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The main purpose of this study was to investigate the diets of forty Home Economics students eating in the University dining halls at North Carolina Agricultural and Technical State University to determine (1) whether the food chosen by college students in Home Economics conforms to the Daily Food Plan of the United States Department of Agriculture; (2) to compare the nutritive value of the food chosen by these students with the Recommended Daily Dietary Allowances; and (3) to identify, if possible the factors which influence dietary choices of Home Economics majors at the University. Forty students were chosen at random. There were 10 students from each class. This represented 20 per cent of the total enrollment of the Home Economics Department.

The nature of the food chosen was determined by a daily record kept by each student of the foods eaten for a period of five consecutive days during the winter of the academic year (1968-69). The nutritive value of the individual diets was calculated using values given in USDA Handbook Number 8. The nutritive value of the individual diets, and of the class averages were compared with the Recommended Daily Dietary Allowances of the Food and Nutrition Board, National Research Council. The dietary choices were also compared with the "Basic Four Food Plan," U. S. Department of Agriculture. The quantitative data were considered as averages for the students in each of the four academic years.

The majority of students chose diets that conformed rather well to the recommendations used in the evaluation. However, the iron content of the diets of all students studied was considerably below the recommended amount. It was difficult to identify the specific factors which influenced

the students' choices of food. However, a number of upper classmen indicated that they had learned to like more foods during their years at the University. There was little evidence that the differences identified in the socio-economic levels of the families of the students affected the food choices. It was concluded that the students of this study chose fairly adequate diets with the exception of iron which presents a special problem.

DIETS OF HOME ECONOMICS STUDENTS EATING IN THE
DINING HALLS OF NORTH CAROLINA
AGRICULTURAL AND TECHNICAL
STATE UNIVERSITY

by

Eula King Vereen

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the Faculty of the Graduate School at
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Approved by

Faye W. Grant
Thesis Adviser

APPROVAL SHEET

This thesis has been approved by the following committee of the Faculty of the Graduate School at The University of North Carolina at Greensboro.

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CHAPTER I

INTRODUCTION

This study is concerned with the diets of home economics majors at the North Carolina Agricultural and Technical State University. In deciding to carry out this study the investigator was motivated by several factors and conditions. Recent reports suggest that dietary inadequacies exist for a portion of the population of the United States. Surveys have shown that eating habits of young people are particularly poor and that many fail to supply the recommended amounts of some essential nutrients.

The students at North Carolina Agricultural and Technical State University are predominately Negro. These students come from a variety of socio-economic backgrounds so that a variety of food habits would be expected. The food service at the University aims to provide a wide variety of nutritious food. However, the extent to which students availed themselves of the opportunity to choose adequate diets was not known. The present study was undertaken in order to determine the nature of the food choices made by Home Economics students, whose meals were provided by the commercial food service utilized by the University.

Information about the diets of Home Economics students at North Carolina Agricultural and Technical State University was obtained for a period of five consecutive days in the winter of the academic year 1968-69. The students provided the writer with background information concerning their families and former habits of eating. The

nutritive values of the diets were subsequently evaluated by the writer in relation to approved standards.

The specific objectives of the investigation were (1) to determine whether or not the food chosen by college Home Economics students conforms to the daily food plan recommended by the United States Department of Agriculture; (2) to compare the nutritive value of food chosen by specified college students with the Recommended Daily Dietary Allowances of the National Research Council; and (3) to identify, if possible, the factors which influence dietary choices of Home Economics majors at North Carolina Agricultural and Technical State University.

CHAPTER II

REVIEW OF LITERATURE

Recent study of food consumption in the United States has shown that fewer households had good diets in 1965 than in 1955 (1). In 1965 only 50 per cent of the households had diets that were rated as "good" whereas in 1955 the proportion having good diets was 60 per cent. Decreased use of milk products, and fruits and vegetables, the foods which are the main sources of calcium, ascorbic acid, and vitamin A, were chiefly responsible for changes in dietary levels. Since the diet of the population of the United States as a whole seemed to have deteriorated it seemed of particular interest to examine the diets of a group of young people in a university situation.

Everson (2) discussed the diets of teenagers. She suggested that a low consumption of milk, and of fruits, and of yellow and green vegetables will result in intakes of calcium, vitamin A, and ascorbic acid which are below the amounts recommended. She emphasized further that the teenage period is of particular importance for girls since at this stage of the life cycle good dietary habits may have long term effects on nutritive status and health.

In 1961 Edwards, Spahr and Hagan (3) found that a large number of teenage youths in Greensboro, North Carolina, consumed diets in which quantities of milk, green and yellow vegetables and fruits probably were less than optimum. The nature of these diets also suggested that

vitamin A, ascorbic acid and calcium were poorly supplied. The amount of dark green and yellow vegetables was lowest among senior high students, an age group close to that of the college freshmen.

Spindler (4) carried out a study of the diets of young people in Illinois and found only one fourth of the girls and one half of the boys were receiving as much milk or its equivalent as is recommended by the United States Department of Agriculture's Basic Four Plan. Less than half of the boys and girls were consuming the recommended servings of fruits and vegetables. In general the adolescent boys consumed better diets than the teenage girls.

A study by Wharton (5) of the diets of adolescents in Southern Illinois showed that in general the foods high in calcium, iron, vitamin A, and ascorbic acid were consumed in low amounts. Again the diets of the girls were poorer than those of the boys.

In a study carried out by Hampton (6) on the diets of teen-agers in California, the nutrients in the lowest supply again were found to be calcium and iron. Negro subjects and those in lower socio-economic groups tended to have lower intake of nutrients than did white boys and girls in other socio-economic groups.

Meyers (7) stated in a study that was carried out in Boston in a predominantly Negro section that Negro children had lower ratings of satisfactory meals than did most of the other children. The differences in the intake of fruits and vegetables and milk were statistically significant for the Negro children.

In a study by Bryan (8) in five rural counties of North Carolina, inadequate diets were more frequent in the Negro than in the white

families. Fifty-five per cent of the crippled children studied by Bryan were found to have inadequate diets. The majority of the children with inadequate diets were Negroes.

Grant (9) carried out a study of the diets of Negro families in Charleston, South Carolina, in which the subjects were divided in three classes. Only the subjects in the highest socio-economic group studied had three or four vegetables and fruits per person per day. No group had the recommended amount of milk each day nor did those in the lower classes of the subjects have the maximum servings of meat, poultry and eggs.

Huenemann and her associates (10) studied diets of junior and senior high school students in Berkeley, California. They suggested that dietary patterns were more closely related to ethnic group than to socio-economic group. A large number of the Negro teenagers had highly irregular eating patterns.

Armstrong, Eppright, and others (11) carried out a study of adolescent girls for the purpose of investigating the relationship of certain physiologic, sociologic, and psychologic factors to eating habits and food selection. It was found that the girls who showed the best emotional stability and conformity, as determined by the scores on the Minnesota Counseling Inventory, had better diets than girls who apparently were less well-adjusted.

There appears to have been relatively few studies in the past few years of the diets of college students. Schuch (12) studied food likes and dislikes of Home Economics and Pharmacy majors at South Dakota State University and Alcorn Agricultural and Mechanical College in

Mississippi. It was believed that area, national origin, and racial differences might be reflected in the eating patterns of students in two such widely separated locations. Eggs were well-liked in both institutions, as were apples, bananas, and oranges. Schuch also found that grapefruit was more popular at South Dakota than at Alcorn; that watermelon was well-liked in both places; and that rhubarb and prunes were among the fruits with the lowest acceptance in both institutions. Where vegetables were concerned, the consumption of green leafy vegetables with turnip greens heading the list, was greater in Mississippi than in South Dakota. Asparagus was rated lower in Mississippi than in South Dakota; potatoes or yams were popular in Mississippi, and were eaten frequently. Meat consumption was high in Mississippi. The best liked meats were found to be chicken, pork, beef, and all varieties of sausage.

Knickrehm (13) studied food acceptance of college students at the University of Nebraska. His findings indicated that vegetables are the menu category for which satisfaction of the student clientele is most difficult to achieve.

Jerome (14) reported concerning the changing of meal patterns among Southern-born Negroes now living in the midwest. She pointed out that results obtained from this study support the hypothesis that traditional food habits will be retained in a new environment.

Summary of Review of Literature

Recent study of food consumption in the United States has shown that in general diets appear to be less good than in 1955. The foods which are the main sources of calcium, ascorbic acid and vitamin A were consumed in smaller quantities by several groups. A number of studies

also have been carried out on the diets of young people in various sections of the country. Similar findings have been the results of most of these studies. In each case, calcium, vitamin A, ascorbic acid and iron have been found low.

In college food service, the acceptance of vegetables by students have been found to be poor. Regional, ethnic, and sex differences have been identified. In one study in the South, greens were much more popular than in the North and differences in kinds of fruits liked were identified; in several states the diets of Negro children and of teenagers appeared to be poorer than those of Caucasians; and in some studies the diets of young girls were found to be poorer than those of boys.

CHAPTER III

METHODS OF THE STUDY

At the time this study was carried out, there were 198 students enrolled in the Department of Home Economics at North Carolina Agricultural and Technical State University. When this study was being planned (Winter, 1968-69), the aim was to have approximately 20 per cent of the total student body as participants. Forty students thus were chosen as subjects. This represented slightly more than 20 per cent of the total to allow for those who did not wish to take part in the study or who might withdraw before its completion.

The choice of subjects was made by placing the names of all students in separate boxes according to their classification as Freshmen, Sophomores, Juniors, and Seniors. A staff member from another department drew the desired number of names.

Each participant was notified by a letter which explained the reason for the study and asked whether or not they would be willing to participate. Ten students in each classification responded in the affirmative, giving a total of forty students.

Explanation of the Study to the Students Including Use of the Form and Questionnaire

A meeting was arranged with the students for the purpose of explaining the plan of the study, including the use of the forms for recording dietary information and the use of the questionnaire used

to obtain background information.¹

The form to be used for the dietary record provided for information on the kind and amount of food chosen and eaten by the students throughout the day, including snacks.

The investigator gave the students the following directives for recording the data:

1. Carry the form with you throughout the day. It may be attached to a notebook or carried in your handbag as you prefer.
2. As soon as you have selected the food for a particular meal, fill in the appropriate space with the name of each food selected.
3. Indicate whether food is cooked or raw. In the column for cooked food indicate cooking methods when you know this. Example: egg, fried or scrambled; chicken, fried, broiled or roasted. In the column for raw food indicate the name of the food eaten, as one apple, or one serving of tossed salad, or whatever the food is.
4. Fill in the column headed "amount or measure", that is write the number of servings, pieces, glasses, etc., as appropriate. For example: meats, indicate as one drumstick, one breast, or quarter of chicken.

¹Copies of the letter sent to the students, of the form for the dietary record, and of the questionnaire are included in Appendix A.

5. At the end of the meal, write in column with the heading "eaten", the amount you actually ate.
Example: one half the serving of rice or one half glass of milk as the case may be.
6. Write down food that you eat between meals or before going to bed, (evening snacks) in spaces provided.
7. Most important: Meet with Mrs. Vereen daily as specified to turn in the form for the previous day.

The Use of the Questionnaire

The questionnaire was filled out by the students at the first meeting. Its purpose was to obtain information on the background of the students and on their eating habits before coming to the University. They were asked specifically about the number of persons in their families, the occupation of their parents, the family income, origin of their food, and food likes and dislikes.

Evaluation of the Data

In order to evaluate the quantitative information provided by the records from the students as accurately as possible the investigator weighed the standard servings or measured the main items on the menu daily.

Recipes were obtained for mixed dishes such as chicken salad, tomato sauce with spaghetti, and meat loaf. The nutritive values were calculated on the basis of these recipes.

Each dietary record was considered separately. The nutritive

value of food chosen by each student during the five days was calculated using values obtained in Agriculture Handbook Number 8 (15). The values considered included: energy, protein, carbohydrates, calcium, iron, vitamin A, thiamin, riboflavin, niacin, and ascorbic acid. Following the initial calculations, the nutritive values were considered as averages for the ten students in each class.

The nutritive values of the individual diets and of the class averages, were compared then with the Recommended Daily Dietary Allowances of the National Research Council (16). Also a comparison was made of the dietary choices with the actual recommendations of the "Basic Four Food Groups" Dietary Pattern Leaflet (17).

CHAPTER IV

DESCRIPTION OF THE STUDENTS, INCLUDING SOCIO-
ECONOMIC ASPECTS OF THEIR FAMILIES

The students in this study ranged in age from eighteen to twenty-two years, with the exception of one senior whose age was twenty-three years. The weights of the Freshmen class were within normal limits with the exception of one student who was overweight. This suggested that they had been receiving sufficient food for their caloric requirements before entering college.

The socio-economic characteristics of the students' families differed considerably, although there were similarities. The fathers and some of the mothers were employed variously as shown in Table 1. One father was retired and five were deceased; six fathers were farmers; nine fathers were employed in factory work or as janitors and custodians; there were several mechanics and constructionists and a number of individuals employed miscellaneously, including one in high school teaching. Four of the students' families were headed by the mothers. Their employment included the following: one as a domestic worker, one substitute teacher, one as a teacher's aide, and one as a nurse's aide. In case of two students, both parents were deceased.

Information on the incomes of the families is given in Table 1 also. As may be seen, the incomes of the family heads ranged from \$90.00 monthly to \$700.00. In seventeen of the families the mothers worked outside

TABLE 1
OCCUPATIONS AND INCOMES OF HEADS OF THE FAMILIES
OF FORTY NORTH CAROLINA STUDENTS^a

Occupation of Family Head	Number	Head's Average Monthly Earnings	Range of Head's Monthly Income	Cash Income by Other Parents	Average Amount of Cash Supplement	Family Income Total or Range	Some Food Raised or Commodity Food Received
Retired	1	\$150.00	\$ -	1	\$375	\$525	1
Farmers	6	288.00	200 - 330	3	387	590 - 700	6
Non Skilled Workers	2	285.00	270 - 300	1	260	530 -	2
Factory Supervisors	3	333.00	250 - 400	3	233	450 - 700	3
Janitors and Custodians	3	350.00	300 - 450	-	-	350 -	1
Semi-Skilled Factory Workers	1	400.00	-	1	300	700	1
Truck Driver	1	400.00	-	-	-	400 -	-
Policeman	1	400.00	-	1	150	550 -	-
U.S. Postal Worker	1	500.00	-	1	350	850 -	-
Telephone Linesman	1	500.00	-	1	650	-	1
Shipping Clerks	2	525.00	-	1	800	1450 -	-
Probation Officer	1	530.00	-	1	500	1030 -	-
Constructionists	2	550.00	400 - 700	-	-	-	1
Mechanics	3	567.00	400 - 800	2	325	700 - 1350	1
Food Service Supervisor	1	600.00	-	-	-	-	1
High School Teacher	1	600.00	-	1	575	1175 -	1
Marine Corp	1	700.00	-	-	-	-	1
Domestic (Mother)	1	90.00	-	-	-	-	1
Substitute Teacher (Mother)	1	200.00	-	-	-	-	1
Teacher's Aide (Mother)	1	250.00	-	-	-	-	-
Nurses' Aide (Mother)	1	300.00	-	-	-	-	-

^aThe total shown here is 35. Five of the students' fathers were deceased.

the home so that the cash incomes ranged from a total of \$90.00 to \$1450.00 monthly. Three families (those headed by mothers) had yearly incomes from about \$1000.00 to \$3000.00. This places them at the so-called poverty level.

Food was raised by two of the women with the lowest incomes. The domestic worker in this group raised pork as well as vegetables. She also received commodity food. Some food also was raised in twenty of the other families. The farmers raised nearly all of their food with the exception of the wheat used. Six of the others raised pork and chickens, or other sources of meat. The majority raised only vegetables and a few fruits. The food raised would add considerably to the family incomes.

The food likes and dislikes of the students when they entered the University are shown in Table 2. Green and yellow vegetables were disliked by more of the students than were foods in any of the other groups. Twenty-four of the forty students disliked one or more foods in this important group. This represents 60 per cent of the students, a fairly large number. Thirty per cent disliked one or more "Other Vegetables." Liver and other organ meats also were not popular since 22.5 per cent indicated that they disliked one food in this group.

Foods in the Milk Group were well liked by most students, as far as the initial responses went. Only one student indicated that she disliked milk, two disliked cheese, and only one student disliked ice cream.

Thirteen students had learned to like foods in the Green and Yellow Vegetable category during their years in school. None of the Freshmen had learned to like foods in this group at the time of this study.

TABLE 2

NUMBER OF STUDENTS WHO DISLIKED SPECIFIED
FOODS UPON ENTERING COLLEGE AND THOSE
WHO LEARNED TO LIKE THOSE FOODS

Food	Disliked Before Entering College (Number)					Learned To Like (Number)				
	Fresh- men	Soph- omores	Jun- iors	Sen- iors	Total	Fresh- men	Soph- omores	Jun- iors	Sen- iors	Total
Beans and Peas	1	4	-	2	7	1	1	-	-	2
Leafy green and yellow vegetables	4	6	8	6	24	-	5	4	4	13
Other vegetables	1	4	3	4	12	-	3	2	3	8
Tomatoes	-	-	-	2	2	-	-	-	1	1
One or more Other fruits	-	-	-	1	1	-	-	-	-	-
Certain bread stuffs	2	-	-	-	2	-	-	-	-	-
Cooked cereals	-	1	2	2	5	-	-	-	1	1
Noodles and Spaghetti	1	-	2	-	3	-	-	-	-	-
Milk, cheese, ice cream	1	-	-	3	4	-	-	-	1	1
Beef and veal	2	2	2	-	6	-	-	-	-	-
Pork and sausage	-	2	1	-	3	-	1	-	-	1
Chicken	-	-	-	1	1	-	-	-	-	-
Fish	2	-	1	1	4	-	-	-	1	1
Lung and other organ meats	2	2	2	3	9	-	-	-	1	1
Eggs	1	-	-	-	1	-	-	-	-	-
Certain cakes and pastries	-	1	2	1	4	-	1	-	1	2

Eleven of the students had been accustomed to eating only two regular meals each day before they came to college. Breakfast and dinner were the meals most often eaten.

A comparison of the food likes and dislikes of students at North Carolina Agricultural and Technical State University in relation to those reported by Schuch (12) for students of South Dakota State University and Alcorn Agricultural and Mechanical College in Mississippi, showed that, in general, the food likes and dislikes of the students at North Carolina Agricultural and Technical State University appeared to be rather more like those of students at South Dakota State University than like those in the Mississippi State College. Fruit was well liked at North Carolina Agricultural and Technical State University and by those in South Dakota, whereas, they were less popular in Mississippi. Green leafy vegetables were better liked in Mississippi than in North Carolina and in South Dakota. Knickrehm (13) found that at the University of Nebraska vegetables were the least popular of food groups with student clientele.

CHAPTER V

RESULTS AND DISCUSSION

Description of the Menus

The food service at the North Carolina Agricultural and Technical State University is provided by a well-known commercial catering company. In general the menus are varied from day to day and there is a choice of main dishes, vegetables, and other foods at each of the three meals. The main foods served during the five days of the study are shown in Appendix B.

The portions of many of the foods are probably about average for commercial food services. Portion weights of most of the commonly served foods are shown in Appendix B. The portion weight of beef stew for example was 177 grams (6 oz.), that of veal cutlet was 118 grams (4 oz.), chicken pot pie 111 grams ($3\frac{1}{2}$ oz.).

The size of the serving of vegetables ranged from 60 grams (2 oz.) for green peas to 129 grams ($4\frac{1}{3}$ oz.) for broccoli. Fifty-two grams (nearly 2 oz.) of citrus fruit juice and a variety of whole fresh fruits, as well as canned fruits were served for breakfast. The fresh fruits and canned fruits also were served at the other meals.

From 40 ($1\frac{1}{3}$ oz.) to 160 grams ($5\frac{1}{3}$ oz.) of cake, depending upon the type of cake, were served per portion.

Food Choices of the Students

All of the students in this study ate breakfast. Certain foods

were more popular than others. For example, bacon was particularly popular with all of the students at this meal, as were eggs. Grits and dry cereal were often included for breakfast. The breakfast generally started with fruit juice. The majority of the students drank milk at this first meal and about a third of the students drank coffee. Upper classmen drank more coffee than did the lower classmen.

All of the students chose a main dish, a starchy dish, a dessert, and a beverage for the noon meal. The choice of cooked vegetables and salads was slightly more irregular, although these vegetables were eaten to some extent by the majority. This will be apparent from the analysis of the food choices in relation to the United States Department of Agriculture's Basic Four Food Plan.

Crackers and cookies were eaten at meals. They were also eaten as snack foods, in which case they were purchased from vending machines.

Carbonated beverages were provided for students ad libitum. As may be seen in Table 3, the daily consumption of these beverages was from 320 to 916 grams (10 to 32 oz.) for the Freshmen; 144 to 700 grams (5 to 23 oz.) for the Sophomores; 210 to 728 grams (7 to 24 oz.) for the Juniors; and 43 to 1364 grams ($1\frac{1}{2}$ to 41 oz.) for the Seniors.

The foods eaten by the majority of the students in each class also are shown in Table 3. The consumption of bread and rolls, and of other starchy staples did not seem to be related to the year in school. The amount of bread varied from about 2 to $2\frac{1}{2}$ slices or the equivalent in rolls to as many as 6 or 7 slices. Macaroni, spaghetti, and noodles were fairly popular with more than half of the students eating these each time they were served. Some cake was eaten daily by all students. The use of

TABLE 3

FOODS EATEN DAILY BY THE MAJORITY OF STUDENTS IN
EACH GROUP STUDIED WITH RANGE OF INTAKES
(EDIBLE PORTIONS, COOKED)

Food	Student Groups And Ranges of Consumption			
	Freshmen (Gm.)	Sophomores (Gm.)	Juniors (Gm.)	Seniors (Gm.)
Bread and rolls	62 - 139	44 - 180	59 - 133	68 - 131
Grits and rice	11 - 120	50 - 145	24 - 130	15 - 109
Macaroni and cheese and spaghetti ^a	25 - 72	25 - 90	25 - 88	25 - 55
Dry cereal, crackers and cookies	9 - 30	2 - 40	7 - 110	12 - 67
Cakes	24 - 73	13 - 70	13 - 88	13 - 70
Sugar	1 - 4	1 - 5	1 - 13	2 - 15
Carbonated drinks	320 - 916	144 - 706	210 - 728	43 - 1364
Potato chips	3 - 9	3 - 8	3 - 9	3 - 6
Margarine and Salad dressings	3 - 20	3 - 15	1 - 16	1 - 21
Bacon and sausage	5 - 33	2 - 12	4 - 12	4 - 12
Meats, including chicken and fish	93 - 210	83 - 174	108 - 189	131 - 186
Eggs	10 - 65	23 - 160	6 - 66	2 - 55
Green and yellow vegetables	16 - 136	20 - 100	20 - 110	60 - 175
Other vegetables	44 - 100	20 - 175	40 - 125	50 - 135
Vegetable salads	10 - 50	13 - 30	13 - 26	6 - 14
Citrus products	21 - 112	30 - 150	10 - 62	47 - 120
Other fruits	17 - 169	5 - 80	16 - 127	8 - 121
Milk, including ice cream converted to milk equivalents	290 - 916	208 - 580	244 - 1128	50 - 604

^aExclusive of meat sauce for spaghetti.

sugar was not extensive although it did increase from as little as one teaspoon daily to as much as two or three teaspoons daily with the increased use of coffee or tea by some upper classmen.

The entries in Table 3 for margarine also include salad dressings. The use of salad dressings, however, was negligible since raw salads were not popular with the students. Meats were used freely. Freshmen ate from 93 to 210 grams (3 to 7 oz.) daily; Sophomores, 83 to 174 grams (about 2 3/4 to 6 oz.); Juniors, 88 to 189 grams (about 3 to 6 oz.); Seniors, 131 to 186 grams (about 4 1/2 to 6 oz.). Some quantity of eggs was eaten by all students except one. The majority ate eggs daily with scrambled eggs being particularly popular.

The majority of the students ate vegetables. None of the Freshmen failed to eat vegetables daily during this study. Indeed, in each class, all students ate some foods from the vegetable group daily. The quantity of green and yellow vegetables was increased to some extent by Senior students. This is consistent with the information obtained initially concerning food likes and dislikes. The use of raw vegetable salads did not increase with the years at the University. It may be due to the fact that raw salads were not a part of the eating habits of these students before they came to college.

In general, citrus fruits and other fruits were popular. However there were some exceptions. Two students in the Freshmen group chose citrus products to a limited extent. One of these students had one small serving during the five-day period and another had two servings. This was not compensated for entirely by the use of other fruits and vegetables.

Four students in the Sophomore class either did not choose citrus

products or chose them to a very limited extent. One of the Juniors also chose very few citrus products. One Senior student chose only one citrus product during the five days study.

Milk was used freely by most of the students. Only one of the forty students failed to take some milk daily. The majority drank at least two glasses. Many students used two or even more glasses daily.

Food Choices In Relation to the United States Department of Agriculture's Basic Four Food Plan

A better appraisal of the nature of the foods eaten came from an examination of the choices in relation to the Basic Four Food Plan. This appraisal is summarized in Table 4.

Relative to milk consumption, it may be seen that 60 per cent of the Freshmen, 100 per cent of the Sophomores, 90 per cent of the Juniors, and 80 per cent of the Seniors drank at least two cups of milk daily. One hundred per cent of the Seniors had two or more servings of meat daily, exclusive of eggs; 90 per cent of the three other groups ate at least two servings from the meat group, again exclusive of eggs.

Only 30 per cent of the Freshmen chose four or more servings from the vegetable-fruit group daily. Fifty per cent of the Sophomores and Juniors chose four or more servings from the vegetable-fruit group daily; and 60 per cent of the Seniors chose similarly. One hundred per cent of the students in each class chose four or more servings from the cereal-bread group. Usually the consumption was considerably more (See Table 4).

Nutritive Value of the Diets

As explained earlier in this paper, the nutritive value of the

TABLE 4

STUDENTS, BY CLASSIFICATION, WHOSE FOOD CHOICES
CONFORMED TO THE BASIC FOUR FOOD PLAN

Food Group	Students In Each Class Who Followed Basic Four Plan-							
	Freshmen		Sophomores		Juniors		Seniors	
	Number	Per-centage	Number	Per-centage	Number	Per-centage	Number	Per-centage
Milk Group (2 or more cups)	6	60	10	100	9	90	8	80
Meat Group ^a (2 or more servings)	9	90	9	90	9	90	10	100
Vegetable-Fruit Group (4 or more servings)	3	30	5	50	5	50	6	60
Cereal-Bread Group (4 or more servings)	10	100	10	100	10	100	10	100

^aIn this case, exclusive of the eggs eaten.

individual diets was calculated. From these data, the average nutritive values for each group of students were then calculated. These values are shown in Table 5 in relation to the Recommended Dietary Allowances of the Food and Nutrition Board (RDA).¹

The RDA for kilocalories for this age group is 2000. The average kilocalories value of the diets chosen by the students in each group is as follows: 2029 for the Freshmen; 1858 for the Sophomores; 2227 for the Juniors; and 2093 for the Seniors. This represents a deviation of minus 7 per cent, plus 11 per cent, and plus 5 per cent for the three groups of upper classmen respectively.

The average amount of protein in the diets was generous. The RDA for this age group is 55 grams. The values of these diets ranged from 45 to 65 per cent above the recommended amount.

The average amount of calcium for each group also met the recommendation generously, as did the amounts of thiamin, riboflavin, and niacin. The average vitamin A value of the diets for the four groups was above the RDA for the Freshmen, Juniors and Seniors, while that of the diet of the Sophomores essentially met the recommendation. The ascorbic acid in the diets of the Juniors and Seniors was slightly above the recommended amount. The average amount of ascorbic acid in the diets of the Freshmen and Sophomores was slightly below the RDA. This deviation probably is not significant since the allowances provide a margin of safety. The RDA for iron has recently been raised from 15 to 18 mg. a day. The average value for iron in each of the groups was considerably

¹The Recommended Daily Dietary Allowances of the Food and Nutrition Board are shown in Appendix C.

TABLE 5

NUTRITIVE VALUE OF FOODS EATEN BY STUDENTS AS AVERAGES FOR THE FOUR GROUPS
AND PERCENTAGE AGREEMENT WITH THE DAILY RECOMMENDED DIETARY ALLOWANCES
OF THE FOOD AND NUTRITION BOARD

Student Group	Nutrient and the Percentage Agreement with Recommended Dietary Allowances																	
	Energy (kcal.)	Agreement RDA	Protein (gm.)	Agreement RDA	Calcium (gm.)	Agreement RDA	Iron (mg.)	Agreement RDA	Vitamin A (I.U.)	Agreement RDA	Thiamine (mg.)	Agreement RDA	Riboflavin (m.g.)	Agreement RDA	Niacin (m.g.)	Agreement RDA	Ascorbic Acid (m.g.)	Agreement RDA
Freshmen	2029	100	86	+56	1.163	+ 45	12.2	-32	0077	+20	1.17	+17	1.75	+10	14	+ 7	48	-12
Sophomores	1858	-7	80	+45	0.801	+100	11.6	-35	4917	-10	1.06	+ 6	1.64	+ 8	14	+ 7	49	-18
Juniors	2227	+11	91	+65	1.738	+ 11	12.8	-26	7129	+42	1.27	+27	2.00	+33	16	+23	57	+29
Seniors	2093	+ 5	87	+57	0.917	+1.4	13.0	-27	7609	+52	1.29	+29	1.95	+30	15	+15	62	+12

below the recommendations, ranging from 11.6 mg. daily to 13 mg. This represents a deviation of from minus 27 per cent to minus 35 per cent.

Averages, however, do not represent the true picture for individual students as may be seen from Table 6. The kilocalories values of three freshmen students (30 per cent of the total) were below the RDA. In one case, a student with particularly poor eating habits, the diet provided only about 1000 kilocalories. The deviations in the other two cases included in this table were probably not significant. Half of the Sophomore Class consumed diets with kilocalories values ranging from 1168 to 1829 kilocalories. Two of the Juniors (20 per cent) had diets providing 1709 and 1765 kilocalories, while the diet of only one of the Seniors was low in energy value.

One Freshman and one Senior chose diets that provided only 40 grams and 50 grams of protein, respectively. Four Freshmen chose diets that provided from 144 to 656 mg. of calcium in contrast with the 800 mg. recommended. Three of the Sophomore students also chose diets that provided less than the RDA for this nutrient. Only one Junior and one Senior chose diets that were significantly below the recommendation for calcium.

From one to four students in each of the four classes chose diets below the RDA in vitamin A value. The majority of the students chose diets that provided the recommended allowance of thiamin. The riboflavin intake of three of the Sophomore class was low enough to merit comment. These intakes were approximately 1 mg. each, in contrast with the recommended 1.5 mg. There was a wide deviation in the number of students who obtained the recommended amount of ascorbic acid. Fifty per cent of the

TABLE 6

PERCENTAGE OF STUDENTS IN EACH CLASSIFICATION
WITH NUTRIENT INTAKES BELOW RECOMMENDED
DAILY DIETARY ALLOWANCES

Dietary Factor	Student Classification			
	Freshmen	Sophomores	Juniors	Seniors
Kilocalories	30	50	20	10
Protein	10	10	0	0
Calcium	40	30	10	10
Iron	100	100	100	100
Vitamin A	10	40	20	10
Thiamine	10	20	10	10
Riboflavin	20	30	0	10
Niacin	10	10	0	10
Ascorbic Acid	50	40	30	10

Freshmen chose diets which ranged from 19 to 58 per cent of the recommendation. Only one student in the Senior class chose a diet that was significantly below the recommended amount of ascorbic acid.

Discussion of the Results

As shown in the preceding sections the majority of the students chose diets that conformed rather well to the recommendations. The calculated amount of iron for each student was below the RDA. The seventh edition of the Recommended Dietary Allowances (16) makes it clear, however, that the adequate diet usually does not contain more than 6 mg. of iron per 1000 kilocalories. Further they suggest it is difficult, if not impractical, to attempt to obtain the recommended amount of iron from ordinary food. The implication is that a great many more food products may require fortification with iron. Thus, the students cannot be criticized for the failure to obtain the recommended amount of iron from their choices of food.

The four Freshmen whose diets were low in calcium did not choose as much milk and leafy green vegetables as did the other students in the study. This was true also of the students in the other classes whose diets were low in calcium.

Two students in the Sophomore class whose diets were particularly low in vitamin A chose diets that did not follow the Basic Four recommendations for green and yellow vegetables. To a lesser degree this also was true for all other students in the study whose diets were calculated to contain less than the recommended amount of vitamin A.

The failure to meet the recommendations for thiamin appeared to result from a failure to include a sufficient amount of bread. These

students chose the recommended four servings from the bread-cereal group but their choices were almost entirely limited to spaghetti, macaroni, and rice products that are not required to be made with enriched flour, at least in this state.

Where riboflavin was significantly low in the case of two Freshmen and three Sophomores, the cause appeared to be largely from the failure to drink a sufficiently large amount of milk. Indeed, one of these students drank no milk, while three others drank slightly under the recommended two glasses daily. The student who drank no milk consumed nearly a pint of carbonated beverages daily, while the others drank at least one glass of some of these beverages daily.

As mentioned earlier, the failure to obtain the recommended amount of ascorbic acid appeared to come from the failure to include enough citrus products and tomato juice. It should be pointed out also that the standard serving of citrus juice in the dining hall is about one and one-half to two ounces smaller than the standard half cup serving. Large, unpeeled oranges were available everyday at some meal if the students had cared to choose them.

The investigator believes that the information obtained in this study suggest that students do tend to change their food habits to some extent when a variety of foods is available. As was shown in Table 2, a total of twenty-one students indicated during the initial interview period that they had learned to like a number of foods from the vegetable groups which they had not liked when they entered college. It also may be that the food choices of some upper classmen were influenced favorably by the content of certain of the courses taken in the Department of Home

Economics.

Socio-economic differences in the family may not have been important influences in the food choices of the upper classmen. It was difficult to relate the food choices of the Freshmen to socio-economic factors. As discussed before, many of the upper classmen from a number of different types of families had learned to eat a greater variety of foods than when they entered college. It appeared that the differences in the socio-economic levels of the Freshmen who participated in the study were less marked than for some of the other groups. Even so, two Freshmen students whose homes were headed by mothers with low incomes and apparently little education chose very few citrus products and milk during the study. In one of these instances, the student apparently had not used either citrus fruits or dairy products at home. It is possible that in this case economic factors had entered in the formation of early food habits. The poorest diet in the Freshmen group was chosen by a student whose father was retired and whose mother worked away from home as a domestic. She disliked vegetables when she entered college and drank no milk during the study. Perhaps a more extensive study of the eating habits of Freshmen students would show greater and undesirable differences in food choices which could be related to socio-economic differences in the families. If this were found to be true for a large number of students perhaps the inclusion of the principles of nutrition in orientation courses might be helpful.

CHAPTER VI

SUMMARY AND RECOMMENDATIONS

Summary

The main purpose of this study was to investigate the diets of forty Home Economics students eating in the University dining halls at North Carolina Agricultural and Technical State University: (1) to determine whether food chosen by college students in Home Economics conforms to the Daily Food Plan of the United States Department of Agriculture, and (2) to compare the nutritive value of the food chosen by these students with the Recommended Daily Dietary Allowances.

Ten students from the Freshman, Sophomore, Junior, and Senior classifications were chosen at random. This represented 20 per cent of the total enrollment of the Home Economics Department at the University.

The nature of the food chosen was determined by a daily record kept by each student of the foods eaten for a period of five days during the winter of the academic year 1968-69.

The records were collected daily by the investigator. The weights of the foods selected by the students were based upon actual weights of representative servings, and upon observations where weights were actually constant, as with an egg and with bread. The menus were studied daily in the dining halls. Serving of the portions of foods was observed each day by the investigator.

The nutritive value of the individual diets was calculated

using values given in the United States Department of Agriculture Handbook Number 8. The nutritive value of the individual diets and of the class averages was compared with the Recommended Daily Dietary Allowances. The dietary choices were also compared with the actual recommendations of the "Basic Four Food Groups." The quantitative data were considered as averages for the students in each of the four academic years.

The socio-economic characteristics of the students' families differed considerably, although there were similarities. The incomes of the family heads ranged from \$90.00 monthly to \$700.00 monthly. In seventeen homes where the mothers worked outside the home, the total cash income of the families ranged from \$450.00 to \$1450.00. Many of the families raised foods which added to their real incomes.

Several of the students reported that they liked some of the foods which they had disliked when they entered college. Certain foods were more popular than others eaten in the dining halls.

The majority of the students chose diets that conformed rather well to the recommendations. The calculated amount of iron was below the RDA for each student. However, the seventh edition of the Recommended Daily Dietary Allowances makes it clear that the adequate diet usually does not contain more than 6 mg. of iron per 1000 kilocalories, and it is difficult, if not impractical, to attempt to obtain the recommended amount of iron from ordinary food. This implication is that a great many more food products may require fortification with iron.

It is believed that the information obtained in this study suggests that the students do tend to change their food habits to some extent when a variety of foods is available. It is suggested also that

perhaps the food choices of some upper classmen have been influenced favorably by the content of certain of the courses taken in the Department of Home Economics.

Socio-economic differences in the family may not have been important influences in the food choices of the upper classmen.

Recommendations

It would be of value to carry out further study of the eating habits of Freshmen so that possible differences related to the socio-economic levels of the families might be identified. The results of such a study might be used as a basis for community-action programs to improve the eating habits in the homes and as a basis for an orientation course for Freshmen students.

A broader dietary study to include students from other departments at North Carolina Agricultural and Technical State University could be of value. In this way the need for general instruction in foods and nutrition could be identified. Further, this study could be of value in evaluating the success of home economics education.

A nutrition study to include clinical and laboratory data for the same students at different stages of the undergraduate program would be of value in terms of determining improvement or deterioration of students' eating habits. It would be of value to consider such findings in relation to the general health records of the students.

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APPENDIX A

NORTH CAROLINA AGRICULTURAL AND
TECHNICAL STATE UNIVERSITY

Greensboro, N. C. 27411

Department of Home Economics

February 18, 1969

Dear Miss _____,

The importance of good nutrition is well recognized. However, a number of studies have shown that the selection of a suitable diet is a problem common in various age groups and in various conditions. What is the usual dietary pattern of college women in North Carolina?

Few studies have been made of dietary patterns of college students in the South. In a few days, I shall need your help in a short-term dietary study of interest to the Home Economics Department and to me. You can contribute valuable information concerning the dietary pattern of college women at A. and T. Would you be willing to spend a few minutes of your time keeping a daily record of all food choices for a period of five consecutive days? Would you also answer a few questions concerning your family background and eating habits before you came to the University?

There will be a meeting on Saturday, February 22, 1969 in the Reading Room in Benbow Hall at 2 p. m. Will you please attend so that I can explain the study in greater detail?

Sincerely yours,

(Mrs.) Eula K. Vereen
Instructor, Institution Management

Directions For Use of Dietary Record Form

Five forms consisting of two sheets each are provided for the dietary study. Please use one form each day of the study as follows:

1. Carry the form with you throughout the day. It maybe attached to a notebook or carried in your handbag as you prefer.
2. As soon as you have selected the food for a particular meal, fill in the appropriate space with the name of each food selected.
3. Indicate whether food is cooked or raw. In the column for cooked food indicate cooking methods when you know this. Example: egg, fried or scrambled; chicken, fried, broiled or roasted. In the column for raw food indicate the name of the food eaten, as one apple, or one serving of tossed salad, or whatever the food is.
4. Fill in the column headed "amount or measure", that is write the number of servings, pieces, glasses, etc., as appropriate. For example: meats, indicate as one drumstick, one breast, or quarter of chicken.
5. At the end of the meal, write in column with the heading "eaten", the amount you actually ate. Example: one half the serving of rice or $\frac{1}{2}$ glass of milk as the case may be.
6. Write down food that you eat between meals or before going to bed, (evening snacks) in spaces provided.
7. Most important: Meet with Mrs. Vereen dally as specified to turn the form for the previous day in to her.

Dietary Record Form

Name _____ Date _____

Meal	Food		Measure or Serving	
	Cooked	Raw	Serving	Eaten
Breakfast				
Morning Snack				
Lunch				

Meal	Food		Measure or Serving	
	Cooked	Raw	Serving	Eaten
Afternoon Snack				
Dinner				
Late Evening Snack				

Eating Patterns and Food Preferences Questionnaire

The information requested on this questionnaire mainly relates to your family's eating patterns and your food preferences before you came to college. Please answer all questions as carefully and truthfully as possible. All information will be kept confidential.

Name _____ Date of birth _____

Home Address _____ Academic year _____
 (City) (State) (County)

Major area in Home Economics _____

Number in family _____ Rank in family _____

Mother's occupation _____ Father's occupation _____

Mother's income per month _____ Father's income per month _____

Indicate below whether the major portion of the food used in your family is bought in retail stores or whether it is home grown.

Retail store _____

Home grown _____ (Check chief foods raised for home consumption that would be eaten by your family and you.)

Fruits

Pears _____

Apples _____

Berries _____

Others _____

Meats

Pork _____

Beef _____

Rabbit _____

Chicken _____

Turkey _____

Duck _____

Guinea Fowl _____

Vegetables

Collard Greens _____

Mustard Greens _____

Turnip Greens _____

Kale _____

Cabbage _____

Lettuce _____

Green Beans _____

Carrots _____

White Potatoes _____

Radishes _____

Corn _____

Yams _____

Green Peas _____

Tomatoes _____

Lima Beans _____

Blackeyed Peas _____

Onions _____

Others _____

Dairy Products

Milk _____

Butter _____

Eggs _____

Others _____

Is butter served or eaten in your home? Foods donated, if any.
 Donated or commodity foods, if any.

1. _____

4. _____

2. _____

5. _____

3. _____

6. _____

Does your family participate in the food stamp program?

Yes _____

No _____

Food pattern at home

1. How many meals did you usually eat each day? _____

2. At what time did you usually eat breakfast? _____
Lunch? _____

3. What foods were served most often at home? List.

1. _____

3. _____

2. _____

4. _____

4. Describe a typical breakfast, lunch, dinner that would be
 eaten at home. List

Breakfast

Lunch

Dinner

5. What were your favorite snacks before you came to college? List.

1. _____ 3. _____
2. _____ 4. _____

6. When you were at home, what were your favorite foods? List.

1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

7. What foods did you dislike before coming to college? List.

1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

8. Did you eat these foods even if you did not like them?

Yes _____ Sometimes _____ No _____

9. Have you now learned to like or to eat any of the disliked foods mentioned above? If so, which ones?

APPENDIX B

Foods Served For Lunch And Dinner During The Study

First DayLunch

Peppered Steak
 Creamed Chicken
 Salisbury Steak

White Potatoes
 Vegetable Soup
 Okra - Tomatoes
 Broccoli with Cheese Sauce
 Tossed Salad
 Green Bean Salad
 Cabbage Slaw

Cookies
 Chocolate Pudding
 Sliced Pineapple
 Pear Halves
 Whole Apple
 Whole Orange
 Deviled Food Cake with White
 Icing
 Plain Cake
 Assorted Fruited Jello

Iced Tea
 Milk
 Carbonated Beverage

Margarine
 Jelly
 Peanut Butter
 French Dressing
 Blue Cheese Dressing
 Mayonnaise

Sliced Bread
 Crackers

Dinner

Ham Slice
 Braised Beef Cakes
 Wagon Steak

Noodles
 Rice
 Carrot Rings
 Cabbage - Cooked
 Tossed Salad
 Cabbage Slaw
 Green Bean Salad

Whole Apple
 Cookies
 Strawberry Chiffon Cake
 Sliced Peaches
 Fresh Bananas

Hot Chocolate
 Carbonated Beverage
 Strawberry Punch
 Milk
 Iced Tea

Margarine
 Peanut Butter
 French Dressing
 Blue Cheese Dressing
 Jelly
 Mayonnaise

Dinner Rolls
 Sliced Bread

Foods Served For Lunch And Dinner During The Study

Second DayLunch

Salisbury Steak
Fish Sticks
Meat Loaf

Macaroni - Cheese
Vegetable Soup
Green Peas
Boiled White Potatoes
Glazed Carrots
Tossed Salad
Cabbage Slaw

Cookies
Plain Cake
Pineapple Cake
Whole Orange
Whole Apple
Assorted Fruited Jello
Purple Plums

Milk
Grape Punch
Carbonated Beverages

Sweet Pickle Relish
Tartar Sauce
Margarine
Jelly
Peanut Butter
French Dressing
Blue Cheese Dressing

Sliced Bread

Dinner

Beef Stew
Ham Slice

Noodles
Sweet Potatoes
Carrot Rings
Collard Greens
Tossed Salad
Cabbage Slaw

Cookies
Pineapple - Coconut
Cake
Nut Bars
Whole Apple
Whole Orange
Peach Halves
Bananas

Milk
Grape Punch
Carbonated Beverages

Dinner Rolls
Sliced Bread
Crackers

Foods Served For Lunch And Dinner During The Study

Third DayLunch

Chicken Pot Pie
Hamburger Pattie

Beef and Vegetable Soup
Spinach
Sweet Potatoes
Cole Slaw
Tossed Salad
Cottage Cheese Salad

Spiced Cake
Cookies
Bread Pudding
Chocolate Pudding
Pear Halves
Whole Orange
Whole Apple
Bananas
Grapes
Pineapple Slices

Carbonated Beverage
Milk

Margarine
Peanut Butter
French Dressing
Blue Cheese Dressing
Mayonnaise

Sliced Bread
Crackers

Dinner

Sweet and Sour Pork
Spaghetti with Meat Sauce

Glazed Carrots
Turnip Greens
Mixed Vegetables
Cole Slaw
Tossed Salad
Corn Salad
Mashed White Potatoes

Peach Short Cake
Assorted Jello
Grapes
Whole Apple
Whole Orange
Bananas
Peach Halves

Carbonated Beverages
Milk

Margarine
Peanut Butter
French Dressing
Blue Cheese Dressing
Mayonnaise

Dinner Rolls
Sliced Bread
Crackers

Foods Served For Lunch And Dinner During The Study

Fourth DayLunch

Pizza
Baked Corned Beef Hash
Spaghetti with Meat Sauce

Turnip Greens
Whole Kernel Corn
Cream of Celery Soup
Tossed Salad
Cottage Cheese Salad
Cole Slaw
Carrot Salad

Cookies
Peach Cobbler
Oatmeal Cookies
Banana Pudding
Whole Oranges
Whole Apples

Carbonated Beverages
Milk

Margarine
Peanut Butter
French Dressing
Blue Cheese Dressing
Mayonnaise

Crackers
Sliced Bread

Dinner

Salisbury Steak
Veal Cutlet

Macaroni - Cheese
Noodles
Green Peas
Squash
Tossed Salad
Cottage Cheese Salad
Cole Slaw

Cookies
Plain Cake
Cake with Plain Icing
Peach Slices
Whole Oranges
Bananas
Pear Halves

Iced Tea
Carbonated Beverages
Milk

Margarine
French Dressing
Mayonnaise

Dinner Rolls
Sliced Bread
Crackers

Foods Served For Lunch And Dinner During The Study

Fifth DayLunch

Chili Con Carne
Tuna Fish

Macaroni - Cheese
Turnip Greens
Split Pea Soup
Tossed Salad
Cottage Cheese Salad
Cole Slaw
Assorted Jello Salad
Beet Salad
Cabbage, Cooked

Deviled Food Cake
Whole Orange
Whole Apple
Assorted Jello
Peach Halves
Grapes
Banana

Carbonated Beverages
Milk

Margarine
Jelly
French Dressing
Mayonnaise

Sliced Bread
Crackers

Dinner

Fried Fish Fillet
Beef Peppered Steak

Noodles
Scalloped Tomatoes
White Potatoes
Green Beans
Tossed Salad
Cottage Cheese Salad
Cabbage Slaw

Cookies
Chocolate Cake
Whole Orange
Whole Apple
Pineapple Slices
Purple Plums

Iced Tea
Carbonated Beverages
Milk

Margarine
Peanut Butter
Jelly
French Dressing
Mayonnaise

Sliced Bread
Crackers
Dinner Rolls

Portion Weights Of Foods Most Commonly Served In The
Dining Hall During The Dietary Study

<u>Food</u>	<u>Weight in Grams</u>
Bacon	18
Frankfurter	56
Tuna Fish	101
Fish Sticks	80
Chicken Pot Pie	111
Chicken Thigh	97
Hamburger	88
Meat Ball	24
Salisbury Steak	160
Meat Sauce	68
Veal	118
Ham Slice	104
Pork Slice	174
Peppered Steak	86
Egg	50
Broccoli	129
Cabbage, Cooked	108
Collard Greens	62
Spinach	117
Turnip Greens	115
Lettuce	47
Carrots	83
Corn, Whole Kernel	84
Mixed Vegetables	94
Green Peas	60
Okra-Tomatoes	107
Squash	120
Tomato Slice	40
Potato, White	97
Citrus Juice	52
Tomato Juice	52

Portion Weights Of Foods Most Commonly Served In The
Dining Hall During The Dietary Study

<u>Food</u>	<u>Weight in Grams</u>
Rice	77
Macaroni - Cheese	158
Spaghetti	124
Noodles	122
Oat Meal	222
Cream of Wheat	120
Corn Flakes	36
Grits	122
Bread	25
Rolls	30
Plain Cake	71
Apple	175
Banana	104
Peach Pie	120
Pear Half	26
Purple Plums	58
Chocolate Pudding	42
Ice Cream	54
Cup Cake	43
Milk	240
Carbonated Beverage	240

APPENDIX C

Estimated Daily Energy Allowance for

Female 15-25 Years of Age (1970)

Selected Activities

Thinking, 2000

Reading, 2000

Writing, 2000

Listening, 2000

Watching TV, 2000

Walking, 2000

Shopping, 2000

Driving, 2000

Working, 2000

APPENDIX C

APPENDIX C

Recommended Daily Dietary Allowances For
Females 18-22 Years Of Age (16)

Selected Nutrients

Kilocalories	2000.0
Protein, gm.	55.0
Calcium, mg.	0.8
Iron, mg.	18.0
Vitamin A, I.U.	5000.0
Thiamine, mg.	1.0
Riboflavin, mg.	2.0
Niacin, mg.	13.0
Ascorbic acid, mg.	55.0