, the other freshman students who reported carrying sack lunches indicated that they became tired of sandwich lunches and certain spreads used over and over. Although school cafeteria lunches offer carefully balanced meals, some students indicated that quantity

and not quality was emphasized. This study substantiated the results of other studies which indicate that appearance plays a major role in food acceptance. For example, cafeteria lunches brought to one student's memory, "pale, watery hot dogs and white, sickly lima beans, which I still cannot enjoy." Other students tried to save money by skipping lunches or eating only a bowl of soup. Skipping lunches seems to lessen as the student grows older.

Huenemann, Shapiro, Hampton, and Mitchell (26) concluded that, for both sexes, dinner was the most and lunch the least frequently eaten meal. Lunch was, in fact, omitted more often than breakfast during the summer vacations and about equally during the school year. Reasons for skipping lunch varied with the time of year. During the summer vacations, reasons were late breakfasts, lack of planning, or provision for lunch. During the school year, the most frequent reason was substitution of other activities, with or without a snack.

Earl (10) stressed that at noon teenagers are busily darting about, snatching up a candy bar and soft drink, or munching a few crackers and cookies. At the evening meal, they may be in too much of a hurry to eat a nutritionally balanced meal. Spindler and Acker (48) also pointed out

that time was a factor even in the school lunch program. Many of the subjects said that having to eat too early or too late or in too short a time, because of congested lunch room conditions, was one reason for skipping the noon meal.

Leverton (32) commented that the school lunch is an access point that has not always been used to advantage. Programs as extensive as the school lunch must aim to do the greatest good for the greatest number. Teenagers represent a relatively small portion of that "greatest number," but their participation is relatively high in programs managed by directors who are alert to their needs and preferences. The Type A meal pattern is flexible enough to be interpreted with foods that are appealing to the teenage population. Usually teenagers like many kinds of foods; however, they like a choice. They also like fast service. If some low-calorie choices are available, the lunch is more acceptable, especially to the girls, even if they do not make a choice.

#### Snacks

Fleck (18) stated that from time immemorial, snacks have been of prime importance in people's lives. In the early days Indian runners carried small sacks of corn for munching. Caesar found that offering food was a good way to gather a crowd to hear his orations. Hospitality in feudal



days was shown by offering food to guests. Today, particularly for teenagers, snacks can comprise a large share of the day's nutrient intake.

Lantis (29) commented that children, outside of institutional life in which eating is more controlled, are growing up with the expectation that the family does not just stop for gas, the family stops for gas and pop. A person does not just bowl or skate--he bowls and has a cup of coffee or eats a hot dog. An adolescent does not just wait for a bus--he waits and eats a candy bar, or, if a girl, she stops in the drug store to have a soft drink. Seoane (46) observed that the teenager wants his peer group to like him. In today's culture, individuals share their food and drink with their friends. The teenager is no different. It is the snacks eaten with friends at the corner drugstore, the hamburger place, that may make the difference in whether he is eating empty calories or getting needed nutrients.

Fleck (18) reported that many of teenagers' snacks are eaten at date time. Hungry friends at rumpus room record sessions or post-game get-togethers will consume such foods as three-decker sandwiches, pizzas, hamburgers, hot dogs, chili, pickles, toast, buns, cake, cookies, or fruit. This informal type of party does much to foster friendships and

also gives a person an opportunity to develop social poise, but little thought is given to the nutritive value of such "pick-up fare."

Spindler (47) offered proof that most of the subjects in her study consumed from one to three snacks a day. Only four out of 75 reported no snacks. According to Fleck (18) many Americans today are eating at least six meals a day, but they are calling three of them coffee breaks or snacks. This in-between meal eating is not only common to Americans but it can be identified with most peoples of the world.

Fleck (18) pointed out that the evening snack has become a part of cultural ways in America. Edwards (11) found that for mid-morning and mid-afternoon snacks, students in the seventh and ninth grades generally chose wholesome food more often than those in the tenth and twelfth grades. The younger subjects more often selected such foods as fruit, bread and cereal, and milk. Snack preferences of students in the tenth and twelfth grades were almost always soft drinks and foods from the dessert and candy group. As an after-supper snack, milk was sometimes selected with foods from the dessert and candy group, but most frequently a soft drink was the beverage.

Fleck (18) stated that the kinds of foods in the markets will have an effect on what people eat between meals. The foods which are advertised through the various media of communication also have an impact. If people become familiar with a new tasty snack, there may be a demand for the food. Schaefer (44) pointed out that the snack industry can be looked upon as a revolutionary industry. Prior to 1945, snacks frequently consumed were cookies, crackers, potato chips, pretzels, popcorn, and nuts. These foods are still important but new snack items have been added in the years since World War II. More leisure time, bringing with it increased home entertaining and participation in activities away from home, has helped expand the demand for snacks and caused the industry to evolve into a multimillion dollar business.

Lantis (29) stated, "An economy that can offer all the things that we have been discussing--carbonated and sweetened water instead of plain water, abundant small choices, frequent snacks, fancy merchandising--is of course an economy of plenty." Any child with a dime in almost any public place can get a beverage and probably more solid food, and most youngsters have dimes. If a child is momentarily free of any specific adult who has authority over him, society

places no restrictions on him, short of purchase of intoxicants, which are not yet vended by machines.

Eppright, Pattison, and Barbour (14) commented that studies at Iowa State University have shown that, on the average, snacks may furnish as much as 15 per cent of the total calories of the day for teenage girls. Many of them tend to consume carbohydrate-rich foods at snack time, with heavy emphasis on carbonated beverages and sweet dessert-type foods.

Fleck (18) contended that the times for eating between meals may be different, and certainly the type of food consumed will vary from one part of the world to another. Hot tea in a glass, a carbonated beverage, chopped radishes and grated onions spread on black bread, a puffy Chinese doughnut, a small glass of wine, or an elaborate high tea may be characteristic of some of these in-between feedings found among different cultures.

Mayer (36) revealed that in Negro families a large pan of biscuits is usually made at breakfast, and these are available for the children to eat throughout the day. When sweet potatoes are plentiful, a large pan may be baked in the morning and left out for the children to eat whenever they want them. In rural areas, during the summer months,

tomatoes, cucumbers, and melons are eaten directly from the garden; during the winter, the children may go to the turnip patch and dig up a turnip to eat. When a dessert is cooked for the children, it is usually sweet potato pie or molasses pudding.

Huenemann, Shapiro, Hampton, and Mitchell (26) obtained diaries from 122 eleventh and twelfth grade subjects. Snacks were classified in ten categories. The frequency with which these appear in descending order of popularity were: Boys--cereal and bread; pie, cake, pastry, and cookies; soft drinks; milk; fruit; eggs, meat, and cheese; ice cream; candy; potato chips; and vegetables. Girls--pie, cake, pastry, and cookies; candy, fruit, cereals, and bread; soft drinks; ice cream; milk; eggs, meat, and cheese; potato chips; and vegetables.

Vegetable snacks were eaten infrequently by all boys and girls. Subjects with differing amounts of body fat did not vary greatly in the types of foods selected for snacks.

Fleck (18) felt that while social reasons are usually the main motivation for eating something between meals, hunger itself is often a factor. A lowered blood sugar may be responsible for this. Or the mere habit of eating between meals may lead one to crave something to eat. Many people

become extremely uncomfortable when they are hungry and are unable to concentrate on the task before them. This may occur when little or no breakfast has been eaten or lunch has been light.

Seoane (46) contended that another reason teenagers are poorly fed is that they make a poor selection of snacks. Studies made in Iowa (16) show that one-fourth of the calories of the teenager come from snacks. This is equivalent in calories to one meal. Empty calories--foods made up chiefly of fat, sugar, and starches--have small amounts of vitamins, minerals, and protein in proportion to the calories.

Everson (17) felt that foods providing mainly energy, served as mid-meal snacks, too often would cause one to refuse a well-planned menu at home or at school. Frequently such well-planned meals are not available. Edwards (11) believed that snack foods which make a worthwhile contribution to the total diet, such as milk, ice cream, fruit, and nuts, should be given greater emphasis in nutritional programs for this age group. These foods should be readily available at home and especially during and immediately following school hours.

Huenemann, Shapiro, Hampton, and Mitchell (26) offered proof that among boys and girls with calcium intakes below

two-thirds of the recommended allowance, there was a general tendency to substitute soft drinks for milk at meal time. Hampton, Shapiro, and Huenemann (23) revealed that milk was included in seven responses to the question of what was liked best as an after-school snack, and was second only to desserts such as cookies, pie, or cake, which were mentioned by 11 individuals. This tendency to enjoy milk as part of a snack indicates that snacks can be a good contribution to the total intake of the day's nutrients. Since milk is acceptable by many, this acceptability might well be used as a basis for encouraging consumption of well-planned snacks.

Fleck (18) was of the opinion that snacks for teenagers definitely have a social implication. The desire to be with others is usually strong, and there are many occasions provided in order that teenagers can get together. Food eaten by adolescents is generally much larger in quantity than for other ages as these young folks are in the period of greatest growth and consequently are often hungry. Hampton, Huenemann, Shapiro, and Mitchell (22) offered proof that there appeared to be a trend toward less frequent eating by the "obese" subjects of both sexes than those of other fat classifications. The girls had a slight tendency to eat more frequently than boys. Data support the popular conception of the teenager as a snacker. Generally speaking, there seemed to be no

relationship between the frequency of eating and overall quality of the diet except that those eating less than three times a day usually had much poorer diets. The youngsters who ate frequently tended to have overall good diets. It would seem that teenagers' snacking should not be maligned. Fleck (18) emphasized that snacks ideally should complement the day's meals, augmenting the intake of essential nutrients.

#### Educational Implications

Lee (31) reported that a speaker from the world of sports and one from the field of nutrition told boys and girls about the importance of good eating habits. Tom Chandler, head baseball coach at Texas A & M University, made this key statement: "If a teenager expects to be a success, he must possess three traits: a desire to succeed, a good mind, and a healthy body." Spindler (47) stated:

If we are going to motivate teenagers to improve their nutrition, we must first understand them. Second, we must base our approach on the needs, and the wants of the teenagers, or we are not going to get through to them. And third and most important, we must involve the teenagers in solving their own problem.

According to Spindler teenagers want to be popular--perhaps with just the right group--or with a small group--but they want to be popular. The person they most admire is not a television or movie star but usually a member of the peer



group who is popular. He may be the class president or an outstanding athlete or student, but in all probability he has good health. If adults are to motivate the teenagers to better food habits, they need to show adolescents how good nutrition helps an individual to have pep, energy, and good looks. It is not just the player on the field or the cheer leaders that want pep and energy. Teenagers admire people with pep and energy and want these qualities for themselves. Teenagers do not always connect lack of energy with poor nutrition; hence adults need to help them see this relationship.

Balsley, Brink, and Speckman (4) emphasized that it is possible to distort the importance of nutrition in relation to the concerns of adolescents as a source of motivation in changing food habits. Deutsch (8) deplored teaching nutrition as a factor affecting appearance and personality. Although nutrition is relevant to many of the concerns of adolescence, it is not the only component. The relation of nutrition to growth and physical attributes is obvious; however, heredity and environmental influences, in addition to nutrition, are also important and limiting factors.

Balsley, Brink, and Speckman (4) further stated that the nutrition educator has the responsibility of putting nutrition in perspective as one of the factors involved in

the total physical, mental, and social development of the adolescent. In a booklet published by the American Medical Association (53), emphasis on nutrition as one factor of importance rather than the total explanation, is exemplified in the following statement: "Remember that a person can be well-nourished and still not be physically fit, but he can never be physically fit without being well-nourished."

Lee (31) recommended that educators should provide opportunities for teenagers to plan the activities and programs and create a teenage steering committee to help make the activity interesting, different, and fun. Educators should also allow teenagers to work together in groups with the support of adults to plan an educational program that serves the threefold purpose of education, social development, and recreation.

Lantis (29) stressed that teenagers must learn to deal with multitudinous inducements to buy food and drink, not on a feeling basis but with practical knowledge. Lantis pointed out the fact that it is not enough merely to know what are good and bad--one must know how to get the better and reject the worse. Since today's culture is consumer-oriented, the consumer is king. But in many cases this person does not realize the nature of his power or the strength of it. This is especially true of the child consumer.

Alford (3) was of the opinion that improvement in nutritional status depends on daily decisions of the individual regarding his eating habits. It is essential that the individual learns to make wise choices from the wide variety of available foods. Changing food habits is a slow process. Pilgrim (41) found that group feeding is a valuable tool for the improvement of food habits. The importance of educational programs has been emphasized as a means of changing an individual's food habits.

Covan, et al. (7) and Hinton and colleagues (25) reported that knowledge of nutrition is positively related to good food practices. Adolescents who had the most information about nutritional needs ate better diets. In a nutrition survey of 6200 teenage youth conducted by Edwards, Hogan, and Spahr (11), dietary choices of students in the twelfth grade appeared to be less favorable than those in the seventh, ninth, and tenth grades. This suggests the need for increased emphasis on a good diet in the senior high schools. In addition, if food enjoyment is a characteristic of adolescents who select good diets, emphasis should be placed in the home and school on tasty, appetizing food offered in pleasant surroundings.

Brown (5) conducted a study on food habits and found that the participants still lived at home during the high

school years, but they indicated that they were "on their own" when it came to eating habits. Some of the students felt that the influence of the school, through home economics classes or clubs, helped them to strengthen good food habits and provided an awareness of food preparation standards.

Wenkam (50) emphasized the fact that the role of nutrition education is to guide and strengthen forces leading to dietary improvements. Wenkam suggested the following guidelines:

- 1) Identify and understand the cultural factors of a people which will ultimately influence food decisions;
- 2) Acquire detailed knowledge of the environment;
- 3) Acquire skills in educational techniques and competence in subject matter; and
- 4) De-emphasize one's own cultural and professional values.

A survey conducted by Adelson (1) concluded that home economics can help families achieve better diets if they:

- 1) Intensify nutrition education programs. Many U.S. families at all income levels need guidance in meeting their nutritional needs from the great abundance of foods available. Individuals need nutrition education to help them choose wisely in restaurants, snack bars, and the school lunchroom. Use mass media and other means to reach everyone. Since the same dietary shortages were shown in 1965 as 10 years earlier, new, imaginative approaches are needed.

- 2) Emphasize increased consumption of milk and milk products, fruits, and vegetables.
- 3) Help low-income families to make best use of the less-expensive foods. Help them to make use of such programs as the Federal food donation or food stamp program, the school lunch, school breakfast, and Head Start feeding programs.
- 4) Develop nutrition programs adapted to the needs of different age groups: young families, children, teenagers, and older folk.
- 5) Guide teenagers and others in the selection of snack foods that contribute nutrients to the day's diets.
- 6) Assist homemakers in their selection and use of the convenience foods.

Earl (10) mentioned that the late President Kennedy, in urging establishment of the National Institute of Child Health and Human Development, defined its purpose and programs well when he said:

We look to such an Institute for a full-scale attack on the unsolved affliction of childhood. It would explore prenatal influences, mental retardation, the effect of nutrition on growth, and other basic facts needed to equip a child for a healthy, happy life. It would, in addition, stimulate imaginative research into the health problems of the whole person throughout his entire life span--from infancy to the health problems of the aging.

STATEMENT OF PROBLEM

Statistics show one-third of the total food consumed is eaten away from home. Drive-in food service enjoys volume business. Approximately 13 per cent of food intake was eaten away from home in 1930. In a few years it is predicted the figure will be close to 40 per cent.

In 1950 there were ten chain restaurants of the drive-in type. Today the number of chain drive-in restaurants in the United States has risen to 250. It is apparent that fast type food service is the money-maker today while leisure-type food service is going out of business. Reinforcing this idea, a professor of Foods and Nutrition at Texas Woman's University suggests one think about how few places a person can sit today and drink a leisurely cup of coffee.

Snacking is taking the place of balanced meals. There is a definite rise in snack items being sold. This can be observed as grocery carts roll up to the check-out counter at the supermarkets. It is evident soft drinks and potato chips are on the best selling list. Empty calories--foods made up chiefly of fat, sugar, and starches--are preferred over fruits and vegetables. Cold cuts and beer enjoy volume sales. The temptation to eat snacks is great not only by teenagers but by children and adults.

Meal skipping is popular; the individual may be concerned about gaining weight and feels meal skipping is the answer. Empty calorie foods are favored over a balanced meal because many times there is no one to prepare a meal. Because of chronic tiredness, poor management, and little planning, breakfast is omitted by family members.

The Basic Four Food Group is designed to help simplify daily nutritional needs; but this medium is difficult for most people to use when their diet consists of "Heat and Serve" dinners, processed, and convenience foods. Advertising places more emphasis on chips, candy, and soft drinks; while the essentials of good nutrition are least mentioned.

Balsley, Brink, and Speckman (4) concluded that adolescents do not often perceive malnutrition as a problem; dietary surveys have shown that the diets of many adolescents are such that they are not realizing their full potential in growth and well-being. Emerson (13) summarized studies of nutritional status which showed that adolescents had poorer diets than younger children and that teenage girls had perhaps the poorest diets of any population group.

From the study made by Moore, Beasley, and Moore (38) it appeared that either family meals were planned around the

likes and dislikes of the male head of the household, or the man ate what was put before him with little question. If the husband does set the family eating pattern and if he is a prime target for coronary heart disease, which long has been associated with diet, should not each boy as a family head become the focus for more and better nutrition education?

#### PURPOSE OF STUDY

The overall purpose of the present study is to investigate the eating habits of a group of selected high school boys before and after a nine-week period of foods and nutrition education. Specific purposes for the study include the following:

- 1) To investigate the eating habits of a group of teenage boys;
- 2) To teach the group of teenage boys a foods and nutrition unit;
- 3) To investigate the eating habits of the same group upon completion of the unit;
- 4) To analyze and compare pre-unit and post-unit food habits;
- 5) To establish the need for teenage boys' foods and nutrition education; and
- 6) To develop a foods and nutrition curriculum to meet the needs of the group studied.



## CHAPTER II

### P L A N   O F   P R O C E D U R E

In recent years it has become apparent that in a country of unparalleled affluence there are poor people who suffer from malnutrition. Many others, though not poverty stricken, deprive their bodies of vitamins and minerals necessary to maintain good health, build strong bodies, and enjoy maximum mental ability. Adolescents have poorer diets than younger children; teenage girls have perhaps the poorest diets of any population group.

On June 11, 1969 the President of the United States appointed Dr. Jean Mayer as Special Consultant to the President in charge of organizing the White House Conference on Food, Nutrition, and Health. The purpose of this Conference was to focus national attention and national resources on the country's remaining--and changing--nutrition problems.

In the fall of 1970, at a meeting held in Houston, Texas, Dr. Mayer (52) presented the findings of his study to an assembled group of the state's best minds and expertise from business, labor, and education. Dr. Mayer asked this group to consider the following questions:

- 1) How do we insure continuing surveillance of the state of nutrition of our citizens?
- 2) What should be done to improve the nutrition of our more vulnerable groups--the very poor, pregnant and nursing mothers, children and adolescents, the aging, and those such as Indians for whom we have a direct and special responsibility?
- 3) As we develop new technologies of food production, processing, and packaging, how do we monitor the continued wholesomeness and nutritional value of our foods and insure that the poor, and indeed all Americans, obtain the greatest amount of nutrients for their money?
- 4) How do we improve nutrition teaching in our schools--from Head Start to medical schools--and what programs of popular education do we need to better inform the public of proper food buying and food consumption habits?
- 5) What should be done to improve Federal programs that affect nutrition, either directly as in the Armed Forces and the Veterans Administration, or indirectly through programs such as the food stamp, commodity distribution, and school lunch programs?

After hearing these nutritional needs outlined by Dr. Mayer, and the question posed by a member of the audience, "When are we going to start teaching nutrition in our schools?" the investigator of the present study decided to devote time and energy to teaching better nutrition education to high school students.

The overall purpose of the present study was to investigate the eating habits of a group of selected high school

boys before and after a nine-week period of foods and nutrition education. Specific purposes for the study included the following:

- 1) To investigate the eating habits of a group of teenage boys;
- 2) To teach the group of teenage boys a foods and nutrition unit;
- 3) To investigate the eating habits of the same group upon completion of the unit;
- 4) To analyze and compare pre-unit and post-unit food habits;
- 5) To establish the need for teenage boys' foods and nutrition education; and
- 6) To develop a foods and nutrition curriculum to meet the needs of the group studied.

#### SAMPLE

The sample consisted of five classes of Boys' Home-making from the ninth and tenth grades at MacArthur High School, Houston, Texas. A total of 104 students were involved in the original sample.

Fifty-two students did not complete the study. Reasons for not completing the study included: late enrollment for the spring semester, early withdrawal from the spring semester, and school dropout. The freshman counselor lost 17 per cent of students enrolled in the freshman class from August to November. Other factors preventing completion of

the study were: lack of motivation to complete assignments either at the beginning or end of the semester and too many absences.

Fifty-two students supplied the necessary data for the study. The students were randomly selected for meaningful and significant comparisons of the food habits of young men. All of the participants came from homes in the lower or middle socio-economic bracket. The boys were Caucasian, Latin American, Negro, and Indian.

#### QUESTIONNAIRE

Data were obtained through the use of two instruments, namely: 1) "Family Food Habits, Form I" and 2) "Daily Record of Food Consumption, Form II." The two instruments were developed by the investigator. "Family Food Habits, Form I" included family food habits, family shopping habits, and family background information. The "Daily Record of Food Consumption, Form II" secured data concerning the Four Basic Food Groups and standard food intake for one week, the number of servings over daily minimum requirements and the number of servings below daily minimum requirements. The students completed the "Daily Record of Food Consumption, Form II" before the nine-week food unit was taught, and on completion of this unit the same procedure was used. A copy of each instrument follows.

F A M I L Y F O O D H A B I T S

F O R M I

1. Who prepares most of the meals in your home?

- A. Mother \_\_\_\_\_
- B. Father \_\_\_\_\_
- C. Sister \_\_\_\_\_
- D. Self \_\_\_\_\_
- E. Other \_\_\_\_\_

2. What meals do you prepare for yourself?

- A. Breakfast \_\_\_\_\_
- B. Lunch \_\_\_\_\_
- C. Supper \_\_\_\_\_
- D. Snacks at other times \_\_\_\_\_

3. How often do you and your family eat together?

- A. Several times a week \_\_\_\_\_
- B. Every morning \_\_\_\_\_
- C. Weekends \_\_\_\_\_
- D. Sundays only \_\_\_\_\_
- E. Holidays only \_\_\_\_\_
- F. Every morning and night \_\_\_\_\_

4. How many times a week do you eat at a:

- A. Cafeteria \_\_\_\_\_
- B. Restaurant \_\_\_\_\_
- C. Short order specialty \_\_\_\_\_

5. Do you:

- A. Bring your lunch \_\_\_\_\_
- B. Eat school cafeteria regular lunch \_\_\_\_\_
- C. Eat school a la carte lunch \_\_\_\_\_
- D. Eat snack bar items \_\_\_\_\_

6. Who does the grocery shopping in your family?

- A. Mother \_\_\_\_\_
- B. Father \_\_\_\_\_
- C. Self \_\_\_\_\_
- D. Others \_\_\_\_\_
- E. If other, who \_\_\_\_\_

7. Is this shopping done at a:

- A. Chain supermarket \_\_\_\_\_
- B. Independent grocery \_\_\_\_\_
- C. Drive-in grocery \_\_\_\_\_
- D. Other \_\_\_\_\_
- E. If other, where \_\_\_\_\_

8. How often is grocery shopping done for your family?

- A. Once a month \_\_\_\_\_
- B. Twice a month \_\_\_\_\_
- C. Once a week \_\_\_\_\_
- D. Several times a week \_\_\_\_\_

9. Is a market order used?

- A. Yes \_\_\_\_\_
- B. No \_\_\_\_\_

10. What percentage of your food stuff comes from a garden?

- A. One-half \_\_\_\_\_
- B. More than one-half \_\_\_\_\_
- C. One-fourth \_\_\_\_\_
- D. Less than one-fourth \_\_\_\_\_
- E. None \_\_\_\_\_

11. Is your mother single head of the house?

- A. Yes \_\_\_\_\_
- B. No \_\_\_\_\_

12. Do the following live in your home? If so, how many?

- A. Parents \_\_\_\_\_
- B. Sisters \_\_\_\_\_
- C. Brothers \_\_\_\_\_
- D. Other relatives \_\_\_\_\_
- E. Others \_\_\_\_\_

13. Is your mother employed outside the home?

- A. Yes \_\_\_\_\_
- B. No \_\_\_\_\_

14. How many hours a week are you employed outside the home?

- A. None \_\_\_\_\_
- B. 10 hours \_\_\_\_\_
- C. 20 hours \_\_\_\_\_
- D. More than 20 hours \_\_\_\_\_

15. How many members of your family are employed outside the home?

- A. Father only \_\_\_\_\_
- B. Father and self \_\_\_\_\_
- C. Both parents and self \_\_\_\_\_
- D. Both parents \_\_\_\_\_
- E. More than both parents and self \_\_\_\_\_

# RECORD OF FOOD CONSUMPTION

## FORM II

Food Groups	Stand- ard Intake One Week	Food Intake for One Week													
		Mon- day	* ±	Tues- day	±	Wednes- day	±	Thurs- day	±	Fri- day	±	Sat- ur- day	±	Sun- day	±
Fruit Vegetable <u>  4  </u> servings	28														
Enriched and Whole Grain Bread Cereal <u>  4  </u> servings	28														
Lean Meat, Fish, Eggs, Poultry, Nuts, Dry Peas, Peanut Butter, and Beans <u>  2  </u> servings	14														
Milk-Cheese <u>  4  </u> cups per teenager	28														

- \* + Number of servings over daily minimum requirements for one day.  
 - Number of servings below daily minimum requirements for one day.



## CHAPTER III

### D I S C U S S I O N   O F   F I N D I N G S   W I T H P R E S E N T A T I O N   O F   D A T A

The instrument "Family Food Habits, Form I" furnished background information on each student. These data provided information concerning family food habits, which included the following areas: employment of family members, number of people living in the student's home, meals prepared in the home, food shopping practices of the family, and eating out patterns of the family. The sample was selected from 104 students from the ninth and tenth grade Boys' Homemaking classes at MacArthur High School, Houston, Texas.

An item analysis for family food habits of 52 high school boys in a metropolitan school is summarized in Table I. This analysis includes frequency and percentage for each of the question responses. The data of the survey for "Family Food Habits, Form I" shown in Table I revealed that the mother prepared the meals 92.3 per cent of the time, the sister 3.8 per cent of the time, and the student 3.8 per cent of the time.

TABLE I

FAMILY FOOD HABITS OF 52 HIGH SCHOOL

BOYS IN A METROPOLITAN SCHOOL

Item Number	Type of Information	Student Response	
		Number (N=52)	Per cent
1	Who prepares most of the meals in your home?		
	Mother	48	92.3
	Father	0	0.0
	Sister	2	3.8
	Self	2	3.8
2	What meals do you prepare for yourself?		
	<u>Breakfast</u>		
	None	15	28.8
	Two times	15	28.8
	Five times	14	26.9
	Seven times	8	15.3
	<u>Lunch</u>		
	None	24	46.1
	Two times	21	40.3
	Four times	1	1.9
	Five times	2	3.8
	Seven times	4	7.6

TABLE I (Continued)

Item Num- ber	Type of Information	Student Response	
		Number (N=52)	Per cent
	<u>Supper</u>		
	None	37	71.1
	One time	2	3.8
	Two times	8	15.3
	Five times	3	5.7
	Seven times	2	3.8
	<u>Snacks</u>		
	None	1	1.9
	Two times	9	17.3
	Three times	1	1.9
	Five times	10	19.2
	Seven times	31	59.6
3	How often do you and your family eat together?		
	Several times	22	42.3
	Every morning	7	13.4
	Weekends	4	7.6
	Sundays only	5	9.6
	Holidays only	2	3.8
	Every morning and night	11	21.1

TABLE I (Continued)

Item Num- ber	Type of Information	Student Response	
		Number (N=52)	Per cent
4	How many times a week do you eat at a		
	<u>Cafeteria</u>		
	None	39	75.0
	Two times	4	7.6
	Five times	7	13.4
	Seven times	2	3.8
	<u>Restaurant</u>		
	None	32	61.5
	Two times	15	28.8
	Five times	2	3.8
	Seven times	2	3.8
	Nine times	1	1.9
	<u>Short order specialty</u>		
	None	25	48.0
	Two times	17	32.6
	Five times	5	9.6
	Seven times	4	7.6
	Nine times	1	1.9

TABLE I (Continued)

Item Num- ber	Type of Information	Student Response	
		Number (N=52)	Per cent
5	Do you		
	Bring your lunch	4	7.6
	Eat school cafeteria lunch	28	53.8
	Eat school a la carte lunch	16	30.7
	Eat school snack bar items	15	28.8

The participants' responses for "What meals do you prepare for yourself?" were classed into the four areas of breakfast, lunch, supper, and snacks. The analysis revealed that 28.8 per cent of the participants did not prepare breakfast for themselves. The same percentage of students prepared breakfast twice a week. Slightly over one-fourth of those involved in this study prepared breakfast five times a week; and only a small percentage prepared breakfast seven times a week for themselves.

Hampton, Shapiro, and Huenemann (23) asserted that for years, home economists, nutritionists, dietitians, and workers in allied fields have emphasized the importance of a cheerful, well-planned breakfast time for the family, with a meal that includes one-third of the day's nutrients for each member of the family. However, Earl (10) related that teenagers of today leave their homes for school often by seven o'clock in the morning and do not return until six or later in the evening.

Research conducted by Edwards, Hogan, and Spahr (11) revealed that the majority of the students ate breakfast. The percentage of those not eating breakfast generally ranged from 3 to 15 in the various grades. More students in the tenth and twelfth grades missed breakfast than students in the seventh and ninth grades.

The findings concerning the preparation of lunch indicated that nearly one-half of the group studied did not prepare lunch for themselves. Twice a week approximately 40 per cent prepared their lunch. Very few students prepared their lunch four times, five times, or seven times each week. When responses concerning self-preparation of supper were analyzed, the data revealed that supper was the meal least frequently prepared by this group of teenagers.

At noon, according to Earl (10), students are busily darting about, snatching up a candy bar and soft drink, or munching a few crackers and cookies. At the evening meal, they may be in too great a hurry to make a later appointment to take the time to eat a nutritionally balanced meal. Spindler and Acker (48) also pointed out that time was a factor even in the school lunch program. Further analysis of the foods prepared by these young people showed that they preferred the preparation of snacks to the other meals.

The participants' responses to "How often do you and your family eat together?" were classed into the six areas of several times, every morning, weekends, Sundays only, holidays only, and every morning and night. Data from the survey revealed that a small percentage of the students ate every morning with their family, ate weekends with their

family, and ate Sundays only with their family. About one-fifth of the students ate every morning and night with family members while 42.3 per cent ate several times a week with their family.

Question 2, which concerned eating out patterns, was classed into three areas of cafeteria, restaurant, and short order specialty. The students' responses concerning how many meals were eaten out revealed that three-fourths of the entire group did not eat at a cafeteria. A small percentage ate two, five, or seven times per week at a cafeteria. Restaurant meals were not preferred by more than one-half of the students who took part in this survey while 28.8 per cent ate twice a week at restaurants. Slightly less than one-half of the whole group did not eat at short order specialties at which about one-third of the participants had their meals twice a week. For the entire sample short order specialties were frequented more often than cafeterias and restaurants.

As indicated in Table I a small percentage of the participants brought their lunches from home. Approximately 60 per cent of the group made their own food selections from the school a la carte or snack bar items. The data revealed that many of the students ate nutritionally balanced meals prepared by the school cafeteria.



Brown (5) related that lunch means one of two things to high school students: hot meals sold in the cafeteria or sack lunches from home. This study revealed that sack lunches provided varied reactions. Ten per cent of the freshmen and 35 per cent of the upperclassmen had fond memories of "brown bags and the tempting fare inside." However, the other freshman students who reported carrying sack lunches indicated that they became tired of sandwich lunches. Although school cafeteria lunches offer carefully balanced meals, some students indicated that quantity and not quality is emphasized. This study substantiated the results of other studies which indicate that appearance plays a major role in food acceptance.

An item analysis for family shopping habits of the 52 high school boys is summarized in Table II. This analysis includes frequency and percentage for each of the question responses.

When responses were analyzed by individual family members, it was found that the mother was the one who purchased the groceries most frequently for the family. Almost 10 per cent of this marketing was done by the students. A very small percentage of the fathers took part in this activity.

TABLE II  
FAMILY SHOPPING HABITS OF 52 HIGH SCHOOL  
BOYS IN A METROPOLITAN SCHOOL

Item Num- ber	Type of Information	Student Response	
		Number (N=52)	Per cent
6	Who does the grocery shopping in your family?		
	Mother	25	48.0
	Father	3	5.7
	Self	5	9.6
	Others	19	36.5
7	Is this shopping done at a		
	Chain supermarket	50	96.1
	Independent grocery	0	0.0
	Drive-in grocery	0	0.0
	Other	2	3.8
8	How often is grocery shopping done for your family?		
	Once a month	1	1.9
	Two times a week	5	9.6
	Once a week	40	76.9
	Several times a week	6	11.5

TABLE II (Continued)

Item Num- ber	Type of Information	Student Response	
		Number (N=52)	Per cent
9	Is a market order used?		
	Market order used	30	57.6
	No market order used	22	42.3
10	What percentage of your food comes from a garden?		
	One-half	8	15.3
	More than one-half	4	7.6
	One-fourth	10	19.2
	Less than one-fourth	16	30.7
	None	13	25.0

The participants' responses for "Where is the grocery shopping done?" were classed into the four areas of chain supermarket, independent grocery, drive-in grocery, and other. The participants' responses concerning how often the family shopped at a chain supermarket revealed that 96.1 per cent of the families represented in this study did shop at a chain supermarket while 3.8 per cent shopped at another type of store. The results were not surprising to the investigator as there are many chain supermarkets in the area.

The frequency of the families' grocery shopping was divided into four categories: once a month, two times a month, once a week, and several times a week. The statistical analysis in this area revealed that 98 per cent of the families' food purchases were done weekly. The investigator was pleased to find that over one-half of the participants used a market order whereas 42.3 per cent did not use a market order.

The students' replies concerning the percentage of food from gardens were categorized into five divisions: one-half, more than one-half, one-fourth, less than one-fourth, and none. The analysis of the responses showed that approximately one-fifth of the families obtained one-fourth of their food from a garden while one-fourth did not incorporate garden products in their diets. Mayer (52) pointed out

that city dwellers in the South tend to show food habits similar to those seen in the country, except that the availability of green vegetables is decreased. Food is still home-grown in backyard gardens and chicken coops. Most of it is purchased, however, generally at large supermarkets.

An item analysis for family background information concerning 52 high school boys in a metropolitan school is summarized in Table III. This analysis includes frequency and percentage for each of the question responses.

Responses to the question whether the mother is the single head of the house were classified into two areas: mother head of house and head of house other than mother. The data indicated that only a minority of the students' mothers were single heads of the house whereas a large percentage of the families had other family members as heads of their homes.

Answers concerning the number of residents in the student's home were divided into four groups: parents, sisters, brothers, and other relatives. Less than 4 per cent did not have parents living in the participants' homes, and the majority of these young people lived with their parents. Within this group, slightly over one-fifth of the students had no sisters living with them whereas over 70 per cent had

TABLE III  
FAMILY BACKGROUND INFORMATION CONCERNING  
52 HIGH SCHOOL BOYS IN A  
METROPOLITAN SCHOOL

Item Num- ber	Type of Information	Student Response	
		Number (N=52)	Per cent
11	Is your mother single head of the house?		
	Mother head of house	8	15.3
	Head of house other than mother	44	84.6
12	Do the following live in your home? If so, how many?		
	<u>Parents</u>		
	No response	2	3.8
	One parent	7	13.8
	Two parents	43	82.6
	<u>Sisters</u>		
	No response	11	21.1
	One sister	21	40.6
	Two sisters	16	30.7
	Three sisters	4	7.6

TABLE III (Continued)

Item Num- ber	Type of Information	Student Response	
		Number (N=52)	Per cent
	<u>Brothers</u>		
	No response	9	17.3
	One brother	22	42.3
	Two brothers	12	23.0
	Three brothers	7	13.4
	Four brothers	2	3.8
	<u>Other relatives</u>		
	No response	47	90.3
	One relative	4	7.6
	Six relatives	1	1.9
13	Is your mother employed outside the home?		
	No response	1	1.9
	Employed	20	38.4
	Not employed	31	59.6
14	How many hours per week are you employed outside the home?		
	Not employed	25	4.8
	10 hours	3	5.7
	20 hours	5	9.6
	More than 20 hours	19	36.5

TABLE III (Continued)

Item Num- ber	Type of Information	Student Response	
		Number (N=52)	Per cent
15	How many members of your family are employed outside the home?		
	No response	3	5.7
	Father only	13	25.0
	Father and self	12	23.0
	Both parents and self	10	19.0
	Both parents	6	11.5
	More than both parents and self	8	15.3



sisters residing in their homes. The data also revealed that most of the participants had one, two, or three brothers dwelling with them. As for the number of relatives sharing the students' residence, over 90 per cent of the group did not have relatives within their homes.

The participants' responses for "Is your mother employed outside the home?" were classed into the three areas of no response, employed, and not employed. Data from the survey on this category revealed that a small percentage of the participants did not live with their mothers. It was surprising to the investigator that 59.6 per cent of the participants had mothers that were not employed outside the home.

When the responses of the participants as to the number of hours the students were employed outside the home were combined, the following results were found: a high percentage were not employed outside the home, a small percentage were employed 10 and 20 hours a week outside the home, and 36.5 per cent of the participants were employed more than 20 hours per week. Covan and co-writers (7) noted that in the suburban and urban communities students with the longest working hours had poorer diets than those working fewer hours or none at all.

The number of family members working outside the home was investigated. Included in this category those considered as possible working combinations were: father only, father and self, both parents and self, both parents, and more than both parents and self. Nineteen per cent of the students and both parents were employed outside the home, and only 11.5 per cent of the students had both parents employed outside the home. Data from the survey revealed that 5.7 per cent of the participants did not have family members employed outside the home. Mayer (52) stressed that nutritional insufficiency and income insufficiency are inseparable problems. Within the present food distribution system in the United States adequate nutrition is impossible without adequate income, although income alone cannot guarantee superior nutrition. Experience and evidence indicate that when income is limited, the family unit may feel that certain priorities stand higher than the food budget.

A chi-square analysis was used to determine the significance of the change of eating habits for the pre-unit period to the post-unit period. The effect of the teaching on the students' eating habits was determined with a .05 significance level.

The Basic Four Food Groups analyzed by the chi-square analysis were fruits and vegetables; enriched and whole

grain bread and cereal; lean meat, fish, poultry, and eggs; and milk and cheese. The results of this analysis are found in Table IV.

Data relative to the fruit and vegetable basic group revealed that 27 boys ate from 0-14 servings for the seven-day period, 24 boys ate from 15-28 servings for the seven-day period, and one boy ate over 28 servings for the seven-day period prior to the study of the food unit. For the week following the study of the food unit, 18 boys ate from 0-14 servings for the seven-day period, 21 boys ate from 15-28 servings for the seven-day period, and 13 boys ate over 28 servings for the seven-day period.

The chi-square analyses of data collected for the fruit and vegetable basic group indicated differences between the pre-unit period and the post-unit period of the food study, and these analyses were significant at the .05 level. A higher proportion of the boys ate more fruits and vegetables in the post-unit period than in the pre-unit period. ( $\chi^2=9.09$ ,  $df=2$ ,  $p<.05$ .) The results found in this study are contrary to trends found in most studies. For example, Mayer (52) found in an urban Negro study, consumption of fresh vegetables is low and consumption of citrus fruits is negligible. Pilgrim (41) concluded that among the least liked items are mashed turnips, broccoli, asparagus,

TABLE IV

CHI SQUARE VALUE DISTRIBUTION OF WEEKLY CONSUMPTION OF FOODS  
BY 52 HIGH SCHOOL BOYS IN A METROPOLITAN SCHOOL

Type of Food	Consumption of Food					
	One Week Prior to Study of Foods Unit			One Week Following Study of Foods		
	Number of Servings			Number of Servings		
	0-14	15-28	Over 29	0-14	15-28	Over 29
Fruits and Vegetables	27	24	1	18	21	13
* $\chi^2 = 9.09$ , significant at .05 level						
$\chi^2 (.05, 2) = 5.99$						
Enriched and Whole Grain Bread and Cereal	13	30	9	6	22	24
* $\chi^2 = 3.25$ , non-significant at .05 level						
$\chi^2 (.05, 2) = 5.99$						
Lean Meat, Fish, Poultry, Eggs	34	16	2	17	24	11
* $\chi^2 = 3.47$ , non-significant at .05 level						
$\chi^2 (.05, 2) = 5.99$						
Milk and Cheese	16	36	--	8	44	--
$\chi^2 = 6.37$ , significant at .05 level						
$\chi^2 (.05, 1) = 3.84$						

\*Complex Chi Square and the Contingency coefficient (c)

cauliflower, and several other vegetables. Actually few vegetables are well liked. Pilgrim (41) observed that vegetable combinations, such dishes as stewed tomatoes and egg-plant decrease in preference with increasing education.

The data in regard to the enriched and whole grain bread and cereal basic group revealed that 13 boys ate from 0-14 servings for the seven-day period, 30 boys ate from 15-28 servings for the seven-day period, and nine boys ate over 28 servings for the seven-day period prior to the study of the food unit. For the week following the study of the food unit, six boys ate from 0-14 servings for the seven-day period, 22 boys ate from 15-28 servings for the seven-day period, and 24 boys ate over 28 servings for the seven-day period.

The chi-square analyses of data included for the enriched and whole grain bread and cereal basic group indicated that differences between the pre-unit and post-unit periods of the food study were not significant at the .05 level. The proportion of boys eating enriched and whole grain bread and cereals was no higher in the post-unit period than in the pre-unit period. ( $\chi^2=3.25$ ,  $df=2$ ,  $p>.05$ .) These findings were expected by the investigator as most young men eat adequate amounts of the bread-cereal group,

and to eat an increased amount was not emphasized in the unit of study.

Data concerning the lean meat, fish, poultry, and egg basic group revealed that 34 boys ate from 0-14 servings for the seven-day period, 16 boys ate from 15-28 servings for the seven-day period, and two boys ate over 28 servings for the seven-day period prior to the study of the food unit. For the week following the study of the food unit, 17 boys ate from 0-14 servings for the seven-day period, 24 boys ate from 15-28 servings for the seven-day period, and 11 boys ate over 28 servings for the seven-day period.

The chi-square analyses of the data assembled for the lean meat, fish, poultry, and egg basic group indicated that differences between the pre-unit and post-unit periods of the food study were not significant at the .05 level. The proportion of boys eating lean meat, fish, poultry, and eggs was no higher in the post-unit period than in the pre-unit period. ( $\chi^2=3.47$ ,  $df=2$   $p>.05$ .)

Data relative to the milk and cheese basic group revealed that 16 boys ate from 0-14 servings for the seven-day period, 36 boys ate from 15-28 servings for the seven-day period, and there were no boys who ate over 28 servings for the seven-day period prior to the study of the food unit.

For the week following the study of the food unit, eight boys ate from 0-14 servings for the seven-day period, 44 boys ate from 15-28 servings for the seven-day period, and there were no boys who ate over 28 servings for the seven-day period.

The chi-square analyses of the data collected for the milk and cheese basic group indicated that differences between the pre-unit and post-unit periods of the food study were significant at the .05 level. A higher proportion of the boys consumed more milk and cheese in the post-unit period than in the pre-unit period. ( $\chi^2=6.37$ ,  $df=2$ ,  $p<.05$ .)

## CHAPTER IV

### S U M M A R Y, C O N C L U S I O N S, A N D R E C O M M E N D A T I O N S

The purpose of the study was to investigate the eating habits of a group of selected high school boys before and after a nine-week period of foods and nutrition education. Specific purposes for the study include the following:

- 1) To investigate the eating habits of a group of teenage boys;
- 2) To teach the group of teenage boys a foods and nutrition unit;
- 3) To investigate the eating habits of the same group upon completion of the unit;
- 4) To analyze and compare pre-unit and post-unit food habits;
- 5) To establish the need for teenage boys' foods and nutrition education; and
- 6) To develop a foods and nutrition curriculum to meet the needs of the group studied.

Two instruments were developed by the investigator. "Family Food Habits, Form I" included family food habits, family shopping habits, and family background information. The "Daily Record of Food Consumption, Form II" secured information concerning the Four Basic Food Groups and standard food intake for one week, the number of servings over daily minimum requirements, and the number of servings below



daily minimum requirements. The information from the "Daily Record of Food Consumption, Form II" was collected before the nine-week food unit was taught, and on completion of this unit the same procedure was followed.

An item analysis for family food habits, family shopping habits, and family background information of the sample was summarized. This analysis includes frequency and percentage for each of the participants' responses to the various questions.

Data revealed that mother prepared 92.3 per cent of the meals in the home while the student and a sister prepared an equal amount of meals. Approximately one-fourth of the students prepared breakfast for themselves twice a week. One-fourth of the students prepared the same meal five times a week. The student prepared lunch and supper fewer times than breakfast and snacks for himself. The student prepared snacks for himself more times per week than breakfast, supper, or lunch.

The student and his family did not eat together very often. Only 21.1 per cent of the students and their families ate together every morning and night while 42.3 per cent of the students ate with their families several times a week.

The boys preferred eating short order specialty food rather than restaurant and cafeteria food. Seventy-five per cent of the students did not eat cafeteria meals while 61.5 per cent did not eat restaurant meals and 48 per cent did not eat short order specialty foods. Approximately 50 per cent of the boys selected their lunch from the school a la carte items and snack bar items. It was noted by the investigator that students evidently could not differentiate between lunch and eat school a la carte items; therefore it was possible both items were checked. The present study indicated that students ate more frequently at restaurants, schools, and short order specialties than at home. Therefore, it is important for teenagers to become more aware of correct food selection.

Data analysis on family shopping habits revealed that mother and others purchased 84.5 per cent of the food for the family. The greater part of this shopping was done once a week at chain supermarkets. A market order was used for this shopping a little over half the time. Seventy-five per cent of the students obtained some of their food from a garden.

The family background information revealed that 82.6 per cent of the students lived with both parents, 15.3 per cent of the students lived with their mothers, while 2.1 per cent lived with persons other than their parents. The

majority of the participants had one sister or two sisters, and one brother or two brothers. A small percentage of the students had other relatives living in their homes. Approximately 40 per cent of the mothers were employed outside the home. Approximately 36 per cent of the boys worked outside the home more than 20 hours a week; and 45.8 per cent of the students had both parents and self, both parents, and more than both parents and self employed outside the home.

Data concerning the participants' family background indicated that most of the boys in the study lived with both parents and more than one sister and brother. Data revealed that much of the family's time is spent working outside the home. Since the family seems to have little time in the home for food preparation, time and energy management need to be made a more meaningful part of the food study.

A chi-square analysis was used to determine the significance of the change of eating habits from the pre-unit period to the post-unit period. "Daily Record of Food Consumption, Form II" was used to secure these data. The effect of the teaching on the students' eating habits was determined with the .05 significance level. Data revealed a significant change in the eating habits of the boys after the foods and nutrition unit was taught in the fruit and vegetable group and the milk and cheese group. The increased

consumption of the fruit and vegetable group pleased the investigator, as much planning was done to introduce a large variety of fresh, frozen, and canned fruits and vegetables in the unit of study. Alford and Tibbets (3) obtained similar results in a study concerning fruits and vegetables: they found that vegetable consumption increased significantly in the experimental group and did not in the control group. For these children, education was an important factor in the vegetable consumption practices even with the serving of an adequate diet.

In a nutrition survey of 6200 teenage youth Edwards, et al. (11) reported that although 66 per cent of the group consumed two cups or more of milk or milk products, 14 per cent of the students had none. Intake of milk was highest in the seventh and ninth grades where approximately 72 per cent of the participants consumed two servings or more. The participants' intake was lowest in the tenth and twelfth grades in which only 57 per cent of the youth consumed this amount. For the students in this study food laboratory concepts and experiences were important factors in the milk and cheese food intake practices. These teenagers were made aware of the importance of availability of food in the home--cheese and milk are two of these items.

According to the data there was a non-significant change in the eating habits of the boys after the foods and nutrition unit was taught in the areas of the bread and cereal group and the lean meat, fish, poultry, and egg group. These results revealed the effectiveness of the unit of study. The investigator attempted to make the students aware of the following: most young men include adequate amounts of the bread and cereal group in their daily food intake, and probably it was not necessary for the students to change their eating patterns in this area. Edwards, et al. (11) were of the same opinion that bread and cereals generally were eaten in adequate or more than adequate amounts; 86 per cent ate three servings or more.

In the final report of the White House Conference on Food, Nutrition, and Health, 1969, Mayer (52) made the following comments concerning nutrition education:

- 1) Tone, manner, and feeling are crucial to the success of this task in public education;
- 2) Too often in the past, nutrition education has carried with it an air of dullness, didacticism, and condescension;
- 3) The biggest job in nutrition education is to look at the problems through the eyes of the people who need to learn, remembering that they may not realize their need;
- 4) A final suggestion is to emphasize the positive aspects of nutrition more than the don't's, the

"no-no's," and the terrors. Good nutrition . . . good eating . . . not only is enjoyable in itself, it is also the basis for the better, more enjoyable life we all aspire to. An emphasis on the rewards of good nutrition can be one of the most powerful appeals in the educational campaign.

With reference to the findings of the present study, the investigator recommends the following changes to be considered by educators in boys' food and nutrition curricula:

- 1) Place more emphasis on nutritious snacks;
- 2) Incorporate more time management, meal management, and aesthetics of meal preparation;
- 3) Emphasize better selection of foods when eating out; and
- 4) Encourage the use of low-cost meat, fish, eggs, and poultry in food preparation.

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