Chapter Two

The Framework of Nutrition Education

THE FOCUS of nutrition is on *people:* people of all ages, incomes, races, creeds, and nationalities. Our interest as nutrition educators is in helping them to develop good food habits which, in turn, will help them to become healthy, attractive, personable, and productive citizens.

As a result of the application of nutrition knowledge, we may visualize the ultimate development of a portrait of beautiful people. The portrait, let us say, is incomplete without a suitable frame. To the

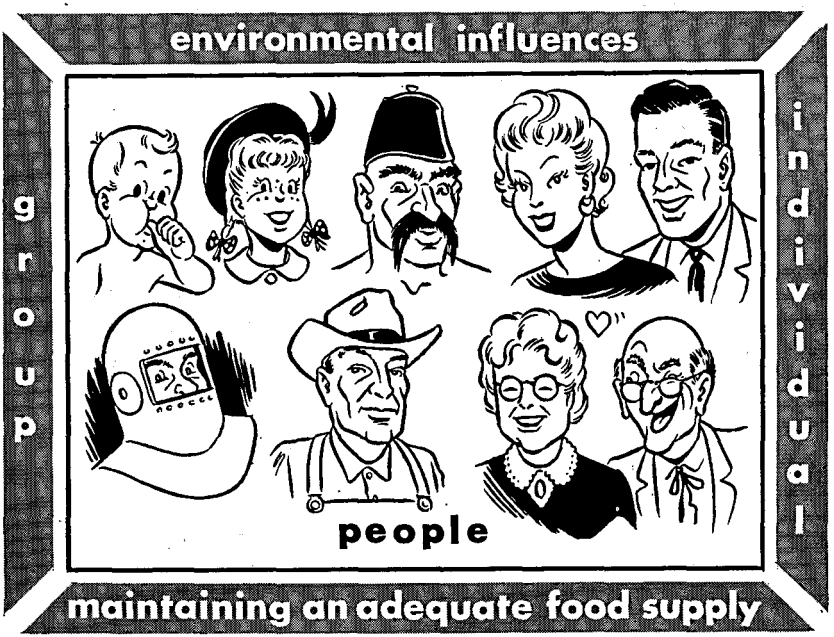
nutrition educator, the frame may represent the various factors important to the development of the portrait. This, in a sense, shows the broad scope of nutrition education.

The frame consists of four major sides, each of which is a sort of mosaic consisting of important segments. The first major side of the frame relates to the individual; the second to the group or groups of which the individual is a part; the third to the maintenance of an adequate food supply; and the fourth to environmental conditions that affect nutrition (see Fig. 2.1).

Each segment is important and must be separately considered as we work toward the goal of helping people to achieve good nutrition. But without any one of the segments, the picture presents an unfinished appearance. Nutrition education therefore is concerned with the portrait itself and every part of the frame.

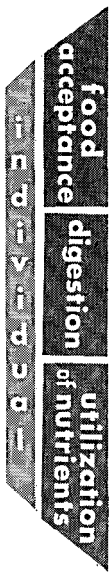
THE INDIVIDUAL

To many people, nutrition education involves mainly teaching the individual the essential nutrients in an adequate diet. The individual is indeed the focal point of nutrition education, but what he is taught about nutrition must include more than a list of dietary requirements or even the allowances for individual nutrients—



necessary as they may be. Because nutritional requirements are fulfilled mainly through *foods,* teaching people how to meet body needs through appropriate selection of foods is one of the main responsibilities of nutrition education. But this is not enough.

The individual must *accept* food which provides the nutrients required, must then *digest* it, and finally must *utilize* it to build the body and promote the proper functioning of its parts. Failure at any one of these steps leads to poor nutrition. For each step a large amount of knowledge exists.



Food acceptance involves appetite and preferences as well as hunger and the need for sustenance. It is concerned with attitudes toward food and eating, including the emotional, cultural, and traditional factors which influence choice of food.

After the individual has accepted food, his body then must perform the task of digesting it. Subsequently the utilization of nutrients by the body tissues occurs. In some ways, the utilization of nutrients may be regarded as following remarkably unerring processes, but the possible variations result in a wide range of individual differences in metabolic patterns and nutrient needs.

Nutrition educators must have an appreciation of the differences in needs of individuals, and it is a part of their responsibility to interpret to the public this concept of differences. Williams (1) has said that if large populations of individuals (both male and female) were studied, the range in calcium needs would be substantially larger than fivefold. On the basis of animal studies, he states that a tenfold variability, or possibly more, may be expected in the human needs for vitamin A. Similar observations have been made for other nutrients; for example, he states that the evidence indicates the requirement of human beings for ascorbic acid probably varies within a fivefold range.

The implications for nutrition education are highly important. They have been summarized by Williams as follows:

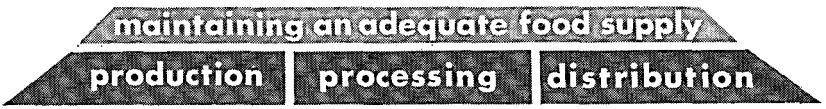
> One of the real difficulties in selling nutrition to the public . . . is the fact that there are individuals who seem to pay no attention to nutritional maxims, or to vitamins, minerals, et cetera, and yet remain healthy to advanced old age. . . . These individuals are very effective living denials of all the nutritionists have to say, and the public is not slow to see the difference between "theory" and "practice."

In continuing his discussion, Williams says these individuals "are not so phenomenal, actually" because they may have "unusually low demands for a number of crucial nutrients" which allows them apparently to violate nutrition laws. He concludes by emphasizing the need for more widespread recognition of the variations in nutritional needs among individuals.

THE GROUP

The nutrition of the individual is strongly influenced by the groups of which he is a part. Mealtime is mainly a group activity — whether it occurs within the family circle or in a public place. The same may be said for snack time. Usually we can be easily influenced by the attitudes of the people with whom we are eating. Furthermore, we are dependent on the knowledge and ability of those who plan, prepare, and serve our meals and who determine the quality of the food from which we select our diets. Perhaps the most important influence on the nutrition of our people is the skill of homemakers who hold in their hands the health of family members. The nutritional fate of the individual — especially in his early years — is determined by the mother-figure of the group.

Because an estimated 17 per cent of meals are taken outside the home in recent years, the quality of the nutrition of our people rests increasingly with those in the commercial or institutional food services. Children eating in the school lunch program, people who take their meals in industrial cafeterias, residents of sanitoria, and the aged in custodial homes are limited in what they can do for their own nutrition. Hence the nutrition educator carries a continuing responsibility to reach people in charge of group feeding, and to consider the possible influences of the group with which the individual is eating.



MAINTAINING AN ADEQUATE FOOD SUPPLY

Maintaining an adequate food supply forms the base of the framework of good nutrition. This, of course, begins with *production* of food and continues through *distribution* and *processing*. Many contingencies affect food supplies, but probably the main one is the ratio of population to the available agricultural land. If population demands exceed the supply of food that can be grown, either food must be obtained elsewhere or the people must exist on reduced rations.

This segment of the framework may not seem important to the individual in a land of plenty, but it is so interrelated with our international affairs that nutrition educators need to view as one of their responsibilities the interpretation of the significance of an adequate food supply to world peace and the effect on people of the semistarvation that exists as a result of inadequate food supplies.

Production

Here in the United States we have overabundance of certain foods resulting from agricultural surpluses. Approximately 1.9 billion other people of the world, however, have the opposite problem: undernutrition and malnutrition resulting from agricultural shortages. Not enough land, poor land, outmoded farming practices, lack of modern equipment, inefficient labor, or precarious economies or governments limit the possibilities of improving food production.

Then, too, the physical or health status of the people has a direct bearing on their ability to produce food. If they are semistarved or afflicted with disease, they will be unable to devote maximum effort toward producing more food because their physical and mental vitality and ability have been impaired. Inadequate food production and malnutrition form a vicious cycle, wherever they occur.

Distribution

Problems of distribution relate directly to the maintenance of an adequate food supply. Food is not evenly distributed among people, even when sufficient supplies are available on a national basis. Variations in harvest conditions during the year, coupled with the lack of transportation or storage facilities for foods, may cause alternating feasts and famines. Statistics of the average amounts of available food in a nation may be misleading, because all individuals do not have access to those amounts on an equal basis the year round. The educator is challenged to help people to understand barriers to food distribution and ways to equalize the food supply between times of plenty and scarcity.

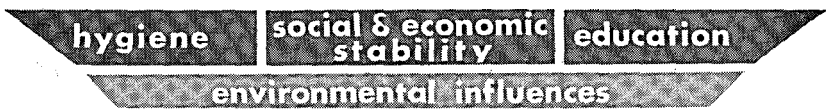
Processing

Finally, problems of processing foods have a direct bearing upon the maintenace of the food supply. Inefficient methods of food preservation often account for major losses in *quantity* as well as in quality of the food. If proper processing and storage facilities are lacking, distribution of foods is adversely affected. Processing is related to transportation of food, too, because it is far easier to ship larger quantities of foods if they have been condensed and packaged efficiently.

One unfavorable connotation of food processing exists in the minds of many people. Often food processing is regarded as synonymous with the losses of nutrients which may occur in milling, heating, and drying. To some extent, this is true, but processing also helps assure a safe and ample food supply the year round, and the food industry is continually at work to protect the nutritive value of food products.

At the same time such useful purposes are being served, the "hucksters" prey upon the public with false claims and misleading advertising. A major problem for nutrition educators is helping people take advantage of the opportunities for better nutrition created by food industries, while at the same time aiding them to resist the pressures of those who are in the competition for their food dollars. The basic "defensive" tool for consumers is knowledge of nutrition, coupled with an understanding of the psychology of advertising and quackery.

It is clearly evident that food processing plays an increasingly important role in the affairs of man. If and when man gets to the moon, food processing undoubtedly will have helped to make it possible.



ENVIRONMENTAL INFLUENCES

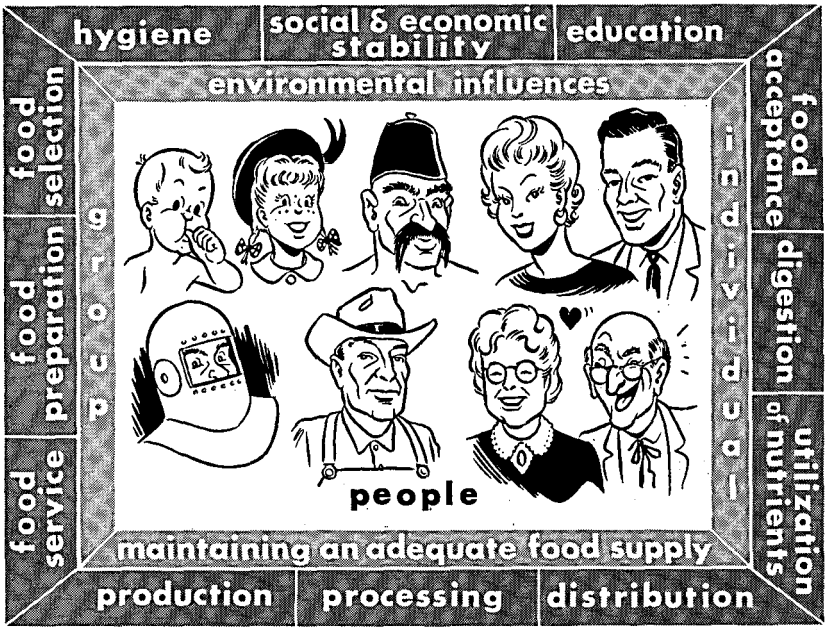
The fourth side of the frame of our portrait of well-nourished people consists of important environmental influences which directly or indirectly have a bearing on nutrition.

Sanitary Conditions

Such circumstances as poor sanitation or hygiene in homes or public places are causes of various infectious diseases or infestations by parasites in human beings. Illnesses caused by such factors will greatly affect both the need for nutrients and the utilization of them. If the amounts of the nutrients in the diet were marginal, the presence of the infection or infestation may render the diet inadequate. An environment in which children are exposed to repeated or chronic infection may become a hazard to nutrition.

Social and Economic Conditions

A broad, over-all influence on the nutrition of an individual is the social and economic situation in a nation, in a community, or in a family. Wars and depressions have usually brought deterioration of the diet and, ultimately, of the nutritional status of the population. As discussed in the first chapter, food supplies are closely related to political conditions. Scarcity of food can create unrest and resentment toward those who wield governmental power; history has shown repeatedly that when harvests fail, revolutions may subsequently occur. The



A PORTRAIT OF GOOD NUTRITION

socioeconomic status of a nation's people, particularly at the lower levels of the range, therefore is a strong determinant of the health of people as affected by nutrition.

Education

Perhaps the most important segment in the framework of nutrition is education. Actually, education of specifics overlies the entire structure of the framework, but education *per se* is also a discrete segment of the picture. Illiteracy and ignorance are usually equated with poverty and poor nutrition, while higher educational levels are likely to be associated with better diets.

The improved educational status of people in the United States has been cited as an important resource for health. The total of high school graduates, as a percentage of persons over 17 years of age, has increased fourfold since 1920, while the number of college degrees has jumped ninefold, according to *Health, Education, and Welfare Trends,* 1960 revision, Washington, D.C. With increasing education of our populace, the work of nutrition educators should be facilitated. It has been pointed out that nutrition education becomes more difficult as the gap widens between the literacy and culture of the educa-

tor and of the student. Therefore, as such a gap is bridged one of the problems of the nutrition educator is solved.

A BROAD PICTURE

The framework of nutrition portrays the complexities and the many facets of the field of nutrition. We can see in the over-all view the importance of the natural sciences of chemistry, biology, and physics to basic nutritional science. The social sciences – psychology, sociology, anthropology, and economics – play their part in furthering the application of facts discovered by nutrition science. Thus it is evident that education in nutrition must involve the *entire spectrum* of these various specialities if it is to achieve its goals.

To illustrate further the wide scope of nutrition, other areas of specialization which affect food supplies and diets must be considered. Specialists in agricultural, commercial, and governmental fields need to cooperate with scientists and educators in communicating ideas for better nutrition. As all the other specialists unfold the facts, nutrition educators must then proceed to organize and interpret them in relation to the needs of people, and proceed to disseminate them to the public.

NUTRITION IN THE UNITED STATES

It seems a contradiction that we have nutritional problems here in the United States, with our plentiful food supplies, a stable economy, many convenience foods of high quality, excellent facilities for food preservation and processing, and efficient distribution and storage.

In addition, meals are made conveniently available to many groups of people in our schools and colleges, industrial plants, public places, hospitals, sanitoria, and other institutions. Furthermore, we have established the custom of reserving time in midmorning and mid-afternoon for some kind of eating or drinking or both.

Despite all these opportunities and advantages, however, *the status of our health and nutriture though generally good is not as high as it should be.* Certain barriers to health have been removed and, consequently, cannot be blamed: rampant communicable diseases, exploitation of child labor, unhealthful working conditions for adults, and poor sanitary facilities in homes and communities. For many people the greatest remaining hazard is the assault on health made from three to five times a day, sometimes seated at the meal table, but occasionally eating on the run at a snack bar or restaurant. Coffee breaks too often are attempts to make up for missed breakfast or lunch; late afternoon snacks too frequently are high in calories and low in needed nutrients. Much more attention is directed toward social than nutritional values of snacks. These and many similar dietary abuses can adversely influence the health of our people.

. . . attention is directed toward the social rather than the nutritional values of coffee breaks.

LONG-TIME TRENDS IN HEALTH AND NUTRITURE

To evaluate the nutrition problems of a people, the first step is to take a look at the vital statistics, preferably over a long period of time.

One of the first publications of the Food and Agricultural Organization of the United Nations (2) made the following statement:

> Food consumption is directly correlated with health. As diet deteriorates in quality, health and physical abilites decline and length of life decreases. In communities where the diet is adequate, the average length of life is nearly seventy years compared with thirty to forty in the worst fed communities. Unfortunately, poverty is associated with other conditions adverse to health, and it is difficult to assess the relative killing power of the different disease-producing factors. But the remarkable improvements in health and physical well-being following an improvement in diet show that inadequate food is one of the main causes of the preventable diseases, misery, and premature death which afflict the majority of mankind.

In the first World Food Survey of 70 countries whose people represented 90 per cent of the world's population, poor nutrition was observed to be associated with high death rates and low expectation of life; high mortality in infancy and early childhood and among women during the child-bearing period; increased susceptibility to many diseases such as tuberculosis; and impaired working capacity. Evidences of the high state of health and nutrition in the United States are that the life expectancy has been extended by more than 20 years during the first half of the century. Further, nutritional deficiency diseases have been substantially wiped out, national average height and weight charts of the younger generation have been revised upward, and athletic records of youth continue to be improved. We are considered to

TABLE 2.1

AGE-ADJUSTED DEATH RATES FOR UNITED STATES PER 100,000 POPULATION*

Year	Heart Disease	Cancer and Other Malignancies†	Tuberculosis	Influenza and Pneumonia	Gastrointestinal Inflammatory Diseases
1900.....	167	80	199	210‡	113‡
1950.....	300	126	15	24‡	4‡
1959.....	291	127	6	24‡	4‡

* Adapted from: Lindsay, D. R., and Allen, E. M., in *Science* 134:2017–24, Dec. 22, 1961.
† Including leukemia.
‡ Exclusive of newborn.

TABLE 2.2A

LIFE EXPECTANCY AT BIRTH (AGE-ADJUSTED RATES FOR THE CONTINENTAL UNITED STATES, EXCLUSIVE OF ALASKA)*

	Total Population	Males	Females
	(*Yrs.*)	(*Yrs.*)	(*Yrs.*)
1900.....	47.3	46.3	48.3
1950.....	68.2	65.6	71.1
1959.....	69.7	66.5	73.0

* Source: Same as Table 2.1.

TABLE 2.2B

AGE-ADJUSTED DEATH RATES FOR THE CONTINENTAL UNITED STATES, EXCLUSIVE OF ALASKA FOR DEATHS FROM ALL CAUSES*

Year	Deaths per 100,000 Population
1900.....	1,778
1950.....	840
1959.....	770

* Source: Same as Table 2.1.

have stronger, healthier, better informed individuals than ever before and, in addition, we have social and community health resources of an extent and variety never before available (3).

Nevertheless, some of the trends in the incidence of certain diseases are not wholly reassuring. (See Table 2.1.) Data for life expectancy and total deaths per 100,000 population are given in Tables 2.2A and 2.2B.

The United States Public Health Service is the watchdog of the nation's health. Dr. James Hundley (4) has reaffirmed that conditions are good with the people of this country, but he points out that pockets of malnutrition still exist, due largely to poverty, ignorance, misguided dieting, food faddism; and, secondary, to other causes such as alcoholism.

He states further that as older health problems have come under control, new problems have arisen to take their places. A large segment of adults, perhaps 10 to 20 per cent, are obese. Senior citizens, according to Hundley's statement, have special health problems, notably coronary heart disease and cancer. He states that there are indications that health progress has reached a plateau in this country. A number of countries have less heart disease, and some countries have better infant mortality rates than we have in the United States; the general death rate here has not changed since 1956.

We cannot afford to be complacent about our national health picture, however, for Hundley adds that if further substantial health progress is to be achieved we must find ways to control cardiovascular disease and cancer; furthermore, that there is some evidence that a "break through" may be achieved through diet.

Olson (5) has said:

> Nutrition has been implicated as etiologic in a variety of chronic diseases in which the threat appears to be overnutrition rather than undernutrition. These diseases include obesity, diabetes, coronary artery disease, and certain types of neoplasm. The particular role of nutrition in causation of these diseases is not entirely clear, but certainly no less clear than was the etiology of pellagra when Goldberger carried out his classic studies.

PUBLIC HEALTH NUTRITION PROBLEMS

A listing of the public health problems of the country may vary somewhat with the judgment of those who are making the analysis, though the general agreement is striking. Excerpts from the summary by Daft (6) are given as a guide to the nutrition educator in interpreting current nutrition problems in the United States.

1. Dietary deficiency diseases have largely disappeared from the country.
2. Despite the virtual disappearance of frank deficiency disease in this country, the margin of safety is not large. Complacency is not justified. We should not feel that the newer nutritional problems of public health importance have been substituted for deficiency disease but rather that they have been added to our field of responsibility.
3. In many parts of the world, deficiencies . . . remain as an extremely important public health problem. This constitutes an important challenge to us as well as to the citizens of the countries directly involved. In addition, it presents an opportunity for training of nutrition personnel.

4. Obesity is one of the most important public health problems in this country today. Our attack on this problem leaves much to be desired.
5. The chronic diseases are widely recognized, not only as public health problems of tremendous and increasing importance but also as related in various ways to nutrition. Atherosclerosis is rightly occupying a great deal of our attention today. In relation to many other chronic diseases there are also important nutrition problems deserving attention.
6. Lastly, there is another important group of diseases in which dietary factors are of great and, in some instances, paramount importance. These are hereditary or familial diseases, sometimes called "molecular" diseases. Diabetes, where the importance of diet is widely recognized, has an hereditary component.

In Dr. Stare's discussion (6), he for the most part agreed with Daft's analysis of current nutritional problems and reaffirmed the importance of obesity, atherosclerosis, and the need for fluoridation as public health concerns. He re-emphasized their importance along with the possible future role of nutrition in diseases in which hereditary and genetic factors are important. In addition to diabetes, Stare stated that most cardiovascular diseases and dental caries can involve strong genetic factors.

Overnutrition is considered by Stare as an important problem today. With respect to food energy, the effect of excesses is obvious. In addition, some concern exists about excesses of vitamin D and calcium. A considerable controversy, however, centers upon the true calcium need. Data still seem to point to a greater frequency of diets containing too little calcium than too much.

In the so-called molecular diseases, poor nutrition is not regarded as a causative factor, but drastic dietary adjustment may help to offset the abnormality.

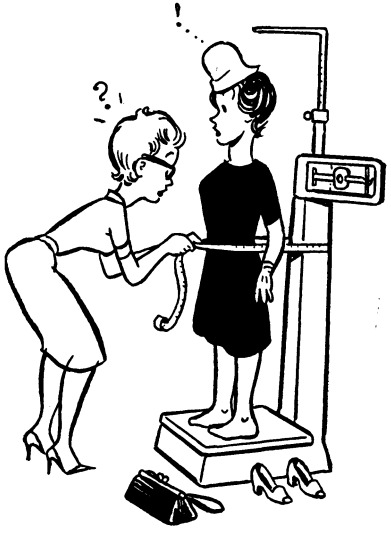
Overnutrition is considered an important problem . . .

FINDING OUT ABOUT OUR PROBLEMS

Neither guesswork nor idle opinion determines the nature of our dietary and nutritional problems, because many techniques are being developed in research to assess the nutritional state, or nutriture, and to detect evidence of nutritional problems. Among them are these:

We weigh and measure individuals, to determine body size and weight in relation to the need for nutrients. Simple records of weight and height, kept for persons or for groups over a period of time, can show important trends which may reflect the effects of good or poor nutrition. Measurements usually include standing heights; additional measurements may be helpful in determining body build, which should be considered in the interpretation of actual weight. Schools should be encouraged to standardize methods for obtaining information on body size of children and to keep consistent records throughout the years, because changes in trends in weight and stature may signal adverse effects of over-all dietary practices of populations as well as individuals.

A continuous check of the nutritional status of a population is a first step toward ensuring a high state of health. A good example of such a program is that of the Netherlands, described by C. Den Hartog (7) at the Fifth International Congress on Nutrition. With the cooperation of school physicians a census is taken every year of the food consumption by school children and of their growth and development. In consultation with the statistician the 8-year-old children to be included in the investigation are chosen. They should be well dispersed over the country according to town, village, and rural district.



We weigh and measure individuals.

Simple dietary records are obtained together with measurements of weight, height, sitting height, and subcutaneous fat. The data are compared from year to year. Changes in nutritional status which may accompany unfavorable economic developments are expected to show up in the changing trends of body measurments. A decrease in the annual rate of growth is a danger signal.

Similar data are compiled in the centers for prenatal care. This repeated "transversal" investigation of diversified groups – as infants, school children, and pregnant women – may be expected to render a "proper idea" of the nutritional status of a population.

Such a systematic and ongoing check of the nutrition of peoples everywhere could be of great value not only in checking the progress of maturation but in preventing overnutrition, in the form of a growing tendency toward overweight.

Knowledge of body composition is important in interpreting the information obtained from the scales. Is the observed increase in body weight an increase in fat, bone, or muscle? This information may make considerable difference in deciding whether a change, if any, is desirable. Various methods have been developed for getting this information, and some can be easily applied. For example, skin folds in specific parts of the body can be measured by suitable instruments, providing an index of the thickness of the fat layer under the skin. The procedure has been described as "taking a pinch," but certainly it is an educated, carefully measured pinch.

We take X-ray pictures of bones to determine their density which is related to their mineral content. In addition, the X-ray pictures reveal important facts about the total maturation of an individual: whether his bones have developed as might be expected for his chronological age. It is an important index of the physiological age and, when considered with menarche for girls, can help to pinpoint the stage of maturation.

We study diets and food habits . . .

Physicians take a careful look at many facets of the physique. Are the eyes clear, with surrounding tissues free of infection? Is the tongue free of cracks and fissures, and of proper color? Is the skin smooth and resilient, with the "bloom" of good health? Is the hair glossy? Are there cracks about the corners of the mouth? What about the general posture and appearance of the individual? The absence of any of these positive signs can indicate health problems other than poor nutrition, of course, but viewed collectively such indicators can be significant in determining a person's total nutriture.

Dentists examine teeth and oral tissues to find signs associated with malnutrition, including faulty tooth structure, dental caries, fluorosis, and redness, swelling, and bleeding of the gums.

We analyze blood samples because "blood will tell." It will tell a great deal about what has been eaten recently, as well as the status of our body stores of certain nutrients. It will reveal how we are utilizing important building stones and chemical substances essential to health. In analyses of blood, indications of defective body structure and impaired function may be found.

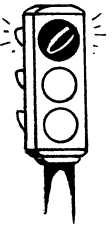
We analyze physical fitness — the ability to perform standard physical tasks, both for children and for adults. We know that exercise alone will not guarantee physical fitness; nutrition is an important companion part. People in poor nutritional status are seldom outstanding examples of fitness. Any coach or athletic director knows the importance of nutrition and encourages his athletes to build their health and physical abilities upon a foundation of good nutrition. The role of nutrition in the physical fitness program has not been clearly defined; further research is needed to show the relationship between the two.

We study diets and food habits because we know that improper eating for the individual, after a period of time, leads to faulty body structure and function. Diet and nutrition are not synonymous, but poor diets are a first step toward poor nutrition. Body reserves and adaptations may serve to delay the effects of poor food habits, but if inadequate diets are continuously followed, body functions will be impaired and body tissues affected. What people eat and how they utilize their food must be studied in order to forecast the possible effects of what they are doing to their health. Within the past 10 or 15 years, scores of studies have been conducted in all sections of the United States which tell much about diets and food habits.

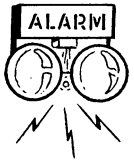
For better understanding of methods of detecting poor nutrition, the reader is referred to two publications: *Nutritional Diagnosis,* by Grace A. Goldsmith (published by C. C Thomas, Springfield, Ill.) and *Control of Malnutrition in Man,* a 1960 publication of the American Public Health Association, 1790 Broadway, New York City 19, N.Y.

DANGER SIGNALS

Studies of nutritional status and of diets of individuals have uncovered some specific danger signals which indicate the dietary and nutritional problems which exist for people of the United States. These are warnings. If they are heeded, our vital statistics could be favorably modified and many nutrition problems prevented. It is particularly important that these signals be noted in youth:

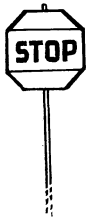


1. *Failure to regulate food energy intake to meet body needs.* This is particularly difficult for many people in our country today who are overweight because they consume more food than they need for the energy required for maintenance and activity. Conversely, some individuals consume too little food to meet their energy needs, resulting in underweight — a hazard to health because in this condition nutrient reserves may be depleted or impaired and body defenses diminished. The problem for every individual is to adjust his food energy intake to the level appropriate for maintenance of body size compatible with his health and vitality. Proper intake varies through the life cycle, but, unfortunately, food habits are not automatically adjusted. (See Chapter 11, "The Challenge of Change," for a discussion of changing calorie requirements in the various stages of age.)



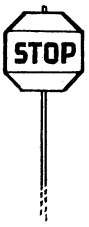
2. *Low blood concentrations of certain substances.* The hemoglobin level in the blood is regarded by nutrition researchers as an indicator of nutritional status. In the main, the concentrations of this constituent for the sample populations studied in the U.S.A. were satisfactory. But there are always some people with low values, and these cannot always be accounted for by diet. Serum concentrations for vitamin C and carotene are indicative of the content of those substances in the recent dietary intake. The levels of these have been shown to be low for many people studied. This observation confirms the dietary shortages observed in the use of foods which are rich in these nutrients. The full implications of these findings for health are not entirely clear.

3. *Dental caries and poor oral conditions.* Dental caries are prevalent among the people of the United States. Although we do not know the exact part played by the different nutrients in protecting the teeth against decay, it is reasonable to believe that this body structure, like all others, must have the proper building materials. The situation is complicated by the fact that the formation of the tooth took place long before its eruption. But the tooth is a dynamic structure with an ebb and flow of metabolic changes such as are characteristic of all kinds of body tissues. Environment of teeth is largely determined by what is taken into the mouth, intermingled with saliva. Thus food and drink undoubtedly are involved in creating an environment which may or may not be detrimental to the teeth. Individuals, communities, and nations differ distinctively in their susceptibility to caries.



4. *Lack of physical fitness.* Many of our young people would not rate an "A-plus" in a test of physical fitness; nor, for that matter, would adults. But we expect youths — with their younger and less worn body machines — to be more fit than adults. Yet in any schoolroom of youngsters, most would seem what we would term "average" in health and fitness. Too few would have the buoyance and vitality of the ideal. In contrast, some would be below average, tending to be apathetic, listless, and difficult to motivate. We seem to be content to regard average health as a normal state of affairs — and seldom question the meaning of "average" or the difference between "average" and "ideal." We need a public demonstration of the effects of better over-all nutritional status in order to determine the extent to which good nutrition can improve the now prevalent "average." The average may be laudable in some endeavors, but should it be the goal in human health and achievement?

5. *Embezzling nutrition reserves.* Most people pay close attention to their bank accounts, protecting reserve funds for use in emergencies while budgeting day-to-day assets for most effective use. Few pay attention, however, to *nutritional* reserves and dietary *"budgets"* or allowances. Some seem to be on a long-term program of "deficit



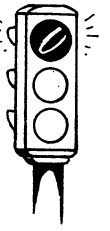
eating," taking out of their bodily reserves more than they replace, while others misappropriate dietary allowances by overspending and neglecting to set aside reserves for basic needs or unexpected demands.

There is nothing so obvious or regular as a bank examiner to detect depletion of stored nutrients. Unfortunately we have few ways by which we can identify and measure the body reserves, so that the "overdrawn accounts" are unobserved. Eventually, they may become evident under stress of illness or accident, when demands are too great to be met. This of course could be disastrous, depending upon the extent of the demands of the emergency.

Teen-age mothers, especially in the lower social and economic levels, are likely to be in this group of "embezzlers." Dr. Genevieve Stearns (8) has said:

> The girl who marries during her mid-teens is apt to be a girl poorly nourished through most of her lifetime and to be equally ill-equipped to meet the many psychological problems inherent in establishing a successful marriage and a new family. It is not surprising, therefore, that she is the least successful mother in producing a healthy full-term infant. These young adolescent girls greatly need counseling in nutrition and in the whole area of preparation for successful family life."

6. *Ailing and aging are considered synonymous.* We naturally expect the number of ailments to increase with age. Facts show that as people grow older the number of ailments does increase.



The following data were obtained in a study of Iowa women (9):

Age in years	Number of ailments per person
30–39	1.9
40–49	2.4
50–59	2.8
60–69	3.1
70 plus	3.6

At the Workshop on Aging sponsored by the American Home Economics Association in April 1962, Edna Nicholson (10) pointed out the need to distinguish between age and illness. When people after age 65 are sick or disabled, she explained, it is because they are suffering an illness or the results of an accident, just as is true at any other time in life. Although nothing can be done to change the *age*, she continued, a great deal can be done to prevent and relieve illness and disability. However, the prevalence of chronic illness among old people is indeed a danger signal. Prevention rests largely on changing the habits and living patterns of people, preferably before they become old. Nutrition education can play a major role in improving their health, thus prolonging their enjoyment of a useful life and perhaps lessening the need for custodial or institutional care.

THE POWER OF GOOD NUTRITION

The nutrition educator must convey to her students that there is *power* in good nutrition. If the body's needs are met in childhood and adulthood, the person can normally expect:

1. To have good health, vitality, and energy.
2. To mature at the proper time.
3. To withstand stresses of the environment.
4. To fulfill his biological role in life.
5. To enjoy an extended prime of life.
6. To withstand many of the hazards of aging.

Knowledge is power, particularly in nutrition. And there is much power in good nutrition.

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To withstand the stresses of the environment.