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N. R. B.

Greensboro, North Carolina

May 1, 1946

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CHAPTER I

INTRODUCTION

This study is an evaluation of the dietary practices of 124 high school juniors and seniors in four selected schools, two urban and two rural, in and near Greensboro, North Carolina. The data for the study were collected during the early fall of 1945.

The recent war has given impetus to the growing appreciation of the importance of nutrition, and to the realization that nutritional deficiency states are frequent in the general population. With the reports of the Selective Service Administration in 1941, came the realization that "man is surely what he eats." It is true as R. M. Wilder says that not all the rejections for the army can be laid at the door of malnutrition, but many undoubtedly belong there. "Tuberculosis, decay of teeth, weak heart, disordered nerves, poor vision, and much else are known to thrive on soil which is eroded by nutritional depression."[1]

It is necessary not only to correct, but also to prevent deficiencies due to improper eating. Public health workers, teachers, social welfare and extension workers are daily impressed with the fact that diet education has an important place to fill in advancing the observance of

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1. Russell M. Wilder, "Mobilizing for Better Nutrition," Proceedings of the National Nutrition Conference for Defense, cited by Journal of American Dietetic Association, XVIII (January, 1942), 2.

the rules of good nutrition. "Prevention of disease is easier than its cure, less time consuming, and without any of the serious aftereffects."[2] Much of this preventive work takes the form of education in proper dietary practices. Surveys can reveal the extent to which food practices in common use are faulty, and so make possible more effective nutrition teaching.

Two schools in Greensboro and two rural schools were selected for study. In one city school it was necessary to use only juniors. In the others, seniors or juniors and seniors were used. Each school had a lunchroom but only one was operated under the Federal plan.

For the collection of data, a conference was held in each school to explain the procedure and to ask cooperation. Individual conferences were held with the students as necessary to secure maximum accuracy in the records. Of the 124 students for whom complete seven-day food records were obtained, forty-three were boys and eighty-one were girls; thirty-six came from urban schools and forty-five from rural schools. The largest proportion of these students were sixteen years old.

The records were studied first for general adequacy by comparing them with a modified "Basic Seven" standard. Boys' and girls' diets and rural and urban diets were studied for possible differences. For the influence of the school lunch a comparison was made between diets on school days and on the week-end. The omission of meals and the use of sweets, tea, coffee, and soft drinks were studied for the possible influence upon the diet.

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2. Margaret S. Chaney, "Food Needs in Growth," Journal of Home Economics, XXXII (January, 1940), 9.

This study was suggested by Dr. Bertlyn Bosley, nutritionist with the North Carolina State Department of Public Health, and chosen by the writer with the hope that information might be obtained which would enable her, as a teacher of home economics, to know where emphasis in her food and nutrition work should be placed.

The purposes of the study were to reveal the food practices of urban and rural, eleventh and twelfth grade students; to identify those habits that were good and to determine needed dietary improvements.

CHAPTER II

REVIEW OF RELATED STUDIES

"A logical approach to nutritional status is through the study of the food consumed, if 'man is what he eats'."[1]

Food supplies may seem to be almost unlimited here in the United States. Throughout the year a variety of foods are enjoyed which are unattainable in almost any other country. These are made possible by an enormous productive capacity in combination with modern methods of processing, storage, and transportation.

> To the casual observer, productive farms, well-stocked warehouses, and flourishing markets may indicate a well-fed nation. Indeed, average per capita consumption figures would seem to bear this out. It is only by a study of individual family food consumption that we can learn about deviations from the average, and how significant these deviations are in terms of human nutrition.[2]

In the following review of studies related to the present study, the attempt is made first to give a picture of the national nutrition situation for high school students and for families; and second, to review the situation for North Carolina.

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1. E. Neige Todhunter, "Evaluation of Nutritional Status," Journal of American Dietetic Association, XVIII (February, 1942), 79.

2. Esther F. Phipard, "How Good is Our National Diet?" Annals of the American Academy of Political and Social Science, CCXXV (January, 1943), 66.

> Nutrition problems of high school students have received little attention from public health and school officials although, at these ages, children are likely to experience serious nutritional deficiencies. Dietary requirements for this age group are higher for most nutrients than at any other period of life, and an optimal intake of those nutrients which are of special importance requires careful choice of foods based on knowledge of food values.[3]

A cooperative medical evaluation of nutritional status of some three thousand adolescent boys and girls of New York City was made by the New York City Department of Health, United States Public Health Service, Cornell University Medical College, and the Milbank Memorial Fund. The results of this nutrition project have been reported in a series of articles beginning in 1940. A few of the reports are pertinent to this study. Wiehl and Kruse[4] report that among pupils in the high income group of their study only a few showed evidence of a nutritional deficiency of ascorbic acid, iron, or riboflavin. Most of these were girls. Among low income groups there were four nutritional deficiencies: vitamin A, riboflavin, ascorbic acid, and iron. Except for iron, relatively advanced stages of these deficiencies were not common in boys. Anemia was more prevalent among girls. Also in the low income group, nearly all of those examined had one or more mild deficiency diseases which could be diagnosed by special tests. Seventy-eight per cent of the boys and 70 per cent of the girls received less than their estimated energy need. More of the children obtained the recommended allowance of protein than of any other nutrient. For the other seven food elements considered,

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3. Dorothy G. Wiehl, "Medical Evaluation of Nutritional Status VII: Diets of High School Students of Low Income Families in New York City," Milbank Memorial Fund Quarterly, XX (January, 1942), 72.

4. Dorothy G. Wiehl and H. D. Kruse, "Medical Evaluation of Nutritional Status V: Prevalence of Deficiency Diseases in Their Subclinical Stage," Milbank Memorial Fund Quarterly, XIX (July, 1941), 241-251.

more than 60 per cent of pupils in one or more of the sex-age groups were supplied with less than the recommended allowance. For the entire group, the proportions of diets lacking in calcium, iron, and the vitamins varied from 53 per cent lacking in vitamin B_1 to 72 per cent lacking in calcium. Among the girls the most prevalent deficiency was iron; 80 per cent receiving less than the recommended allowance. Among the boys iron was a less common deficiency as only 50 per cent had less than the allowance.

Also as a part of this project, Stamm and Wiehl[5] made a report of the school lunch as a method for improving diets of high school students. It was found that the diets of nearly three fourths of the 2,037 pupils furnished less than the estimated calorie needs and almost as many were below the recommended allowances for calcium and riboflavin. The order of frequency of diets deficient in the different food elements are, in descending order, as follows: vitamin A, iron, ascorbic acid, thiamin, protein. Suggestions for increasing the nutritive value of the school lunch in these specific nutrients were given as a means of improving general adequacy.

In Lancaster County, Pennsylvania,[6] in 1938-40, it was found that the adolescents, thirteen to twenty years old, among rural families were eating poorly in several respects. The following percentages of students

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5. Emily Stamm and Dorothy Wiehl, "Medical Evaluation of Nutritional Status VIII: The School Lunch as a Method for Improving Diets of High School Students," Milbank Memorial Fund Quarterly, XX (January, 1942), 83-96.

6. Janice M. Smith and associates, Unpublished data, cited by National Research Council," Inadequate Diets and Nutritional Deficiencies in the United States," National Research Council Bulletin, No. 109 (November, 1943), 5.

were eating less than the recommended amounts of the respective food elements: riboflavin, 90; calcium, 70; vitamin A, 45; thiamin, 45; calories, 30; ascorbic acid, 30; protein, 20; iron, 20.

A study of dietary habits of high school students in nine counties of Tennessee was made by Doris Marie Reynolds[7] in 1939 at the University of Tennessee. According to the classification used, 93.2 per cent of diets were poor, 5.6 per cent were fair, and 1.2 per cent were found to be good. The most frequently reported food in the diets was meat or meat substitute. About a fifth of the students reported no vegetables. Thirty-three per cent had no milk; although 40 per cent of the students had a pint or more milk daily. About 35 per cent of students recorded no fruit and about the same number showed optimal consumption of fruit. Butter was the least frequently reported food item. About 98 per cent recorded no use of butter in diets.

Lucille Coco and others made "A Study of the Adequacy of Diets Consumed by Grade School and High School Students in Louisiana."[8] Food records were collected from white and negro schools in New Orleans and other schools throughout the state during the spring and early summer. In the report, made in 1943, it was shown that the number of diets scored good was quite small and that the proportion of good diets varied little in the various groups of students. There was considerable variation in the consumption of the various food groups by white students. The consumption of meat or meat substitutes in all groups came nearest meeting

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7. Doris Marie Reynolds, Dietary Habits of High School Students in Nine Counties in Tennessee, Master's Thesis, University of Tennessee, 1939.

8. Lucille Coco and others, "A Study of the Adequacy of Diets Consumed by Grade School and High School Students in Louisiana," Louisiana Bulletin, No. 360 (January, 1943), 10 pp.

the present recommendations and the consumption of whole grain cereals was furthest from these recommendations. Taking all of the diets of white students as a group, the consumption of milk ranked second best; green, leafy, yellow vegetables ranked third best; eggs ranked fourth; and citrus fruit or tomato ranked seventh.

The eleventh and twelfth grade girls from ten vocational high schools in Iowa furnished dietary records for the study of food habits made by Mildred Jones[9] at the Iowa State College in 1934. It was found that less than 20 per cent of pupils had included cooked fruit and less than 50 per cent of pupils reported raw fruit in their diets. Slightly more than one fourth of the pupils had included citrus fruit or tomato in their dietaries. In the case of vegetables, over 40 per cent of all the girls had eaten no cooked vegetables other than potatoes, and a relatively small percentage of pupils had eaten raw vegetables. Over 50 per cent of all pupils had drunk a pint or more of milk. It was discovered that one of the reasons why the pupils' dietaries were inadequate was that foods necessary for an adequate dietary were not always served at home, which suggested a need for adult classes in nutrition.

A study was made by Haws[10] at the University of Oklahoma in 1937 on the dietary and nutritional habits of high school girls to find out where emphasis should be placed in the teaching of nutrition in order to provide stimulation where it was most needed. It was found that the utilization of foods available in a rural community should be emphasized.

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9. Mildred L. Jones, The Food Habits of 678 High School Pupils in Iowa, Master's Thesis, Iowa State College, 1934.

10. L. C. Haws, The Dietary and Nutritional Habits of the High School Girls of Rocky, Oklahoma, Master's Thesis, University of Oklahoma, 1937.

Leichsenring[11] and others made a seven-day study of the diets of high school girls in Minnesota and Kansas during the years 1939 and 1940. Definite deficiencies were shown. For example, more than one fifth of the Kansas and more than one fourth of the Minnesota diets contained no eggs during the period of study. The number reporting no milk was relatively small; however, in Kansas more than one half and in Minnesota nearly one third of all subjects reported less than one serving of milk. Green and yellow vegetables particularly were lacking in all diets--more than 80 per cent of the Minnesota group and almost 90 per cent of the Kansas group reported less than one serving daily. As for other vegetables, except potatoes, slightly over 20 per cent of the Minnesota diets contained one or more servings, while only 2 per cent of Kansas records included one or more servings daily. Less than one serving of citrus fruit or tomato a day was contained in 75 per cent of the Kansas and 65 per cent of the Minnesota diets. Coffee, tea, cokes were included one or more times daily in one fourth of the diets.

In 1940, Leona M. Bayer[12] of San Francisco, California, studied the dietary habits of adolescent girls. Diets were scored with regard to total and "fractional" nutritional adequacy. It was found that the diets were generally poor, containing on the average only about two thirds of the recommended essentials. The greatest deficiency was in vegetables, fruits, milk, and whole cereals.

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11. Jane M. Leichsenring and others, "Diets of 524 High School Girls," Journal of Home Economics, XXXV (November, 1943), 583-586.

12. Leona M. Bayer, "The Diet of Adolescent Girls; with Special Reference to Nutritional State and Dental Caries," Journal of Pediatrics, XVI (January, 1940), 56-68.

Cooprider's[13] thesis at Kansas State College in 1940 reported a comparative study of the dietary habits of selected groups of high school girls and young college women. Diets of the high school students ranked consistently lower than those of the college women in consumption of many of the protective foods. There was a deficiency of protective foods in all groups. Another interesting fact was that all groups ate too frequently between meals and drank too much coffee, tea, and coca cola. The high school group ate too few fruits and vegetables.

Few studies have been made concerning the differences between food intake on school days and on week-end days, especially with high school students. Ruth Leverton and Alice Marsh made such a study with a small group of girls between the ages of seventeen and twenty-four years at the University of Nebraska in 1939. The average daily intake for each girl was calculated for week-days and week-end days.

> Percentage differences between daily intake of nitrogen for week-days and week-end days in each of the twenty-four studies ranged from 2.3 to 64.3 per cent, with an average of 21.3 per cent. Those for calcium ranged from .1 to 74.9 per cent, with an average of 27.9 per cent. Among the nitrogen intakes, there were six cases in which the differences did not exceed 10 per cent, and among the calcium intakes eight cases. Eleven of the nitrogen intakes and twelve of the calcium intakes were higher for Saturday and Sunday than for the week-days, while for thirteen of the nitrogen and twelve of the calcium intakes the reverse was true. . . .Although definite figures are not available, personal observation and food records alike indicate that far greater variation from habitual food intakes occurred on Sunday than on Saturday. . . .Reasons for the differences can only be suggested from observation of the girls by the authors and are therefore somewhat subjective.[14]

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13. Majel M. Cooprider, Dietary Habits of Selected Groups of High School Girls and College Women Living in Kansas, Master's Thesis, Kansas State College, 1940.

14. Ruth Leverton and Alice Marsh, "Comparison of Food Intakes for Weekdays and for Saturday and Sunday," Journal of Home Economics, XXXI (January, 1939), 112-113.

The main reason given was that social activities and routines changed during Saturday and Sunday. The point was also made that some girls ate oftener over the week-end, and some girls ate less food because they were too busy to eat.

In 1936 the Bureau of Home Economics and the Bureau of Labor Statistics in collaboration with other Federal agencies conducted a study in which weekly records of family food consumption were the basis for estimates of the nutritional adequacy of diets. When the study was re-evaluated[15] on the basis of National Research Council's recommendations of 1941, it was found that fewer than a fifth of the families in this country had diets that came up to the allowances for each of the nutrients. Farm families fared better than city families on the average, because the foods they produced at home--milk, eggs, meat, vegetables, and fruits--are good sources of nutrients often found to be low in family diets.

Stiebeling, in evaluating the adequacy of American diets in 1943, shows that there has been a phenominal rise in the consumption of sugar and citrus fruits, and an upward trend in the consumption of dairy products and fruits and vegetables. (It is to be remembered that 1942 was the first year of sugar rationing.) Paralleling these increases, there has been a decline in the consumption of potatoes, meats and grain products. "From the standpoint of nutrition, certain of these trends in food consumption have enriched the diets of American people while others have impoverished them. On the credit side, for example, is the increase in consumption of refined sugar."[16] On the basis of her investigation,

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15. Esther F. Phipard, op. cit., 66-71

16. Hazel K. Stiebeling, "Adequacy of American Diets," Handbook of Nutrition, A Symposium, American Medical Association, Chicago, Illinois, 1943. 404.

the tentative estimates for 1936 indicated that about one fourth of the families in this country had diets that could be rated good, more than one third diets that could be considered fair and another third diets that should be classed as poor.

Frances Hardy made a one-week study of the diets of one hundred families in Snohomish County, Washington, in 1943.

> This study re-emphasizes the need for home economists and nutritionists to stress milk consumption, as calcium and riboflavin were the nutrients needed by the greatest number of families. . . .Eating a greater variety of foods might also help to improve the diets, as one of the problems seems to be getting people to eat the food after they produce it. The menus included two types of poor meals: one with so few foods that they could not possibly supply an optimal diet unless chosen carefully; and the other, with too many foods of the same group. The habit of eating a wide variety of foods daily would improve both types.[17]

Jolliffe, McLester, and Sherman in writing of the prevalence of malnutrition in our nation say:

> The evidence at our disposal warrants the conclusion that dietary inadequacies and malnutrition of varying degrees are of frequent occurrence in the United States and that the nutritional status of an appreciable part of the population can be distinctly improved. If optimal nutrition is sought, not mere adequacy, then wide-spread improvement is possible.[18]

In January, 1940, the North Carolina State Board of Health began a nutrition survey in the state under the direction of D. F. Milam. A few representative communities were chosen for this study. For the first survey a rural community in Chatham County was chosen. A thorough physical examination was given and a medical history was obtained. Then, a

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17. Frances Hardy, "Study of Dietary Level of 100 Families," Journal of Home Economics, XXXVII (June, 1945), 355.

18. Norman Jolliffe, James McLester, H. C. Sherman, The Prevalence of Malnutrition," Journal of American Medical Association, CXVIII, 1942, 950.

sample of blood from each individual was examined in the laboratory, and a seven-day food intake record was kept. In Chatham County the blood test revealed one deficiency which Dr. Milam thought probably would be duplicated in every district in North Carolina. That was a shockingly low content of vitamin C in the blood. In order to check on this finding a small well-to-do group living in Durham was examined and the same condition was found to be present. From the food intake records kept, it was shown that the Chatham County community had a caloric intake of about 2,000 calories per person per day. The amount of carbohydrates in the diet was low and the percentage of fat high. The protein intake was just on the borderline of normal.

> However, the vitamin B_1 intake, which vitamin is found in the same foods as protein, is only about 60 per cent of the recommended level. When this vitamin is low there is a tendency to decrease carbohydrates and increase fats, as has occurred here. A diet too high in fats is less digestible.[19]

Another such survey was made by Milam[20] in Wayne County, North Carolina, in the summer of 1942. It was found that the following percentages of persons, fifteen years or older, had less than the approved daily amounts of several of the necessary food elements: riboflavin, 100; ascorbic acid, 93; thiamin, 91; calcium, 86; iron, 66; vitamin A, 62; and protein, 55 per cent of the persons. The following percentages of persons received less than half the advocated daily amounts of the various nutrients: riboflavin, 79; ascorbic acid, 77; thiamin, 43; vitamin A, 27; calcium, 25; iron, 5; and protein, 2.

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19. D. F. Milam, "A Nutrition Survey in Chatham County," The Health Bulletin, LVI (March, 1941), 8.

20. D. F. Milam, Unpublished data, cited by National Research Council, "Inadequate Diets and Nutritional Deficiencies in the United States," National Research Council Bulletin 109 (November, 1943), 12.

Later Milam[21] made a clinical survey in Alamance County. It was concluded after physical examinations and accessory clinical data were collected that in that area the most prevalent abnormalities attributable to malnutrition were underweight, obesity, and low hemoglobin concentrations of the blood. The latter was most prevalent in children and women.

Cleo Brendle, in 1941, studied the food consumption practices of sixty-eight high school girls of Clemmons, North Carolina, and the food production and consumption practices of sixty-two families in East Bend, North Carolina.

> Of great significance is the fact that 10.3 per cent of the group (high school girls) had no milk, 4.4 per cent had no green and yellow vegetables, and 33.8 per cent had no whole grains; and that 80.8 per cent had green and yellow vegetables, and 66.2 per cent had citrus fruit or tomato only from one to seven times per week. . .[22]

The weakest points which she found in the diets of both groups were in the use of whole grains, green and yellow vegetables, and citrus fruits and tomato. She found, as did Haws in Oklahoma and Hardy in Washington, that the pupils did not take advantage of the opportunities offered at school and home to have the essential foods.

Instruction in dietary and other habits which affect nutrition has taken an increasingly important place in health education. Bovee and Downes,[23] in 1941, carried on a specific nutritional education program in ninety families for a period of nine months to study the influence of nutrition education in families of the Mulberry Area in New York City in

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22. Cleo Brendle, Food Production and Consumption Practices in a Selected Group of North Carolina Homes, Master's Thesis, University of North Carolina, 1941. 20.

23. Dorothy L. Bovee and Jean J. Downes, "The Influence of Nutrition Education in Families of the Mulberry Area of New York City," Milbank Memorial Fund Quarterly, XIX (April, 1941), 121-141.

order to find out whether intensive nutrition instruction in the home will bring about needed change in habits of eating and living which are believed to be related to health. An additional forty-five families were observed in which no special nutrition teaching was done. Food habits of the children showed significant improvement in all families in which special educational work was done. There was a marked increase in the use of the protective foods, milk, eggs, fruit, and vegetables. The habits of the children in the control families showed relatively little change.

CHAPTER III

PROCEDURE

Description of Situation

As was stated earlier, this study was made in order to gain an understanding of the diets of eleventh and twelfth grade students in public schools in and near Greensboro, North Carolina.

Two schools, A and B, in Greensboro, a city of about 79,000 population, and two rural schools, C and D, were selected on the basis of availability and the willingness to cooperate. In the smaller urban school, A, only seniors were included. In the larger urban school, B, only juniors were studied because of the abnormally large proportion of boys in the senior class. Only two of the eleven junior home rooms were included in order to limit the number of cases. Since the division into rooms had been made on the basis of alphabetical order, the selection of the two most conveniently located was legitimate. In the rural schools, C and D, all the juniors and seniors who were willing to cooperate were included.

Each of the four schools had a school cafeteria; each of which was observed during the period of collection of food records. Only School C operated under the Federal plan. School A served a good plate lunch each day along with soup, sandwiches, milk, ice cream, and cookies; however, it was possible to select a poor lunch since any item, including those on the plate, could be bought separately. In Schools B and D, no plate was served but lunches were selected from a number of food items offered.

An index to the economic background of the cases studied was that of the occupational group from which the largest proportion of the family's total earnings were derived. Business, professional, clerical, and wage-earning groups were well represented in the cases studied. In the urban groups, there were more business or professional and clerical families. In the rural groups, farming was the predominate occupation.

Methods of Data Collection

All the data were collected during the months of October and November, 1945. At that time, rationing had been discontinued except for sugar, but meats and fats were scarce. In each school, a group conference was first held at which time the general purpose of the study was explained and cooperation on the part of the student was asked. Following this introduction, instructions were given about how to keep the necessary records. Consistent and careful approximation in terms of usual household measures was stressed for recording the quantity of food. This was explained and clarified by comparing measures with the lunch room servings. Several visits were made to the schools and the records to date were collected each time. Conferences with students were held as needed to secure as accurate records as possible. One hundred and twenty-four complete student records were collected. The height and weight of each student and other personal data were obtained at the same time. A copy of the form used and selected dietary records may be found in the appendix.

Methods of Data Analysis

The score card used in this study for determining the adequacy of the daily dietaries was an adaptation of the one used by Coco, Moore, Goldsmith, Lucas, and Davis in their "Study of the Adequacy of Diets Consumed By Grade-School and High School Students in Louisiana."[1]

The changes made for use in this study were:

1. The amount of milk was increased from two to three glasses a day for a "good" diet because of the growth requirement of this age group.

2. All fruits and vegetables except green and yellow, citrus fruit and tomato were grouped together as "other fruits and vegetables."

3. The food item, "whole grain cereals," was omitted since at the time the study was made all flour and cereal products were enriched by state law.

4. A per day standard was made by dividing the "good" and the "poor" of the weekly standard by seven for use in determining the adequacy of school day diets in comparison with Saturday and Sunday diets.

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1. Lucille Coco and others, "A Study of the Adequacy of Diets Consumed by Grade School and High School Students in Louisiana," Louisiana Bulletin, No. 360 (January, 1943), 4.

A SCORE CARD FOR DETERMINING THE ADEQUACY OF DIETS

Food Groups	Servings per week			Servings per day	
	Good	Fair	Poor	Good	Poor
Milk	21 or more	14-20	13 or less	3 or more	1.9 or less
Green, yellow vegetable	7 "	4-6	3 "	1 "	.4 "
Citrus fruit or tomato	7 "	4-6	3 "	1 "	.4 "
Other fruit, vegetables	21 "	10-20	9 "	3 "	1.3 "
Meat	7 "	4-6	3 "	1 "	.4 "
Eggs	5 "	3-4	2 "	.7 "	.3 "
Butter	14 "	8-13	7 "	2 "	1.0 "

The data were analyzed to show first, the adequacy of the diet on the basis of food groups. A comparison was made of the diets of boys and girls; of diets in different schools; of diets on school days and the week-end among the boys and girls in the different schools. Some data were included on the use of sweets, the use of coffee, tea, and soft drinks, and on the omission of meals.

CHAPTER IV

FINDINGS

One hundred and twenty-four complete records were obtained from a group of 58 urban and 66 rural eleventh and twelfth grade students. Of this number 43 were boys and 81 were girls.

The distribution of boys and girls in the different schools and the numbers cooperating in the study are given in Table I.

TABLE I

A COMPARISON OF THE NUMBER OF STUDENTS IN EACH CLASS WITH THE NUMBER OF STUDENTS PARTICIPATING IN THE STUDY

School	Class Enrollment		Student Participation	
	Boys	Girls	Boys	Girls
A	6	16	6	13
B	198	202	16	23
C	17	21	12	19
D	10	28	9	26
Total	231	267	43	81

The class enrollment shown for School B is that of the entire junior class; in the two home rooms selected there were 37 boys and 37 girls. Of these numbers, 16 boys and 23 girls participated in the study, a smaller proportion than from any other school. However, since the

division into rooms had been made on the basis of alphabetical order, it was felt that this small number would be a chance selection and hence representative of the group.

The age distribution of the students cooperating in the study is given in Table II. Although both eleventh and twelfth grade students were used, the larger proportion of boys and girls were in the sixteen years old group and hence the groups were comparable.

TABLE II

AGE DISTRIBUTION OF STUDENTS

Age	Urban		Rural		Total	
	Boys	Girls	Boys	Girls	Boys	Girls
15	3	2	1	5	4	7
16	12	22	11	28	23	50
17	6	9	6	7	12	16
18	1	3	2	3	3	6
Above	0	0	1	2	1	2
Total	22	36	21	45	43	81

The weight-height-age distribution of the students at the time of the study is given in the Appendix, page 1. Almost half of the boys and slightly more than half the girls were normal in weight. About a fourth of the boys and girls were overweight and slightly more then a fourth of the boys and girls were underweight. There was no consistent difference between the boys and the girls. Too much emphasis should not be put on these findings since one weighing does not necessarily give a picture of nutritional status.

Eight of the original dietary records are included in the Appendix. These records were selected to illustrate certain characteristics found in the diets of the students.

A comparison of the number of students in the four schools rating good or poor on the basis of the total diet for the week is given in Table III. Schools A and B were located in Greensboro. Schools C and D were rural schools. Of the 43 boys only three, all in urban schools, could be rated good and 31 rated poor. No rural boys could be rated good. Except in School A, three fourths or more had poor diets. The A boys had a smaller proportion of poor diets than any of the other schools, but the total number was too small to be conclusive. Only one girl out of the total 81 girls was rated good, and 69 of the 81 girls had poor diets. As with the boys, this one good diet was found in an urban school. The proportion of girls with poor diets was about the same as boys with poor diets except at A where more girls than boys had poor diets. The girls in urban School B had a somewhat smaller proportion of poor diets than the girls in any other school. In the rural schools, proportionately more girls than boys had poor diets.

The diets of boys at urban School A seem better than those of boys or girls in other schools. The girls were generally poor in all schools.

As was reported by Hardy[1] (page 10), the poor diets of this study were frequently poor because there was either too few foods eaten or too

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1. Frances Hardy, "Study of Dietary Level of 100 Families," Journal of Home Economics, XXXVII (June, 1945), 355.

TABLE III

A COMPARISON OF THE NUMBER OF STUDENTS RATING GOOD AND POOR ON WEEKLY DIET ON THE BASIS OF TOTAL SERVINGS

School	Students	Total Diet		Food Groups													
				Milk		Green, Yellow		Citrus, Tomato		Other Fr.,Veg.		Meat		Eggs		Butter	
		Good	Poor	Good	Poor	Good	Poor	Good	Poor	Good	Poor	Good	Poor	Good	Poor	Good	Poor
	Boys:																
A	6	1	2	6	0	4	1	5	0	1	0	6	0	3	1	2	1
B	16	2	13	10	3	11	2	5	7	4	6	16	0	13	2	8	6
C	12	0	9	5	3	8	2	1	8	5	2	12	0	7	3	5	4
D	9	0	7	5	3	2	3	3	4	1	5	9	0	5	2	1	6
Total	43	3	31	26	9	25	8	14	19	11	13	43	0	28	8	16	17
Percent	100	7	72	60	22	58	19	33	44	26	30	100	0	65	19	37	40
	Girls:																
A	13	0	11	5	4	10	0	4	5	3	5	13	0	6	7	1	10
B	23	1	18	5	12	14	3	9	8	1	7	22	0	12	2	5	6
C	19	0	16	3	10	15	1	1	14	7	0	17	0	5	10	2	9
D	26	0	24	3	16	8	12	6	15	4	7	24	1	10	8	1	18
Total	81	1	69	16	42	47	16	20	42	15	19	76	1	33	27	9	43
Percent	100	1	85	20	52	58	20	25	52	19	23	94	1	41	33	11	53

many foods of the same group. For example, Dietary Record VII and Dietary Record VIII, pages 9 and 10 of the Appendix, are very poor dietaries because too few of the essential foods were eaten; the Wednesday dietary of Dietary Record IV, page 6 of the Appendix, has too many foods of the same group. Dietary Record II, page 4 of the Appendix, is a better dietary in many respects but again too many foods of the same group were eaten. This diet illustrates the all too common habit of emphasizing a few protein foods and omitting the needed vegetables and fruits. This record is rather unusual in its almost complete absence of milk. There was not enough variety to furnish the essential foods.

Table III also analyzes the diets in the four schools according to good or poor consumption of the various food groups during the week. In every food group, on this basis, a larger proportion of urban than rural boys ranked good. It can be seen that all the boys in A, more than half the boys in B, and about half the boys in rural Schools C and D had three or more glasses of milk each day. All the boys in the four schools had one or more servings of meat each day. About two thirds of the boys in Schools A, B, and C had at least one serving of green or yellow vegetables a day, but only two of the nine boys in rural School D had this amount. Five of the six boys in urban School A had one or more servings of citrus fruit or tomato while about one third of the boys in B and D and only one of the 12 boys in C had citrus fruit or tomato every day. Very few boys in any school ate enough other fruits and vegetables. In every school at least half of the boys had five eggs during the week.

Half the boys in urban School B but much less than half the boys in Schools A, C, and D had enough butter for the week.

Only for meat did most of the girls rate good. A larger proportion of girls rated good in the use of green and yellow vegetables than in the use of any other food group except meat. Only 16 of the 81 girls had as much as three glasses of milk a day; surprisingly, the proportion was larger for the girls in urban School A than for the other urban school or the rural ones. More than half of the girls had less than two glasses of milk a day in comparison with one fifth of the boys. Only one of the 19 girls in C and six of the 26 girls in D, both rural schools, had as much as one serving of citrus fruit or tomato a day. Only nine of the 81 girls had two servings of butter a day. This might have been attributed to a shortage in market for the urban schools but is surprising in the rural diets. A larger proportion of urban than rural girls rated good in all food groups except other fruits and vegetables.

A few more than half of both boys and girls had enough green or yellow vegetables to be classed as good but for every other food group a larger proportion of boys ranked good than girls. More boys than girls rated good in the case of milk, citrus fruit or tomato, meat, eggs and butter.

Poor diets in the rural families may indicate the need for more and better gardens and more home canning.

Leverton and Marsh[2] (page 9) compared food intakes on school days and the week-end. A comparison of the diets in this study for school days and the week-end is given in Table IV. The diets of two boys and one girl all in the urban schools were rated good on school days but only one of these students, a boy, also had a good diet on the week-end. In the two rural schools no diet rated good for either school days or the week-end. Dietary Record I, page 3 of the Appendix, is that of the boy with a good diet for both parts of the week, and Dietary Record III, page 5 of the Appendix, is that of the girl with a good diet on school days.

There was little difference shown between the diet of the boys on school days or on the week-end. Slightly more of the rural boys and boys in urban School A were poorer on the week-end. Among the girls there was a somewhat greater difference. In all schools, except D, there seems to be a tendency for the diets of the girls to be poorer on the week-end than during the week. The number of poor diets for urban girls increased on the week-end from 26 to 32. In School D, all girls' diets were poor on school days and all but one on the week-end. Of the total 81 girls, 69 had poor diets during the school days and 76 had poor diets over the week-end. Whether this was due to a school lunch better than the usual home meal or more disorganized living on Saturdays and Sundays was not determined in this study but the impression gained was that less regular eating habits and less attention to the planning of meals were to blame. For example, see the Sunday meals of Dietary Records I, IV, V, VII in the Appendix.

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2. Ruth Leverton and Alice Marsh, loc. cit.

TABLE IV

A COMPARISON OF NUMBER OF STUDENTS RATING GOOD AND POOR ON SCHOOL-DAY AND WEEK-END DIETS ON THE BASIS OF AVERAGE DAILY SERVINGS

School	Students	Total Diet		Food Groups													
				Milk		Green, Yellow		Citrus, Tomato		Other Fr.,Veg.		Meat		Eggs		Butter	
		Good	Poor	Good	Poor	Good	Poor	Good	Poor	Good	Poor	Good	Poor	Good	Poor	Good	Poor
	Boys:																
School-day:																	
A	6	1	3	6	0	5	1	4	0	1	1	6	0	3	1	1	1
B	16	1	11	9	3	12	2	5	7	4	5	16	0	13	2	6	3
C	12	0	11	5	5	8	3	1	10	8	2	12	0	7	2	5	3
D	9	0	7	4	3	3	1	2	6	1	5	8	0	5	2	1	6
Week-end:																	
A	6	1	4	5	0	4	0	5	1	2	2	6	0	3	1	2	1
B	16	0	10	8	5	8	1	7	4	3	4	16	0	9	4	5	3
C	12	0	12	4	6	9	2	4	6	4	4	12	0	5	4	7	5
D	9	0	8	5	3	2	3	4	2	1	4	9	0	4	2	1	2
	Girls:																
School-day:																	
A	13	0	8	6	2	10	0	4	2	4	4	12	0	6	3	1	7
B	23	1	18	6	9	15	2	10	10	3	5	22	0	11	2	5	5
C	19	0	17	3	9	16	0	0	15	10	0	17	0	5	8	3	8
D	26	0	26	4	15	10	13	5	18	5	4	24	0	11	8	1	17
Week-end:																	
A	13	0	12	4	4	10	0	5	5	3	5	13	0	4	6	1	8
B	23	0	20	3	14	14	3	13	5	3	8	22	0	13	3	5	8
C	19	0	19	3	13	14	1	2	14	5	6	15	1	6	8	1	8
D	26	0	25	3	15	11	10	10	9	2	14	24	0	8	9	3	9

When the diets were analyzed according to the food groups represented on school days and on the week-end some significant food practices were shown.

In the case of milk consumption, more of the urban boys used adequate amounts on the school days than on the week-end. Also with green or yellow vegetables, more boys had adequate servings during the week than on the week-end except in C, a rural school. The opposite was true with citrus fruit or tomato--more of the boys in each school had adequate servings over the week-end. About half the boys had adequate amounts of eggs both during the week and on the week-end. The largest number of boys with inadequate amounts of any food group was shown by School C in their use of citrus fruit or tomato during school days. The six boys at School A rated much better than any other group except in other fruits and vegetables, eggs and butter.

A larger proportion of the girls used green or yellow vegetables in adequate amounts than any other food group except meat both on school days and on the week-end. Only 15 of the 81 girls rated poor on their use of green or yellow vegetables on the school days and only 14 of the 81 girls rated poor on the week-end. In School D, the girls' diets seemed to be better during the week. In the use of milk, more girls rated good during the week than on the week-end. The rural girls were definitely deficient in milk on the week-end. In the use of citrus fruit or tomato, the girls, like the boys, rated better on the week-end than on the school days. Although the use of other fruits and vegetables was generally poor, more seemed to have been used in adequate amounts by the girls during the week than on the week-end in all the schools. About half the girls in all schools except C, had adequate eggs during the week. Schools B and C

improved in the use of eggs over the week-end. The use of butter was generally poor with the girls in all schools, during the school days and also over the week-end. Rural School C used citrus fruit or tomato least often in good amounts during both parts of the week.

On both school days and the week-end, meat was the food item most often eaten by both boys and girls. Both boys and girls seemed to show somewhat better use of milk on school days. In all schools, except D, the increase in the number of girls rated poor on the use of milk on the week-end was striking. In all four schools, for the school days as well as for the week-end, the proportion of boys using adequate amounts of milk was much higher than was the proportion of girls. The number of urban boys using green or yellow vegetables at least once a day decreased from 17 during the week to 12 on the week-end. About the same proportion of girls used adequate amounts of green or yellow vegetables for both parts of the week. The use of citrus fruit or tomato was definitely better for all groups on the week-end. Dietary Records IV and VI, pages 6 and 8 of the Appendix, are two examples of this food practice. More boys and girls were deficient in citrus fruit or tomato on school days than in any other food group. The use of other fruits and vegetables was definitely better on school days for rural boys and girls, but was about the same for urban students. Eggs were used by more urban and rural boys on school days, but the girls showed little difference. Little difference was shown in the use of butter.

Leverton's[3] study, a clinical one, shows daily variations for week days and week-end days. Although her findings are not comparable to the present findings, her somewhat subjective reasons for the variations were the reasons indicated by the records of this study. In general, the records of this study showed that some students ate oftener over the week-end. Often in these cases, fewer meals were eaten and more foods such as weiners, sandwiches, popcorn, and others were eaten all during the day. Others ate less food because they were too busy to eat.

A picture of the use of sweets by the students is shown in Table V. Stiebeling[4] (page 10) noted the great increase in the use of sugar in the United States. Although sugar was rationed at the time of the study, some students ate rather large amounts of sweets as for example the Wednesday dietary of Dietary Record VII, page 9 of the Appendix.

TABLE V

CONSUMPTION OF SWEETS IN THE SCHOOLS

School	Total Students Reporting		Servings of Sweets Per Week							
			1-7		8-14		15-21		22 or more	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
A	6	13	0	3	1	5	3	2	2	3
B	16	23	4	0	3	9	3	7	6	7
C	12	19	2	1	7	7	2	5	1	6
D	9	26	0	3	8	13	0	8	1	2
Total	43	81	6	7	19	34	8	22	10	18

3. Ibid.

4. Hazel K. Stiebeling, loc. cit.

As shown in Table V, almost half of the 124 students had more than two servings of desserts or other sweets a day. About a fifth had more than three servings a day. A larger proportion of girls than boys ate sweets more often than twice a day in each school except A. School B, the larger urban school, led with over half of both boys and girls having sweets more than twice a day. School D, rural, had a smaller proportion of students who used sweets excessively than any other school; even so, about a third had more than two servings a day.

Coffee, tea, and soft drink consumption in the various schools showed some relationship with the adequacy of individual diets. As shown in Table VI, only in the urban schools do any boys report no coffee, tea, or soft drinks. Only two girls, one urban and one rural, made a like report. One wonders whether athletic training rules, especially in the city schools, are responsible for the better showing of the boys from those schools. In rural school D where all boys and girls reported the use of coffee, tea, or soft drinks, a comparison was made of the use of these beverages and the use of milk. It was found that of the 17 students who had as much as one serving each day of coffee, tea, or soft drink, 11 of them rated poor on their milk consumption.

More than half of the total students had these beverages at least once a day.

TABLE VI

CONSUMPTION OF COFFEE, TEA, SOFT DRINKS
IN THE SCHOOLS

School	Total Students Reporting		Servings of Coffee, Tea, Soft Drinks Per Week							
			0		1-6		7-13		14 or more	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
A	6	13	2	1	2	6	1	6	1	0
B	16	23	4	0	8	10	0	10	4	3
C	12	19	0	1	2	7	5	7	5	4
D	9	26	0	0	5	13	4	13	0	2
Total	43	81	6	2	17	36	10	36	10	9

In the data collected, there were some instances of meals omitted. Of the meals that were omitted, breakfast on school days was the usual one. The 81 girls missed breakfast 40 times during the school days and 13 times on the week-end; whereas the 43 boys missed breakfast only seven times during the school days and six times on the week-end. The lunch was seldom missed. On the week-end, supper was missed a few more times than breakfast by the girls, but the boys missed supper equally as many times as breakfast.

The greater part of the meals omitted occurred among the urban girls for both parts of the week. Apparently, omitting breakfast was not a deciding factor in poor diets since the greater proportion of poor diets occurred among the rural girls during both parts of the week.

TABLE VII

OMISSION OF MEALS IN THE SCHOOLS

School	Total Students Reporting		Number of Times Omitted Per Week					
			Breakfast		Lunch		Supper	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
School-days:								
A	6	13	0	16	0	2	0	1
B	16	23	0	12	1	0	1	3
C	12	19	7	8	0	1	4	0
D	9	26	0	4	0	3	0	8
Total	43	81	7	40	1	6	5	12
Week-end:								
A	6	13	0	6	0	2	0	3
B	16	23	1	4	0	0	2	4
C	12	19	5	1	0	0	3	3
D	9	26	0	2	0	5	1	7
Total	43	81	6	13	0	7	6	17

Generally speaking, the breakfasts consumed by both urban and rural students were substantial, consisting usually of eggs, bread, meat, or bacon, milk, jam, often fruit and sometimes cereal. This fact is noticeable in each of the dietary records in the Appendix.

In every individual case studied, there was some between-meal eating. A large part of this "extra" eating occurred in the afternoons, although the before-bed-snack was quite popular. There was very little mid-morning eating in any school except D. There, the mid-morning eating about equaled the after school eating. This can be explained by the fact that the school lunch room was open before school and during the entire

morning offering cakes, cookies, peanuts, and other variety items for sale. The types and combinations of foods eaten were quite varied and inclusive, ranging from milk, meat, and vegetables to nuts, fruits, and candy. The most popular items were fruit, desserts, and soft drinks. Between-meal eating can increase the general adequacy of the diet and stimulate the appetite if foods such as milk and fruit are eaten.

It is interesting to see the results of this study in comparison with results found in other parts of the country with similar studies.

Reynolds[5] reported, in Tennessee, 93.2 per cent of diets poor and only 1.2 per cent of diets good; whereas, in this study only 72 per cent of boys and 85 per cent of girls had diets that were poor and 7 per cent of boys and 1 per cent of girls had good diets.

Both Reynolds and Coco[6] found, as did this survey, that meat was the food item which came nearest meeting the present recommendations.

Brendle[7] found, in her study made before the enforced enrichment of flour and cereal products in North Carolina, that one of the weakest points in the diets was the lack of whole grain or enriched cereal products. For the present study it was not necessary to tabulate this food group, because all bread and cereal products on the market were enriched by law.

More than half the boys and a fifth of the girls had at least three glasses of milk a day; whereas, Jones[8] found that more than half of her subjects drank two glasses of milk a day, Reynolds and Coco found

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5. Doris Marie Reynolds, loc. cit.

6. Lucille Coco, loc. cit.

7. Cleo Brendle, loc. cit.

8. Mildred Jones, loc. cit.

less than half drinking that amount, and Leichsenring[9] found that more than half the subjects in Minnesota and a third of the subjects in Kansas had less than one glass a day.

In the case of green or yellow vegetables, more than half of both boys and girls had at least one serving a day. This food group was one of the weakest points among diets of Brendle's subjects. Likewise, in Leichsenring's study, green or yellow vegetables particularly were lacking in the diets.

The boys and girls in this study did not do as well with citrus fruit or tomato as with green or yellow vegetables--about a third of the boys and a fourth of the girls had one serving a day. Reynolds reported a third, Jones reported a fourth, and Leischenring reported a fourth of the respective diets as having one serving a day. Brendle's subjects were very weak in the use of citrus fruit and tomato.

"Other fruits and vegetables" was the food group most generally lacking for boys and girls in this study. Gray[10] recently found in her study of the diets of school children in Rowan County, North Carolina, a similar lack of fruits and vegetables in the diets of junior and senior students. This does not necessarily mean that the community is lacking in these foods; it may mean that the high school students are not taking advantage of the opportunities offered at school and home to have these essential foods. This fact was pointed out by Brendle, of this state,

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9. Jane Leichsenring, loc. cit.

10. Cora E. Gray, Personal Communication, 1946.

Haws[11] of Oklahoma, and Hardy[12] of Washington. However, it is possible, as shown by Jones of Iowa, that the necessary variety of foods are not offered at home. This may explain why many diets were better on school days than on the week-end, especially in the case of vegetables among the urban students.

The very poor usage of butter by the girls of this study can hardly be explained by mentioning butter and fat rationing since more than one third of the boys had adequate amounts and since the same lack was found in rural schools.

As was suggested by Stamm and Wiehl,[13] the nutritive value of the school lunch could be increased in those specific foods which are generally lacking, and thus improve the general adequacy of diet. It was apparent that something should be done to increase the offering and to stimulate the use of citrus fruit or tomato during the school days.

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11. L. C. Haws, loc. cit.

12. Frances Hardy, loc. cit.

13. Emily Stamm and Dorothy Wiehl, loc. cit.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

A survey has been made to reveal the food practices of urban and rural high school juniors and seniors in and near Greensboro, North Carolina. The data for the study were seven-day food intake records collected during the months of October and November, 1945. At that time, rationing had been discontinued except for sugar, but meats and fats were scarce.

It was found that very few of the students had adequate diets in every respect. The girls especially seemed to have inadequate diets in all the schools. The diets of the boys in the urban schools were supeior to the diets of the rural groups. The most conspicuous lack was in the total number of fruits and vegetables eaten.

Generally speaking, the boys' school day diets were no more adequate than the week-end diets. Although more boys had green and yellow vegetables during the week, more boys had citrus fruit or tomato on the week-end than during the week. The number of girls with poor diet was somewhat smaller on school days than over the week-end except for School D, a rural school. Both boys and girls ate more adequate amounts of citrus fruit or tomato over the week-end than during the week. More girls in School C ate green or yellow vegetables and other fruits and vegetables on school days than on the week-end. This may reflect the good influence of the lunchroom during the week; however, the school lunch rooms need to emphasize the use of fruits and vegetables, and especially citrus fruit or tomato.

Breakfast was the most often missed meal; the urban girls missing more often. In contrast with some other findings, the breakfasts were usually quite substantial.

Milk and egg consumption was generally fair in the diets; however, among the 17 students in rural School D who had as much as one serving each day of coffee, tea, or soft drinks, 11 rated poor on their milk consumption. More than half of the students had coffee, tea, or soft drinks at least once a day.

Meat or meat substitutes were usually included in adequate amounts in all the diets.

About half of the students had more than two servings of desserts or other sweets each day; one fourth of these had more than three servings each day.

Recommendations

This study shows the deficiencies in the high school diets and the need for effective teaching of foods and nutrition to the high school students. Emphasis should be placed on:

1. Using more fruits and vegetables.

2. Eating a variety of foods.

3. Drinking more milk, the girls especially.

4. Using more citrus fruit or tomato. There is a definite need for including more of this food group in the school lunch.

Training in the formation and practice of good food habits is a part of the total educational responsibility of the school and also the

home. It is recommended that to set up an effective educational program of foods and nutrition, it is important to include:

1. The administration.

2. Each individual teacher.

3. The lunch room manager and supervisor.

4. The parents.

5. The students.

Suggestions for further study:

1. Discover ways and means of stimulating better choice of foods, especially more fruits and vegetables.

2. Study factors which contribute to poor diet such as food aversions, unavailability of food at home due to ignorance or poverty or carelessness, type of menu offered in school lunch, between meal eating, and others.

3. Study the effect of different ways to stimulate better eating through wider class instruction, home projects, gardens, use of lunch room to teach nutrition, adult education, and others.

4. Plan a school lunch that will emphasize those foods most often missed at home.

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APPENDIX

TABLE A

WEIGHT-HEIGHT-AGE DISTRIBUTION
OF STUDENTS*

School	Total Students		Above Normal 10% or more		Normal		Below Normal 10% or more	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
A	6	13	3	5	2	3	1	5
B	16	23	2	4	10	14	4	5
C	12	19	1	1	6	9	5	9
D	9	26	5	7	2	15	2	4
Total	43	81	11	17	20	41	12	23
Percent	100	100	25	21	46	51	28	28

*Based on Weight-Height-Age Tables prepared by Byrd T. Baldwin, Iowa Child Welfare Research Station, State University of Iowa, and Thomas D. Wood, Columbia University, Reprinted by courtesy of the American Child Health Association.

DIETARY RECORD

Name_____ Age___ Parent's occupation_____

Rising time___ Bed time_____ Ht.____ Wt.____ Grade___ School_____

Activities by days:	Rising to breakfast:	Breakfast to school:	Lunch period:	After school to supper:	Supper to bed:
1.					
2.					
3.					
4.					
5.					
6.					
7.					

Days:	Breakfast:	Midmorning:	Lunch:	After school:	Supper:	Before bed:
1.						
2.						
3.						
4.						
5.						
6.						
7.						

DIETARY RECORD I

School A Boy Age--16 Height--5'11" Weight--150

Tue. B: 1 med. orange, 2 c. oatmeal-3 t. sugar-2 T. cream, 1 egg-scramble, 1 sl. toast, butter, ½ pt. milk.
L: 2/3 c. meatloaf, ½ c. creamed potatoes, 1 cheese sandwich, ½ pt. milk, 1 choc. cookie.
After school: 1 cream puff, 1 pear.
S: 1 c. lamb hash, 1c. Fr. Fr. potatoes, ¼ head lettuce-2 servings, ¼ cucumber, ½ pt. milk, 1c. spinach.
Before bed: 1 large glass choc. milk.

Wed. B: 1 sm. glass tomato juice, ½ c. oatmeal-½ c. milk-1½ t. sugar, 1 egg, 1 sl. bacon, 1 sl. toast-jelly-butter, ½ pt. milk.
L: 2/3 c. chicken noodles, ½ c. snaps, 2/3 c. shredd. lettuce, ½ pt. milk.
After school: 1 pear 1 custard pie.
S: 2 large meat balls, 1 c. spinach, 2 rolls-butter, ½ pt. milk, 1 c. cabbage slaw.
Before bed: 6 ritz crackers and cheese.

Thu. B: 1 orange-sugar, 1 egg, 1 sl. bacon, 2 sl. toast-butter-honey, ½ pt. milk.
L: 2/3 c. baked beans, carrot-celery sticks, 1 cheese sandwich, ½ pt. milk.
S: 1 c. stewed chicken, ½ c. sw. potato, 1½ c. shredd. cabbage, 1½ c. cann. tomatoes, 2 rolls-butter, ½ pt. milk.

Fri. B: 1 orange, 1 c. oatmeal-3 t. sugar-3 oz. cream, 1 egg, 1 sl. bacon, 2 slices toast-butter, ½ pt. milk.
L: 1 hamburger, ½ c. green peas, 1 c. shredd. lettuce, ½ pt. milk, 1 ice cr. sandwich.
S: ¼ lb. steak, 1 c. buttered carrots, 1½ c. shredd. cabbage, ½ pt. milk, 2 rolls-butter-honey.
Before bed: 1 cream puff, 1 banana.

Sat. B: 4 oz. tomato juice, 1 egg, 1 sl. bacon, ½ pt. milk, 1 sl. toast-butter.
L: 1/3 can tuna fish in salad, 1/5 head lettuce, 2 sl. toast-butter, ½ pt. milk.
S: 1/4 lb. steak, Fr. Fr. potatoes-½ c., 1 c. spinach, 1c. shredd, cabbage, 2 rolls-butter-honey.

Sun. B: 1 orange-sugar, 1c. shredd. ralston, 2 t. sugar-3 oz. cream, 1 egg, 1 sl. bacon, 1 sl. toast-butter, ½ pt. milk.
L: 2 pieces Fr. chicken, 1 c. boiled rice, 1 c. spinach, ½ c. corn, several pieces celery, 2 rolls, butter, ½ pt. milk.
After noon: 6 olives, crackers-cheese.
S: 1 egg, 1 choc. malted milk, apple.

Mon. B: 1 orange, 1 egg, 1 sl. bacon, 2 slices toast, ½ pt milk.
L: 2/3 c. macaroni cheese, ½ c. green peas, ½ c. apples, ½ pt. milk.
S: ¼ lb. ground beef, 1 c. Fr. potatoes, 1 c. shredd. cabbage, serv. hot veg., 2 rolls-butter, ½ c. milk.
Before bed: 1 peanut butter sandwich, olives.

DIETARY RECORD II

School A Girl Age--18 Height--5'4" Weight--147 lbs.

Mon. B: 1 egg, 1 sl. bologna, 1 sl. toast--no butter, 1 c. coffee--1 T. cream, 2½ t. sugar.
L: ½ c. chicken noodles, 2/3 c. shredded lettuce--dressing, 2 T. snaps, 1 w.w. roll-butter, tomato--lettuce sandw., ½ pt. milk, ice cream.
After school: 1 pineapple sandw, 1 T. turnip greens, 2 sl. bread.
S: 2 T. turnip greens, 2 T. black eyed peas, 2 small hot peppers, 1 tomato pickle, ½ sl. corn bread.

Tue. B: 1 banana, 1 egg, 1 sl. toast, 1 c. coffee- 2 t. sugar, 2 T. cream.
L: 2 hamburgers--slaw, 2 T. carrots, turnip and celery curls, ½ pt. milk, 1 ice cream sandwich.
S: 3 T. stew beef, 2 T. lima beans, 2 sl. tomato, 1 pickle, 1 sl. w.w. bread, 1 c. coffee, 2 t. sugar, 2 T. cream.
Before bed: 2 tomato sandwiches.

Wed. B: 3 T. brains and eggs, 1 sl. w.w. bread, 1 c. coffee--2 t. sugar, 2 T. cream.
L: 1 pineapple sandw, 2 T. corn, 2 sl. bread, 1 ice cream cone.
S: 1 steak, 2 sl. bread--gravy, 1 T. corn, ice cream.

Thu. B: 1 egg, 1 sl. toast--butter.
L: 2 T. spaghetti, 2 T. greenpeas, 2 T. apples, 2 T. baked beans, 1 w.w. roll-butter, ½ pt. milk, 1 ice cream sandwich.
S: 2 eggs, 3 T. pork and beans, 1 sl. bread, 1 candy choc. bar, 1 hamburger--slaw.

Fri. B: 2 cakes sausage, 2 sl. bread--no butter, 1 c. coffee--1 T. cream, 2 t. sugar.
L: 3 T. meat loaf, 3 T. creamed potatoes, 1 T. gravy, 3 sl. tomato, 1 w.w. roll-butter, 1 w.w. cheese sandw, ½ pt. milk, 1 ice cream.
After school: 2 apples.
S: 1 steak, 2 T. gravy, 2 T. okra, 2 sl. bread.
Before bed: several pieces choc. candy, 1 pineapple sandw with cheese and lettuce.

Sat. B: 1 egg, ½ sl. bread.
L: 2 T. creamed potatoes--gravy, 2 T. greens, 2 T. green peas and carrots, 2 T. cole slaw, 2 rolls, ½ pt. choc. milk, 3 T. banana pudding.
S: 1 fish, 3 sl. bread, 3 hands potato chips, 1 c. coffee--2 T. cream 2 t. sugar.
Before bed: 1 coca cola, 1 c. choc. drops.

Sun. B: 1 steak, 3 T. gravy, 2 sl. bread, 1 c. coffee--2 T. cream, 2 t. sugar.
L: roast beef, 2 T. green peas, 3 T. spaghetti, 2 rolls, jello--apples and bananas, 1 sl. choc. cake.
S: 1 piece chicken, jello--apples and bananas, 1 piece candy.

DIETARY RECORD III

School B Girl Age--16 Height--5'4" Weight--95

Wed. B: 1 sm. glass orange juice, 1 sl. toast--butter, 1 egg, 1 med. glass milk, 1 cake sausage.
L: ½ pt. milk, ½ c. green peas, pimento cheese sandw., banana salad with nuts and mayonnaise.
After school: small fountain coca-cola, ½ Baby Ruth candy bar, ½ large bag of potato chips.
S: 1 sl. of round steak, 1 med. potato, ½ c. spinach, ½ T. butter, 1 glass of choc. milk.
Before bed: 1 sm. glass of orange juice.

Thu. B: 1 med. glass of milk, 1 egg, 1 piece of toast-butter, orange juice, 1 cake of sausage.
L: ½ pt. milk, ½ c. mashed potatoes, gravy, meat sandwich.
After school: coca-cola, 2 cheese crackers, Baby Ruth candy bar.
S: Med. carrot, ½ c. snap beans, 2 hot dogs, 1 glass milk, ½ potato, 1 apple.
Before bed: 1 small glass of orange juice.

Fri. B: 1 piece of toast-butter, 1 cake sausage, 1 egg, 1 glass milk, 1 sm. glass orange juice.
L: pimento sandw., 1 c. tomato soup, potato, milk, carrot.
After school: 1 med. glass orange juice, 1 sm. glass R. C. cola, 1 apple, 1 sm. glass orange juice.
S: 2 hot dogs, carrot, choc. milk, ½ c. corn.
Before bed: 1 sm. glass orange juice.

Sat. B: ½ egg, 1 sm. glass orange juice, 1 toast -butter, 1 piece of bacon, ½ c. apple sauce.
Midmorning: 1 sm. glass orange juice.
L: 1 med. glass milk, ½ c. tomato soup, ½ c. chicken, pimento cheese sandwich, 6 sm. cookies.
Afternoon: 1 sm. glass orange juice, 4 sm. pieces of candy.
S: snap beans-½ c., ½ pt. milk, vegetable soup, sm. piece chicken, 1 med. piece of steak.

Sun: B: 1 egg, 1 piece bacon, 2 pieces toast-butter, 1 sm. glass orange juice.
Mid morning: 1 sm. glass orange juice.
L: ½ c. veg. soup, 1 roll, 1 glass milk, ½ c. chicken, ½ c. ice cream, 3 sm. pieces of candy.
Mid noon: 1 sm. glass of orange juice.
S: med. piece steak, ½ c. green peas, ½ c. corn, 3 carrot strips, 1 glass milk, ½ c. peaches.
Before bed: 1 sm. glass orange juice, 1 apple.

Mon: B: 1 egg, 1 glass milk, 1 roll-butter, 1 piece bacon, 1 orange juice.
L: 3 peanut butter crackers, ½ pt. milk, 1 cream sandw.
After school: 2 c. potato chips, 1 apple.
S: glass milk, ¼ c. peas, ¼ c. chicken, 2 carrot strips, 1 ice cream cone, 1 roll, 1 sm. potato.

Tue. B: 1 med. glass orange and grapefruit juice, 1 egg, 1 strip bacon, 1 glass milk, 1 roll.
L: ½ c. potatoes, 1 tomato sandwich-lettuce and mayonnaise, ½ pt. milk.
After school: 6 sm. pieces of candy, 1 cookie, 1 piece bread.
S: 1 sl. ham, ½ c. potatoes-butter, 1 glass milk, 4 strips carrots, ½ peach, ½ c. green peas.
Before bed: 1 med. glass orange and grapefruit juice.

DIETARY RECORD IV

School B Boy Age--16 Height--5'11" Weight--157

Wed. B: 3 bacon strips, 2 eggs, 1 grapefruit juice, 2 pieces bread-butter.
L: 1 serv. sweet potatoes, 1 serv. w. potatoes and beef, ½ c. greens, ½ c. pinto beans, 1 roll, 1 bowl choc. pudding, 1 pt. milk, ice cream cone.
After school: 1 large dish ice cream, 4 oranges.
S: ½ c. peas, ½ c. potatoes, 4 bread-butter, 2 glasses milk.
Before bed: 1 Baby Ruth candy bar, 2 peanut butter sandwiches.

Thu. B: 1 egg, 1 glass milk, 2 pieces bacon.
L: ½ c. pinto beans, 1 serv. spareribs, chicken, 1 serv. pie, 1 roll, dish peaches, 1 ice cream, 1 pt. milk.
After school: 1 milk shake, 2 oranges, 2 pieces bread, 2 Spam sandw.
S: 2 pieces Spam, 2 glasses milk, ½ c. pinto peas, 2 pieces cake.

Fri. B: 1 egg, 2 sl. bacon, 1 glass milk.
L: 1 serv. beef, 1 serv. potatoes, 1 serv. green beans, ½ c. banana pudding, 1 ice cream, 1 pt. milk, 1 roll.
After school: 1 large dish ice cream, 2 cakes, 1 pepsi cola.
S: ½ c. peas, butter, 2 rolls, pinto beans, 1 glass milk.

Sat. B: ½ c. oatmeal, 2 slices bread, 1 glass grapefruit juice.
L: 1 hot dog, 1 coca-cola, 1 pt. ice cream.
Afternoon: 2 cakes, 2 cokes, 2 candy bars, bunch grapes, 2 tangerines, 3 oranges.
S: 2 prk. chops, bread, 1 serv. peas, 1 serv. potatoes, 1 glass milk.

Sun. B: 1 egg, 2 pieces bread, 1 bacon, 1 glass orange juice.
L: turkey, bread, peas, pt. milk, potatoes.
Afternoon: 1 pepsi cola, 1 pt. ice cream, 1 hamburger.
S: 3 castleburgers, 1 coke.

Mon. B: 1 egg, bread, 1 glass milk.
L: ½ c, macaroni, 1 serv. sweet potatoes, 1 serv. greens, 1 glass milk, ice cream, 1 roll.
S: turkey, bread, milk, Spam.

Tue. B: oatmeal, milk.
L: potatoes, milk, meat loaf, greens, peaches.
After school: 1 large ice cream, 1 cake, 1 Spam sandwich, 1 coke.
S: 1 sm. serv. spinach, 1 serv. peas, 2 sl. bread, milk.

DIETARY RECORD V

School B Girl Age--16 Height--5'5" Weight--135

Wed. B: 1 hard boiled egg, 1 strip bacon, 1 c. coffee-cream.
L: banana salad-peanuts, ice cream sandwich.
After school: 3/4 c. ice cream, orange.
S: ½ c. meat stew, ½ c. green peas, 1 glass custard, 1 c. coffee, cream.
Before bed: 1 lemon bun.

Thu. B: ½ c. grapefruit, 1 c. coffee-cream.
L: ice cream sandwich.
After school: ½ c. ice cream.
S: 1 c. veg. soup, 1 c. coffee-cream, 4 crackers, 1 piece peach pie.

Fri. B: 1 sl. bacon, 1 egg, 1 c. coffee-cream.
L: 1 ice cream sandw., 1 slice peach pie.
S: ½ c. veg. soup, 4 crackers, 2 Vienna sausage, 1 cookie, 1 c. coffee-milk.

Sat. B: ½ banana, 1 strip bacon, 1 c. coffee, milk.
L: ½ pimento cheese sandwich, 2 cookies, ½ c. pepsi-cola, 1 sl. sw. pickle.
Afternoon: 2 sm. chicken sandw., 2 sm. cream cheese sandw., 3 cookies, 3 cheese wafers, 1 c. Russian tea.
Before bed: 1 sq. ice cream, 1 slice wedding cake, 1 T. mixed nuts.

Sun. B: ½ c. grapefruit, 1 strip bacon, 1 hard boiled egg, 1 c. coffee.
L: 1 chicken salad sandw., 4 cheese wafers, 2 c. Russian tea, 4 cookies.
S: 1 c. chile, 1 c. cocoa, 1 slice cake.

Mon. B: 1 hard boiled egg, 1 strip bacon, 1 c. coffee- milk.
L: 1 cream cheese olive sandw., 1 ice cream sandw.
S: 1 good slice roast beef, 3/4 c. potatoes, ¼ c. cabbage, 1½ T. gravy, 1 c. coffee-canned milk.
Before bed: 1 c. Russian tea, 3 cookies, 1 sm. chicken salad sandw. 2 cheese wafers.

Tue. B: 1 hard boiled eggs, 1 strip bacon, 3/4 glass milk.
L: ½ chicken salad sandw., 2 cookies, 1 banana.
After school: 3 t. peanuts, 4 mints.
S: 1 med. piece steak, 1 roll, ½ c. potatoes, 2 T. gravy, ½ c. green peas, 1 slice choc. pie, 1 c. coffee-milk.
Before bed: 2 mints.

DIETARY RECORD VI

School C Girl Age--16 Height--5'6" Weight--105

Tue. B: ½ c. cornflakes, 1/3 c. milk-2 t. sugar, 1 slice steak, ½ egg, 1 biscuit, 1 c. coffee-1 t. sugar, 1 t. cream.
Midmorning: 2 pieces fudge.
L: 3 T. peas and carrots, 3 T. beef, 1 T. slaw, 1 T. candy yams, 2 slices, bread, ½ pt. milk, 1 ice cr. sandwich.
After school: 1 pk. peanuts.
S: 1 c. snaps, ½ c. cr. potatoes, 1 cake sausage, 2 biscuits, ½ c. peaches, 1 slice cake.

Wed. B: 1 egg, 1 biscuit, 1 piece beef, 1 c. coffee-1 t. cream, 1 t. sugar.
Midmorning: 2 pieces fudge, 1 ice cr. sandwich.
L: 2 T. snaps, 2 T. cr. potatoes, 1 T. fruit salad, ½ c. meat loaf, 1 t. slaw, 3 slices bread, pt. milk-½, 1 ice cream sandwich.
S: ½ c. cr. potatoes, 2 slices tomato, 1 salmon cake, 2 biscuits, 1 slice choc. pie.

Thu. B: 1 pancake-3 T. syrup, 1 c. coffee-1 t. cream, 1 t. sugar.
L: 3 T. cr. potatoes, 3 T. baked apples, 3 T. slaw, 3 T. beef, 3 T. turnips, ½ pt. milk.
After school: 3 cakes, 1 pk. peanuts, 1 ice cream sandwich.
S: 3 T. potato salad, 2 weinies, 2 biscuits, 2 slices tomatoes, lettuce, 1 slice cake.

Fri. B: 2 T. oatmeal, 1 beef serv., 1 biscuit, slices toast-2, 1 c. coffee.
L: 2 T. snaps, 2 T. cr. potatoes, 1 T. slaw, pt. milk-½, 3 slices bread, 1 Dixie cup, 1 glass milk.
After school: 5 fig cakes, 1 sm. box raisins.
S: 2 biscuits, 4 T. snaps, 4 T. mashed potatoes, 1 piece steak, 1 t. gravy, 1 slice cake.

Sat. B: 2 pieces toast-1 T. butter, 1 c. coffee, 1 t. cream-1 t. sugar, 1 egg, 1 orange, 1 bowl cornflakes.
L: 1 c. beans, 2 pieces sliced tomato--lettuce and mayonnaise, 3 T. cabbage, 1 piece corn bread, 1 glass buttermilk, 2 biscuits, 1 piece cake.
Afternoon: 1 apple, 1 bar candy.
S: 1 c. beans, 2 biscuits, 3 T. cabbage, 2 T. cr. potatoes, 1 piece corn bread, 1 glass tomato juice-1 t. sugar.
Before bed: 1 apple, piece cake, 1 glass milk, 3 T. raisins.

Sun. B: 1 egg, 1 piece ham, 1 cup coffee-1 t. cream, 1 t. sugar, 2 biscuits, 1 glass milk.
L: 4 biscuits, 1 piece chicken, 2 T. potato salad, 2 pieces sliced tomato, 3 T. fruit salad, 1 T. gravy, 2 T. green peas.
S: 2 biscuits, 1 piece chicken, 1 T. potato salad, 2 T. green peas.
Before bed: 2 sandwiches-lettuce, tomato, mayonnaise, 1 coke, 1 orange, 1 piece cake.

Mon. B: 1 egg, 1 piece steak, 1 bowl oatmeal-2 T. cream, 1 T. sugar, 2 biscuits, 1 c. coffee-1 t. cream, 1 t. sugar.
L: 2 slices bread, ½ pt. milk, 2 T. meat loaf, 2 T. cr. potatoes, 2 T. green peas, 1 T. slaw, 2 cakes, 1 pear, 1 ice cr. sandw.
S: 2 pieces corn bread, 2 T. turnips, 2 T. cabbage, 2 T. mashed potatoes, 1 biscuit, 1 glass butter milk, 1 c. peaches, 1 piece cake.

DIETARY RECORD VII

School D Girl Age--15 Height--5'4" Weight--120

Fri. B: 1 shredd. wt. biscuit, 2 t. sugar, 1 egg, 1 slice ham, 1 biscuit, 1 c. coffee-2 t. sugar, 2 t. cream.
Midmorning: 1 bar candy.
L: 1 cheese sandw., 1 milk shake-½ pt., 1 Hershey bar, 1 c. popcorn.
S: None

Sat. B: 1 egg, 2 slices bacon, 2 biscuits-1 T. gravy, 1 c. coffee-1 t. sugar, 1 t. cream.
L: 1 T. candied yams, 1 T. snaps, 1 corn muffin, 2 biscuits, ½ pt. milk, 1 slice lemon pie.
S: 1 T. beef stew, 1 T. gravy, ½ pt. milk, 2 biscuits, 1 slice choc. cake.

Sun. B: 1 slice steak, 2 T. gravy, 2 biscuits, ½ pt. milk.
L: 1 slice egg custard, 2 biscuits, 2 T. sw. potatoes, 3 T. beef hash, ½ pt. milk.
S: None

Mon. B: 1 egg, 2 t. gravy, 1 c. coffee-1 t. sugar, 1 t. cream.
L: 1 Dixie cup, 1 cake, 1 bag peanuts.
S: ½ pt. milk shake, 1 chicken salad sandwich, 1 slice fruit pie, 1 deviled ham sandwich, 1 c. coffee-1 T. sugar, 1 T. cream.

Tue. B: 1 egg, 1 slice liver pudding, 1 slice bread, 1 c. coffee, 1 T. sugar, 1 T. cream.
L: 1/3 c. creamed potatoes, ½ c. slaw, 1 bag potato chips, 1 Dixie cup.
S: None

Wed. B: 1 egg, 1 cake sausage, 2 biscuits, 2 T. strawberry preserves, 1 c. coffee-1 T. sugar, 1 T. cream.
Midmorning: 1 sucker, 1 piece of candy.
L: 1 Dixie Cup, 1 oatmeal cookie, 1 bag potato chips.
S: None

Thu. B: 2 cakes sausage, 1 egg, 2 T. gravy, ½ pt. milk.
Midmorning: bag peanuts, 1 bar candy.
L: 1 bag potato chips, 1 Dixie cup.
S: None

DIETARY RECORD VIII

School D Girl Age--16 Height--5'5" Weight--117

Fri. B: 1 large slice ham, 1 brown biscuit.
L: 1 bag potato chips, 1 potted ham sandw., 1 tomato sandw. 1 oatmeal cookie.
S: 2 c. potato soup, 2 biscuits, 4 T. slaw.

Sat. B: 1 slice ham, 1 T. gravy, 1 biscuit.
L: 1 T. potato salad, 2 T. snaps, 2 T. chicken stew, 3 pickles, 2 biscuits.
S: 2 T. chicken stew, slice egg custard, 1 slice cake, 1 potted ham sandw., 1 biscuit.

Sun. B: 1 slice ham, 1 T. gravy, 1 biscuit.
L: 3 T. chicken stew, 1 glass tea-1 t. sugar, 1 slice plain cake, ½ c. ice cream, 2 slices beef roast, 2 biscuits.
S: 2 slices beef roast, 1 potted ham sandw., 1 biscuit, ½ c. ice cream, 1 slice cake, 1 piece peanut candy, 1 glass tea-sugar.

Mon. B: 1 slice ham, 1 T. gravy, 1 biscuit.
L: 1 oatmeal cookie, 2 c. ice cream.
S: 2 T. dried beans, 1 glass ice tea-2 t. sugar, 2 biscuits.

Tue. B: 1 slice ham, 1 T. gravy, 1 biscuit.
L: 1 raisin cake, 2 Dixie cups.
S: 2 c. potato soup, 2 biscuits, 1 biscuit-butter, 1 T. white syrup.

Wed. B: 1 slice ham, 1 T. gravy, 1 biscuit.
L: 1 pkg. potato chips, 1 oatmeal cookie, 1 Dixie cup.
S: 2 T. potato soup, 2 T. dried beans, 1 piece corn bread-butter, 1 Dixie cup, 3 graham crackers.

Thu. B: 1 slice ham, 1 T. gravy, 1 biscuit.
L: 1 banana sandw., 1 choc, cake, 1 Dixie cup.
S: 2 T. potato soup, 3 T. gravy, 1 piece cornbread-butter, 4 T. choc. pudding.