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- I. INADEQUACIES IN THE AMERICAN DIET
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by

Emma Gail White
Honors Project
3 Hours Credit
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INADEQUACIES IN THE AMERICAN DIET

American consumers can enjoy a food supply that is unsurpassed in variety and nutritional value. Yet, in this generally well-fed and, in many ways, well-informed country, a great deal of nonsense about foods exists. ¹

Good nutrition for people of all ages for health maintenance as well as restoration of health is an economic, political and humanitarian concern. For the body to function properly, the materials necessary for maintenance and repair must be provided. There is no mean for the body to glean its substances but by the food one chooses to eat. ²

Unfortunately, millions of people in North America experience some degree of malnutrition as a result of ignorance or poverty or both. Consumers do not find it easy to evaluate the nutritive quality of the numerous new foods that constantly appear in the market or to separate fact from misinformation; those whose health is impaired are especially susceptible to half-truths and false claims. Through nutritional services and extended nutritional education, there is an unparalleled opportunity to work for the improvement of the nu-

¹FDA Fact Sheet, (Rockville, Maryland: U. S. Department of Health, Education and Welfare, Food and Drug Administration, July, 1971).

²Eva D. Wilson, Katherine Fisher and Mary Fuqua, Principles of Nutrition (New York: John Wiley and Sons, 1959), p. 302.

tritional status of the population. ³

Since 1940, Recommended Dietary Allowances of certain nutrients have been issued periodically by the Food and Nutrition Board of the National Research Council. These allowances are for healthy persons living in the United States. A good state of nutrition means that the body is supplied with an adequate diet and that the body is properly utilizing these nutrients. Excess of calories has been reported to be one of the greatest nutrition problems in the United States. Nutrients are classified as carbohydrates, fats, proteins, vitamins, minerals, and water. ⁴

Obvious nutritional deficiency diseases such as scurvy, beriberi, pellegra, and kwashiorkor are not seen in the United States except rarely, but "hidden deficiency diseases" which result in lowered capacity to work, lack of energy and greater susceptibility to diseases are widespread. ⁵

Iron, calcium, vitamin C, and vitamin A are the nutrients most often lacking in the American diet, while protein and

³Corinne H. Robinson, Normal and Therapeutic Nutrition (New York: Macmillan Company, 1972), p. vii.

⁴Gladys E. Vail, Ruth M. Griswold, Margaret M. Justin, and Lucile O. Rust, Foods (Boston: Houghton Mifflin Company, 1967), p. 3.

⁵Sue Rodwell Williams, Nutrition and Diet Therapy (St. Louis: C. V. Mosby Company, 1969), p. 318.

the B vitamins are, as a rule, more generously supplied. Such short comings indicate that Americans are using less than desirable amounts of milk and milk products, citrus fruits, and leafy green and yellow vegetables. The B vitamin intake is influenced to a considerable extent by the caloric value of the diet; those whose diets contain less than recommended energy intakes generally have less than adequate thiamine intake also. These inadequacies occur at varying degrees according to age, sex, and economic status. ⁶

Generally, men select better diets than women. Men use more milk and milk products and as a consequence have a more satisfactory calcium and riboflavin intake than women. Most men have an acceptable intake of iron, but many women do not. Recent diet records show as many as 36% to 42% of the diets of college women provide less than two-thirds of the Recommended Dietary Allowance for iron. The unfortunate circumstance in the shortage of iron in the diets of young women is that they urgently need this mineral to take care of the continuing loss of iron through menstruation. ⁷

It is a misconception that adults are not subject to calcium deficiency. The gradual drainage from the blood to replace calcium ions that are lost daily from the body leads to thin, fragile bones which break easily and which heal with

⁶Wilson, Fisher, and Fuqua, p. 302.

⁷Ibid., p. 203.

great difficulty. ⁸

Breakfast skipping or consumption of an incomplete breakfast is reflected in the total nutrient intake for the day. Observation of college students at Montana State College who omitted breakfast or ate one that failed to meet the usual pattern of a fruit, a cereal, and eggs and/or meat, had a less adequate total nutrient content in the day's diet than those who did eat the complete breakfast. ⁹

According to the 1965 Department of Agriculture Dietary Survey in the United States, 27% of the diets provided less than Recommended Dietary Allowances for ascorbic acid; half of these diets furnished less than two-thirds of the Recommended Dietary Allowances. Of all the subjects surveyed in this study, 4% had scorbutic gum lesions. A deficiency of ascorbic acid results in defective formation of the intercellular cement substance. The classic picture of scurvy is rarely seen in the United States. ¹⁰

One of the earliest symptoms of vitamin A deficiency is nyctalopia or night blindness due to incomplete regeneration of visual purple. Epithelial changes, particularly in the respiratory system and eyes, are profound symptoms. ¹¹

Within the family group some members fare better than

⁸Robinson, p. 109

⁹Wilson, Fisher, and Fuqua, p. 203.

¹⁰Robinson, pp. 164-165.

¹¹Ibid., p. 150.

others in the adequacy of their diets. Data from a study in Groton Township, New York, illustrates the common pattern of food selection within a family group. As a whole young children, age groups under ten, fared best, followed next by the rest of the male members of the family. ¹²

Calcium, ascorbic acid, and vitamin A met the National Research Council's Recommendations least well in school children. Studies of food habits of children have shown repeatedly that the foods requiring particular emphasis for the improvement of diets are milk, dark-green leafy and deep-yellow vegetables, and citrus fruits. Food habits contributing to these deficiencies include: poor breakfasts or none at all, poor lunches, and irregular eating habits due to lack of adult supervision. Numerous studies have shown that the nutritional status of most children in the United States is good. Because some of these studies have been limited to children from middle income groups, the problems of undernutrition often seem less serious than they, in fact are. Among lower income groups, calcium and vitamin D deficiencies are often seen. Suboptimal intakes of calcium may result in retarded calcification of bones and teeth in the young child. Acute deficiency is not usually seen unless there is a concurrent lack of phosphorus and vitamin D. Such deficiencies lead to stunted growth and rickets, as evidenced by bowing of the legs, enlarge-

¹²Wilson, Fisher, and Fuqua, p. 309.

ment of the ankles and wrists, and a hollow chest. Because of crowded conditions in city slums, sunlight cannot always be depended upon to supply the body with adequate ultraviolet rays to manufacture vitamin D. Dust, smog, fog, clothing and ordinary window glass -- all act as barriers to prevent the rays from reaching the skin.¹³

According to family-centered studies, teen-agers comprise a group which can be considered nutritionally "vulnerable". They are vulnerable because of the combination of increased nutritional needs to meet the demands of physical growth plus social pressures which, it is generally believed, may tend to favor poor food selection.¹⁴ Inadequate consumption of milk, citrus fruits, and green and yellow vegetables was chiefly responsible for the nutrient shortages. Protein was adequate in the diets more frequently than any other nutrient.¹⁵ Most teen-agers are concerned about their body weight. Generally girls want to weigh less and equate overweight with fatness which is undesirable. Boys want to weigh more and equate caloric intake with desirable muscle development. This increase

¹³Robinson, p. 324.

¹⁴Mary C. Hampton, Leona R. Shapiro, and Ruth L. Huene-mann, "Helping Teen-Age Girls Improve Their Diets", Journal of Home Economics, LII (December, 1961), 835-836.

¹⁵Wilson, Fisher, and Fuqua, p. 377.

in calories makes the teen age boy less susceptible to dietary deficiencies. ¹⁶

A study was conducted during 1960 with senior girls at a high school in California. In this particular group, it appears that obesity was more prevalent than extreme leanness. In addition to calories, nutrients were calculated, including protein, iron, and ascorbic acid. Thirty-eight per cent of the diets were below the National Research Council's Recommended Daily Allowances in protein, and 5% were below two-thirds of the Recommended Daily Allowances. In iron, 95% were below the Recommended Daily Allowance, and 38% were below two-thirds of the allowances. ¹⁷

In a questionnaire, milk was included in seven of 25 responses to the question of what was liked best as an after-school snack, and was second only to desserts such as cookies, pie or cake. Of the 25 students, 18 indicated that they thought "teen-agers don't eat the right things". Of these 18, six included as a reason, "too busy" or "not enough time" among their answers. ¹⁸

One of the interesting ideas indicated by their answers was that this particular group of teens was more interested in eating with their families and in sharing other activities with

¹⁶Robinson, pp. 330-331

¹⁷Hampton, Shapiro, and Huenemann, p. 836.

¹⁸Ibid. 837.

them than might ordinarily be assumed by adults studying teenage problems. Obviously, any program to improve the diets of these girls would necessarily include their families. Another implication of this study is that many teen-agers feel the pressures of the frantic pace of our culture and seem to give the impression that the rush and hurry of their lives interfere with the consumption of an adequate diet. Merely teaching the girls the basis of a good diet is not likely to change the situation. ¹⁹

Perhaps nutritional programs for the aged have been neglected by modern society. The distinction between natural effects of the aging processes and those of degenerative disease, broadly exemplified by atherosclerosis, is at present not clearly evident since these changes differ only in severity and speed of development. If nutritional factors have the grave importance now suspected in the case of atherosclerosis, these same factors may be implicated in most of the so-called normal changes in aging tissues. Both dietary surveys and nutritional studies have so far yielded little evidence that these needs differ significantly from those of young adults. The chief changes noted are in the speed and completeness of digestion and absorption, in decreased appetite, glucose tolerance, and thiamine, protein, fat, and calcium utilization. Lowered ox-

¹⁹Ibid., p. 836.

ductive action in the tissues results in decreased caloric need and the usual decrease in activity further exaggerates this change. In some of the bones at least, especially in women, density decreases with age. Gradually depressed kidney functions result in raised levels of nonprotein nitrogen and uric acid in the blood, a change which is often more noticeable in men than women. A fall in ascorbic acid serum level occurs in both men and women beyond the age of 65, and, at the same time, there is an even more marked fall in serum cholesterol levels.²⁰

The food habits which tend to speed up these changes are well known and largely practiced in this country. Excess caloric intake, especially from sugar, alcohol, white flour, and fats, too little meat, fish, poultry, and eggs, too little milk and cheese, too little of the vitamin-rich fruits and vegetables, characterize the diets of elderly people studied in recent years in the co-operative nutritional status researches. These food habits are thought also to promote atherosclerosis and degenerative tissue changes. Practical recommendations to counteract these tendencies should be brought to aging men and women directly or through their medical advisors. The later years must be active, lean, and in-

²⁰Agnes Fay Morgan, "Programs for the Aging", Journal of Home Economics, LII (December, 1960), 817.

teresting if they are to be golden and not merely proof of empty survival. ²¹

Given an abundant supply of natural foods in great variety, human instinct would undoubtedly select a pretty good diet were it not for man's irrepressible ingenuity. With great skill he invents ways of storing and preparing foods that make for convenience and economy, but often involve loss of nutritional value as well as changes in flavor. Our modern diets may overly reflect the commercial interests of food producers whose advertising copywriters are sometimes more persuasive than accurate. ²²

Another downfall of the American diet is an increased consumption of sugars and a decreased consumption of starches. This is scarcely a change for the better in spite of the "quick energy" propaganda about the value of sugar. Besides the suspicion that sugar promotes tooth decay, sugar is a highly refined chemical which carries only calories, none of the protein, vitamins, and minerals that most other foods provide in some measure. ²³

Fat is another nutrient that is used too often in the American diet. A diet that contains a high proportion of saturated fatty acids and of cholesterol is one of many factors

²¹Ibid., p. 818.

²²Ancel Keys and Margaret Keys, Eat Well and Stay Well (New York: Doubleday and Company Inc., 1959), p. 42.

²³Ibid., p. 45.

that is believed to contribute to cardiovascular diseases. Fats that are liquid at room temperature are most acceptable in this respect. The "hard fats", whether of animal or vegetable origin should be carefully restricted. ²⁴

Examples of malpractices in cooking indicate that the cook, through ignorance or prejudice can ruin the best of foods. It is difficult to convince many people of these facts because the changes that occur are not easily detected by the senses of sight, smell, or taste. A vegetable that has had its vitamins destroyed by improper cooking may look, smell and taste like one that has been properly cooked. It is only by using the special methods of the nutrition scientist that it is possible to prove just what has gone wrong. ²⁵

Many benefits are derived from the cooking of foods. It should not be assumed, however, that all types of cooking are beneficial. In addition to overcooking, another common fault is the use of too much water. The cooking water is usually discarded and with it goes a large share of the vitamins and minerals. This practice has led someone to remark that "the kitchen sink is the best nourished member of the American

²⁴ Ibid., p. 53.

²⁵ Edmund S. Nasset, Food and You (Rochester, Minnesota: Barnes and Nobles, 1959) p. 15.

family".²⁶

Many natural foods are processed for a variety of reasons, and the end product may consist mainly of single food stuffs. For example, casein, derived from milk is a protein; granulated sugar is pure carbohydrate; and margarine is mostly fat. Certain dietary deficiencies may result if too much highly refined food is eaten over long periods of time. Such a diet can easily satisfy the needs for calories, but it may be deficient in proteins, certain fatty acids, vitamins, or mineral salts.²⁷ In the milling of wheat for flour, the outer portion of the grain is removed and with it goes a large portion of the vitamin and mineral salts. American white flour represents approximately 72% of the whole wheat, and this is referred to as 72% "extraction". In addition to this low extraction, white flour is usually subjected to a chemical bleaching process which tends to lower still further its nutritive value. During World War II the need for "lost nutrients" was recognized and the "enrichment" of white flour was instituted. Enrichment in this sense means adding three synthetic vitamins; thiamine, riboflavin, and niacin, and iron to the ordinary white flour.²⁸

²⁶Justice J. Schifferos, Essentials of Healthier Living (New York: John Wiley and Sons, 1963), p. 15.

²⁷Nasset, p. 3.

²⁸Ibid., p. 13.

The vitamin content of food is quite variable depending upon the place of origin, kind of plant or animal, and conditions of transportation, handling, and processing. A food plant can begin its journey to the table with a high vitamin content, but the latter may easily be lost. Every precaution should be taken to preserve the vitamins that nature has placed in the plant. With proper care in transporting, processing, selecting, and preparing food, it is possible for the normal individual to meet all his vitamin requirements solely by the means of the food he eats. The changes that take place in stored foods are not all as evident as the wilting and discoloration of lettuce. There may be a large decrease in vitamin content that cannot be detected except by chemical analysis. Riboflavin is rapidly destroyed by the action of light, and vitamin C is oxidized on exposure to air. It is desirable to keep all fresh foods at a low temperature, in closed containers, and in dim light. The vitamin content of some canned foods may be nearly the same as that of a fresh product, but it would not be wise to live exclusively on canned foods. The nutrient loss is greater than that of fresh or frozen vegetables. ²⁹

Our beliefs and ideas greatly influence our diets. Food fads are scientifically unsubstantiated beliefs about certain foods which may persist for a long period of time with an in-

²⁹Ibid., p. 9.

dividual, a group, or a society. Some food fads may be completely harmless while others have serious implications concerning the health and welfare of their followers. Food myths are unproved stories or beliefs about food which are accepted uncritically or are used to justify one's own desires, interests, or practices. Food misinformation is a statement about food that is not based upon or is not in agreement with scientific evidence. Some of the dangers of food fads, food misinformation, and food myths are the self-diagnosis and self-treatment of various disorders. Money spent needlessly and distrust of the food market are characteristics of food faddists. Food faddism especially finds its place with the teen-ager. Figure conscious girls and muscle minded boys frequently respond to advertisements that are dangerous to health. Obese persons of all ages are likely to also experiment with any method of weight control. ³⁰

Too often foods are categorized as being suitable for a given age group or as more suitable for one sex than the other. Peanut butter and jelly or milk products are looked upon as foods for children, but olives and coffee are appropriate for adults. Teen-agers adopt current fashions in foods -- hot dogs, hamburgers, pizza, and French fries. Women are said to prefer light foods such as salads, fruits, and vegetables.

³⁰Williams, p. 203.

Meals of meat, potatoes, and bread represent the usual choice of men. ³¹

The presentation of well prepared, highly nutritious food to people does not mean that they will eat it. Although food meets common needs for all people, food habits are infinitely complex, being derived from man's earliest experience and being influenced by his family, as well as by the social, geographic, economic, ethnic, and religious environment. ³²

Malnutrition, sometimes called "hidden hunger" is the outcome of prolonged eating habits -- specifically the failure to include essential components in the diet. Wise selection of a tasty well-balanced diet of food and drink is a genuine aid to healthier living, improved personal appearance, and a better outlook on life. ³³

Faulty eating habits can result not only from poverty and food prejudices, but also from emotional stress or sheer carelessness. The obstacles of a balanced diet can be overcome with the application of intelligence, knowledge, and common sense. Since food is so important in the daily life of every human being, it seems sensible that we should be reasonably well informed on the subject. An enlightened pub-

³¹Robinson, p. 213.

³²Ibid., p. 209.

³³Schifferos, p. 95.

lic opinion can do much to determine whether food shall be offered to the public on the strength of an advertising slogan or on the basis of nutritive value. To sell the large assortment of manufactured food products, much advertising is done in newspapers and magazines and through commercials on radio and television. Unfortunately, advertisers often distort scientific data and make misleading statements concerning nutrition. ³⁴

The nutrient requirements of the American population can be met by the ample food supplies that are available. However, people must recognize the need to consume a varied diet, and also be confident that the foods they buy are safe, wholesome, and nutritious. Several FDA programs are underway to provide the consumers with more information on the nutritional content of food through improved labeling. In addition, nutritional quality considerations are being included in some food standards. Nutritional guidelines are under development for certain major classes of food as a means of assuring that the consumer will receive the nutrient qualities expected in the products purchased in food markets. As modern technology leads to new or modified foods, FDA is making many efforts to insure their nutritional quality. ³⁵

Preparation and revision of food guides are among the

³⁴ Eleanor Sense, Clinical Studies in Nutrition (New York: J. B. Lippincott Company, 1960), p. 110.

³⁵ FDA Fact Sheet.

services provided by the U. S. Department of Agriculture. The Basic Four as currently recommended is considered the simplest of the guides, hence the one easiest to remember and the most readily followed. If foods from the four groups listed in the Daily Food Guide are included in quantities suggested, a large share of the needed nutrients will be provided.³⁶

Various programs of nutrition education must be instituted among school children, families, and senior citizens. At the present time several federal programs are attempting to alleviate nutritional misinformation and ignorance which is so widespread especially among the lower economic families. Today, as never before, the American public has become more aware of the importance of good nutrition, but there are still nutritional problems of major importance to be solved in the United States. Overt signs of nutritional deficiency are rare, but certainly a good deal of lowered resistance to infection, slow convalescence from illness and injury, lost time from school and work, inefficiency, and unhappiness are due to poor nutrition alone. Finally, the average American must become informed to protect himself and his family from nutritional quackery so that he can live a richer, healthier, and more productive life.³⁷

³⁶Vail, Griswold, Justin, and Rust, p. 15.

³⁷FDA Fact Sheet.

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DIETARY SURVEY

Dietary surveys of teen-agers, age groups 14 through 18, were conducted in the Texarkana, Arkansas Public Schools; Cale, Arkansas Public Schools; and Ashdown, Arkansas Public Schools.¹ The questionnaire consisted of 25 items and was distributed to approximately 200 boys and girls. The purpose of the survey was a comparison of the responses of students concerning their food intake, and dietary information and statistics obtained from library research. Among some objectives in undertaking the diet survey are the following:

1. A greater consciousness of food habits and their relation to nutrition and health.
2. Familiarity with tables of food composition and the kinds of information they provide.
3. Facility in using food tables whether to calculate a complete dietary or to seek specific answers concerning nutritive values of a single food.
4. Knowledge concerning the important sources of each of the nutrients.
5. Ability to make recommendations for the improvement of dietaries based upon the calculation of dietary intakes.
6. Appreciation of the importance of keeping orderly and accurate records of dietary intake so that any calculations may be as reliable as possible.

¹Personal survey conducted by Emma Gail White, October and November, 1972.

7. The habits of preparing neat and concise reports which have been carefully checked for their accuracy so that co-workers may use the information with complete confidence.²

Evaluations of the survey questionnaires were made separately for the girls and boys. No significant differences were noted in the responses of students from the three schools. It is interesting to note that most students took the matter seriously and were pleased to participate in the survey. For ease in comprehension, the results have been calculated and grouped according to the Basic Four Food Groups. Food habits and breakfast patterns also became evident from the survey.

RESULTS OF GIRL'S DIETARY

Milk Group

Eighty-five per cent of the girls indicated that they liked to drink milk, while 15% said that they never drank milk. Of those who drank milk, 36% drank one glass per day, 56% drank two glasses per day, and 8% drank more than two glasses daily.

Fourteen per cent of the girls reported that they include cheese in their diets very often, while 79% indicated that they ate it occasionally. Only 7% said they never ate cheese.

Likely those who include milk and cheese in their diets meet the Recommended Dietary Allowances for calcium. Unfortunately 25% of those who said they never drank milk also

²Corinne H. Robinson, Normal and Therapeutic Nutrition (New York: Macmillan Company, 1972), p.

reported a dislike for cheese.

Vegetable-Fruit Group

Potatoes were listed by 60% as the preferred vegetable, followed by corn which was listed by 28%. The most disliked vegetable was squash, indicated by 40% of the girls. Turnip greens were disliked by 25%, and string beans and green peas were both least preferred by 14% of the girls.

Fried potatoes were preferred by 39% followed by baked potatoes, 32%; mashed potatoes, 24%; and other methods of preparation, 4%.

Twelve per cent indicated that they rarely ate vegetables. Fifty per cent indicated one serving per day; 25%, two servings per day; 10%, three servings per day; and 5%, four servings per day.

Oranges were the favorite fruit, listed by 35%, followed by grapefruits, bananas, and apples. Only 7% reported a dislike for orange juice, but 65% indicated that they never drank orange juice.

The results of the questionnaire seem to indicate that the girls in these three schools have an inadequate fruit and vegetable intake and are likely to be deficient in vitamin A and vitamin C. It is likely that the absence of orange juice in their diets is due to the food purchaser in the family since only 7% reported a dislike for it.

Meat Group

Beef was listed as the favorite meat by 36% of the girls, followed by fish, chicken, and pork. The least preferred meat was fish as listed by 29%, followed by pork, chicken, and beef. Eighty-nine per cent of the girls indicated that they ate two servings of a protein food daily. In cooking methods for meats, 64% indicated that they preferred fried meats. This seems to support the idea that Americans are likely including too much fat in their diets.

Keeping current dietary research in mind, it is not surprising to note that 83% said that they never ate liver, and only 4% indicated that they ate it weekly.

Bread-Cereal Group

None of the girls surveyed indicated that they disliked all types of breads, and 90% indicated that they preferred one to two slices with each meal. Cereals were listed as one of the top two responses to favorite foods for breakfast.

Food Habits

The least favorite snack listed by 25% of the girls was potato chips or corn chips, followed by pizza, candy, pie, cake, apples, and oranges. The favorite snack was listed as pizza by 29%, potato chips or corn chips by 28%, and candy by 14%. Pie and cake was listed as a favorite by only 4%. It is unusual that pizza and chips are listed as two of the favorite snacks and also as two of the least favorite snacks.

Thirty-six per cent indicated that they drank two soft drinks a day, 36% drank one a day, and 15% never drank soft drinks. Contrary to the popular belief that teen-agers like fad foods -- French fries, hamburgers, hot dogs, pizza, and sweets, 73% of the girls reported that they "really enjoyed mom's cooking".

Sixty-six per cent of the girls reported to eat breakfast every day, while 30% said that they never ate breakfast. Bacon, eggs, and toast were listed as favorites among 80% of the breakfast eaters. Cereals were listed by 12%.

RESULTS OF BOY'S DIETARY

Milk Group

Ninety-four per cent of the boys indicated that they liked to drink milk, while 6% said that they never drank milk. Of those who drank milk, 27% drank one glass per day, 15% drank two glasses per day, 24% drank three glasses per day, and 27% drank more than 3 glasses.

Thirty per cent of the boys reported that they include cheese in their diets very often, while 58% indicated that they ate it occasionally. Twelve per cent said that they never ate cheese.

According to this survey, the boys had a more adequate milk and milk product intake than the girls. Likely the majority of the boys surveyed meet the Recommended Dietary

Allowances for calcium.

Vegetable-Fruit Group

Corn was listed by 36% as the preferred vegetable, followed by potatoes which were listed by 27%. The most disliked vegetable was squash which was indicated by 48% and turnip greens listed by 30%.

Fried potatoes were preferred by 56% followed by mashed potatoes, 41%; and baked potatoes, 3%.

Nine per cent indicated that they rarely ate vegetables. Twenty-seven per cent indicated one serving per day; 27%, two servings per day; and 24%, three servings per day.

Oranges were the favorite fruit, listed by 49%, followed by bananas, apples, pears, and grapefruits. Only 6% indicated a dislike for orange juice, and 27% indicated that they never drank orange juice. Forty-six per cent drank one glass per day, and 27% drank one to two glasses daily.

A comparison of the boy and girl questionnaires seems to indicate that the boys have a much more adequate fruit and vegetable intake than the girls. However, it is likely that a large minority is deficient in vitamin A and a smaller minority deficient in vitamin C.

Meat Group

Beef was listed as the favorite meat by 49% of the boys followed by fish, chicken, and pork. The least preferred meat was fish as listed by 58%, followed by pork, chicken, and

beef. Ninety-five per cent of the boys indicated that they ate two servings of a protein food daily. In cooking methods for meats, 63% indicated that they preferred fried meats. This seems to support the idea that Americans are including too much fat in their diets.

Thirty-six per cent of the boys indicated that they never ate liver, and 11% indicated that they ate it weekly. These figures show that twice as many of the boys ate liver as compared to the girls, and three times as many boys ate it weekly. Unfortunately, it is the girls who especially need iron in the diet.

Bread-Cereal Group

None of the boys surveyed indicated that they disliked all types of breads, and 94% indicated that they preferred one to two slices with each meal. Only 9% indicated cereals as a favorite food for breakfast.

Food Habits

The boy's favorite snack was pizza, listed by 50%; pie and cake, 21%; potato chips or corn chips, 15%; and candy, 12%. Oranges were listed as a favorite snack by 2%, but apples were not indicated by any of the boys. The least favorite snack listed by 25% of the boys was potato chips or corn chips, followed by apples, candy, pie, cake, pizza, and oranges.

Forty-two per cent of the boys listed that they drank one soft drink per day, 18% listed two per day, 21% listed three per day, and 3% indicated that they never drank soft drinks. Seventy-two per cent of the boys reported that "they preferred their mother's cooking to any snacks or restaurant food".

Eighty-nine per cent of the boys reported to eat breakfast every day, while only 7% reported to never eat breakfast. Bacon, eggs, and toast or biscuits were listed as favorites among a large majority of the breakfast eaters. Only 6% listed cereal and milk as a favorite breakfast food. Breakfast patterns among boys are very encouraging considering four times as many girls never eat breakfast as compared to the boys surveyed.

EVALUATION OF SURVEY

Statistics obtained from the survey indicate that nutritional education is needed among teen-agers, especially girls. Girls in the survey were consistently lower in all nutrient groups as compared to the boys. All three of the high schools included in the survey offer courses in home economics, so it is likely that most of the girls have been introduced to nutrition and have probably not taken it seriously. Traditional methods of teaching probably will not reduce the number of poor diets; methods to reach the teen-ager with relevant material must be developed and introduced. Thankfully, Americans are more interested in nutrition than ever before, and federal programs are attempting to further eliminate the problems of malnutrition in the United States. The "vitamin pill" was once thought to be the solution, but the great majority of teen-agers surveyed reported that "they never did and would not take vitamins". It is only when each individual becomes interested in improving his own diet and that of his family that the problem of dietary deficiency can be solved. The old adage, "you can lead a horse to water, but you can't make him drink", could well apply to this situation.

SURVEY OF ECONOMIC GROUPS

According to information and statistics obtained with the aid of a home economist, lower, middle, and high economic groups have certain characteristic patterns and deficiencies in their diets. No certain income level can be used to determine which income group a specific family fits. Factors such as size, education, financial obligations, and health must be considered as well. A few broad generalizations can be made concerning each of these groups. ¹

Lower class families are presently adequately meeting most of their needs due to the Food Stamp Program and nutritional education assistance. This group generally has very little knowledge of the basic principles of nutrition and is likely to be suspicious of anyone who suggests improvements. They are easily swayed by advertising and prefer to buy snack foods or convenience foods which are higher in price and provide less nutrients per dollar. Extra encouragement is needed to eliminate over-spending on cigarettes and alcohol.

Middle income groups vary widely in food patterns. They generally do not receive food stamps or other assistance. Most of the families have a reasonable amount of nutritional

¹Personal interview by Emma Gail White with Mrs. David Halsell, Home Economist, Department of Health, Education, and Welfare, October, 1972.

knowledge. Money is spent on convenience foods such as TV dinners. These families rely on canned foods, "specials", and cheaper cuts of meat to meet their needs. Most often the meals actually prepared in the home are adequate. Most have some interest in improving the family diet.

The upper class meet their needs adequately because of their tendency to plan meals which include a meat, vegetables, potatoes, salads, breads, and desserts. By including so many courses in the meal pattern, the Basic Four is likely to be met. One of the greatest hazards of high incomes is the tendency to purchase too many desserts and snack foods. They are rarely interested in attending nutrition workshops.