

## CHILD-REARING PRACTICES, NUTRITION AND HEALTH STATUS

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Health, as defined by the World Health Organization, is not only the absence of disease but a status of physical, mental and social well-being. Health can also be considered as an adequate adjustment of man to his physical, biological and cultural environment. The relations between culture and physical status are many, and, under various circumstances, each factor influences the other.

But even though health is one of the final goals of a community, the definition of health varies considerably among different cultures.

The social scientist may be of value in two major ways to those interested in improving public health. One of these is in creating a better understanding of the cultural patterns—how they came to be as they are, what their function is within the whole social system, and why they persist or change through time. The other is in suggesting which items may possibly be changed, how changes occur in culture, and what the indirect results of those changes may be on other aspects of the culture and social system. The bulk of the literature existing today in the composite fields of anthropology and health deals with these subjects. Persons such as Adams,<sup>1</sup> Foster,<sup>2</sup> Jelliffe,<sup>3</sup> Paul<sup>4</sup> and Wellin,<sup>5</sup> among others, have dealt with them on both the general and specific levels.

This paper will discuss some of the ways in which culturally-determined dietary and child-rearing practices affect health in Guatemala.

In that country, a variety of social segments exists, each with its

own cultural characteristics. However, the two groups to be discussed here are traditional Indians and poor Ladinos.

The Indian of Guatemala has lived for 400 years in a cultural enclave. After their conquest and reorganization by the Spaniards, the Indians withdrew, psychologically and physically, to their own villages, each of which became a separate cultural entity, characterized by distinct dress, dialect, and customs.<sup>6,7</sup> Engaged in agriculture, the Indian formed an integral part of the total economic organization of the country of Guatemala. He not only raised the basic foodstuffs, but his handicrafts were utilized by Ladinos as well. In addition, Indian merchants were responsible for much of the distribution of these goods. However, Indian-Ladino social relations became crystallized into a caste-like situation, and the Indians maintained a rigid psychological barrier between themselves and the socially and politically powerful Ladinos. This barrier successfully preserved the traditional Indian culture, after its initial post-conquest reintegration, almost to the present day. Needless to say, this culture was, and to a great extent still is, extremely resistant to change.

The culture of the poor Ladino, although incorporating some Indian elements, is essentially based upon Spanish culture of the sixteenth and seventeenth centuries. In some rural areas of Guatemala it too has persisted almost unchanged since that time. However, this Ladino culture does not include the rigid barrier to change characteristic of the Indian. For most Guatemalan Ladinos poverty and lack of educational facilities are the greatest obstacles to change. The poor Ladino recognizes a class, but not an ethnic difference between himself and upper-class Guatemalans, and usually is eager to adopt the ways of this group.

The current dietary and child-rearing practices among these groups must be seen in historical perspective, as well as in terms of economics and on-going acculturation to modern western civilization. Dietary patterns, along with many other elements of culture, are largely determined for any particular people, by *tradition*. The basic foods still consumed by Guatemalan Indians were already part of the pre-Columbian dietary.

The socialization and enculturation processes, of which child-rearing techniques are perhaps the most important, should always be examined very carefully. These processes may furnish important clues in determining whether a culture is primarily traditional, or whether it is undergoing rapid change at any given point of time. When parental authority

and example are the primary means of educating children, the culture will probably turn out to be one of those which is "resistant to change." But when school attendance is high and radio, television, magazines and other mass media are available and in use, and when extra-community influences such as doctors, nurses, extension agents, teachers, missionaries, etc. also play an important role in the education of the young, a rapidly changing, novelty-accepting culture may be expected. Obviously, the practical problems imposed upon those desiring to bring about changes will be different in each of these situations.

Many factors may tip the scale between acceptance or rejection to change, but economic factors are among the most important. "Economic factors" include such things as cost and availability of foods on the local level, means of subsistence, amount of cash available to buy items not locally produced, etc. The groups to be discussed here are largely rural, and are dependent on small scale subsistence agriculture, using primitive tools and techniques, supplemented in some cases by wage labor during part of the year. Some communities also earn a small amount of cash through the sale of handicrafts, such as pottery, baskets, or cloth.

**RISK OF DEATH DURING EARLY LIFE**

In the technically more advanced industrialized countries like the United States, the risk of death of children after birth is still relatively high during the neonatal period, that is, the first 28 days after birth. As shown in Table 1, the death rate is about 20 per 1000 live births. The majority of these deaths occur during the first few days after birth and are due to causes associated with pregnancy and delivery or are of congenital origin. During the remainder of the first year, however, the rate drops to about seven per 1000 live births and after the first year up to the fifth birthday the mortality rate is only about one per 1000 children of that age group.

**TABLE 1. RISK OF DEATH DURING EARLY LIFE<sup>18</sup>**

| <i>Country</i>           | <i>Age</i>                         |                    |                  |
|--------------------------|------------------------------------|--------------------|------------------|
|                          | <i>0-28 days</i>                   | <i>1-11 months</i> | <i>1-4 years</i> |
|                          | <i>Deaths Per 1000 Live Births</i> |                    |                  |
| Guatemala                | 36.3                               | 55.1               | 33.2             |
| United States of America | 18.3                               | 7.0                | 1.0              |

The situation is quite different for children born in the low socioeconomic classes of pre-industrialized, technically underdeveloped countries like Guatemala.<sup>8</sup> There the mortality rate during the neonatal period is twice the corresponding figure for the United States (Table 1). The major causes are the same, but operate with higher intensity due to inadequate prenatal and obstetrical care. Infectious diseases also contribute to the difference but not yet very significantly. At this age the children are still protected by the immunity transmitted from their mothers and, as will be discussed later, are not yet in very close contact with the unsanitary environment. Between the ages one to 11 months, the difference in death rates increases, and is now about eight times higher in Guatemala. Infectious diseases, mainly respiratory infections and diarrheal diseases, are particularly responsible for this situation. During the ages of one to four years, the mortality rates in Guatemala are 33 times higher than in the United States. In this age group, nutritional deficiencies, acting synergistically with the infectious diseases, account for the higher mortality rate.

This pattern of mortality, and a similar one in morbidity, are very closely related to the ecological conditions, and especially, to the child-rearing practices to be discussed below. This very high risk of morbidity and mortality for infants and small children is considered a "normal" pattern by the people themselves. Some infectious diseases, such as measles and intestinal parasitism, are recognized as responsible, although with erroneous concepts of their epidemiology. However, in many instances disease and death are attributed to magic. Nutritional deficiencies, which play a very important role, are not recognized. Under these circumstances, foods are frequently feared and may be considered a source of danger rather than an element of health.

## GROWTH AND DEVELOPMENT OF CHILDREN

Among the low income groups of Guatemala, as in other populations living in similar ecological conditions, nutritional deficiencies and other environmental factors are responsible for the slower rate of growth and development of children than in the technically developed countries or in the upper classes of the same countries.

At birth these children, in spite of the poor nutrition of their mothers, have an average weight which is only slightly lower than the average for children in the United States or Europe and are within normal limits. They usually make up for this difference during the first few

weeks of life and follow the standards of the United States or European counterparts up to the third or fourth month. During this period they are fed exclusively from their mother's breast which satisfies all their nutritional requirements. Hence, infectious diseases, particularly diarrheal diseases, are still infrequent. After this time, their rate of growth decreases significantly as compared with the United States or European standards. During the second half of the first year of life they continue to be breast fed, but supplementary feeding, which is then needed, is inadequate in quantity and quality. They also suffer from frequent attacks of diarrhea and other infectious diseases. By the time of complete weaning, the situation becomes even worse and rates of growth are further depressed. Only by the third to fourth year of life do they become adapted to the unfavorable environment. Diseases are less frequent then, and an improvement in the nutritional intake occurs. At this time they start to grow at a *rate* similar to the United States or European standards but they remain two to three years behind these standards. Since growth ceases at maturation, which takes place at the normal chronological age, the end result is a population of smaller adults than in more privileged groups.

Bone maturation follows a pattern similar to physical growth. Recent evidence suggests that this is also the case for mental development.<sup>9</sup>

These patterns of growth and development, again, are not considered abnormal by the members of this population. These small and usually apathetic and inactive children are the accepted norm. Some physicians and well educated workers in public health and physical anthropology have considered these patterns of growth and development to be a racial characteristic. However, an increasing amount of evidence suggests that these growth patterns are determined largely by environmental factors, mainly nutrition.

## DIETARY PATTERNS

For the Indian communities of Guatemala, corn is the staple food; it provides up to 70 or 80 per cent of the calories and 60 to 70 per cent of the proteins consumed. Because its preparation involves cooking with lime, corn, mainly in the form of tortillas, also provides more than 80 per cent of the calcium. Since yellow corn is usually consumed, it is also an important source of iron, vitamin A, and of some of the vitamin B complex. Next to corn, pulses, mainly black beans, are eaten in appreciable amounts, contributing an important source of proteins in the diet.

A great variety of green leaves and other fresh vegetables and fruits are regularly eaten in very small amounts and these constitute the main source of vitamin C. Animal products, because of low availability and high cost, constitute a very small and infrequent component of the regular diets.<sup>10</sup>

Fats are not used for cooking and the low fat content of the diets, accounting for only eight to ten per cent of the total calories, is provided by the natural fat of the foods.

The main beverage is coffee, sweetened with non-refined sugar. Thin gruels, "atoles," prepared mainly from corn, are also frequently used.

Within this general dietary pattern, the main differences imposed upon the infants and small children are as follows. During the first year of life mother's milk constitutes the primary source of nutrients. Though other foods are progressively introduced, they are given only in very small amounts and do not contribute significantly to the nutrition of the child. Aside from some selection of foods, no special preparations are made for them. Liquid or soft foods are preferred and for this reason beans are not given, but only the broth or water in which they have been cooked. Cow's milk and eggs, if available, are given with preference to the small children but this is infrequent. Meat, on the other hand, is not given to small children. Fruits, when available, are also given with preference to small children. However, they are considered more as a special treat than as a food. Although the tortilla is the main dish for the family, bread, if available, is preferred as an early food. It is given soaked in coffee and considered to be more easily digestible than tortilla.

In general, the amount of foods given to small children during weaning and immediately after, is proportionally less than what they should have if the total foods consumed by the family were shared according to the nutritional needs of its different members. The children, therefore, suffer not only a food restriction greater than the one for the family as a whole in foods which are important sources of proteins and other essential nutrients, such as beans and meat, but their calorie intake is also restricted. Only when the children reach the age of three to four years do they start to share the foods available to the family.

The result of this selection and limitation of foods, based mainly on the fear of diarrhea and other diseases, expressed in terms of nutrients, is indicated in Figure 1. The data are from representative samples of an Indian community in the highlands of Guatemala and were obtained by four dietary surveys carried out over a period of four consecutive

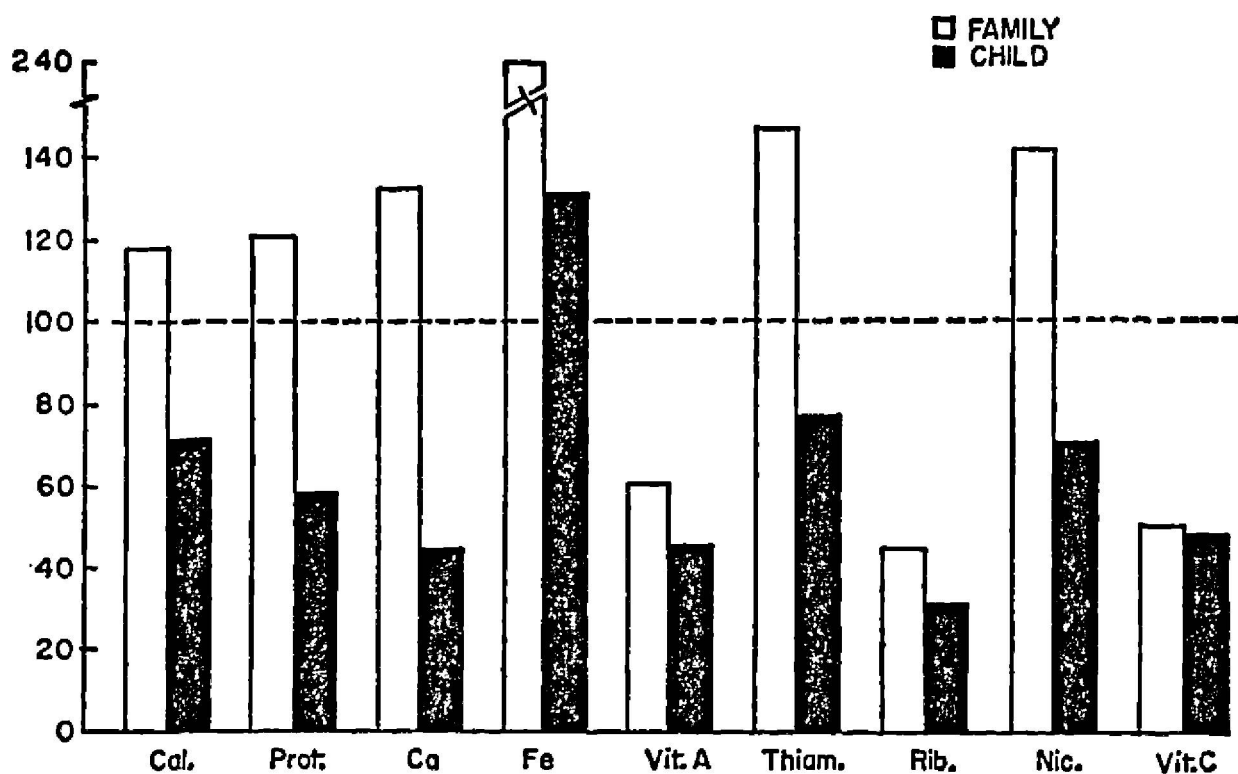


Fig. 1. Adequacy of intake of nutrients/head, expressed as a percentage of the recommended allowances, by families and preschool children in one Guatemalan Indian community, 1959.<sup>11</sup>

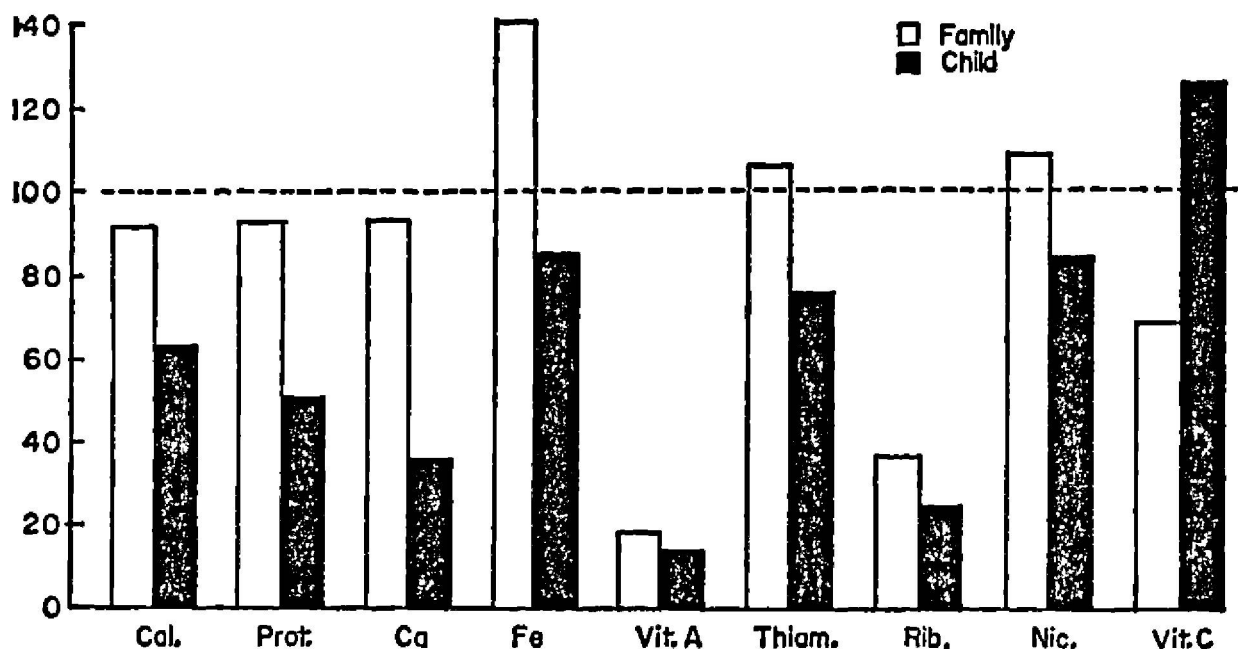


Fig. 2. Adequacy of intake of nutrients/head, expressed as a percentage of the recommended allowances, by families and preschool children in one Guatemalan Ladino community.

years.<sup>11</sup> For all of the nutrients, it shows that the children are in a less favorable situation than the other members of their families; this is particularly evident with respect to calories, proteins and calcium. For these nutrients the intake, when considered on a per capita basis for all the members of the families, is adequate but the share of the small children is much below their nutritional requirements. This is further aggravated with regard to proteins which are mainly of vegetable sources and are of low biological value.

The usual diet of poor Ladino communities living in small rural villages in general follows the same pattern described for the Indian populations. The principal difference is a tendency to use greater amounts of fat, and more refined foods are preferred. White refined sugar is, for instance, used instead of the brown non-refined sugar still widely used by the Indians. White corn is also preferred over yellow corn. In regard to the feeding of infants and small children, weaning is usually earlier and cow's milk is more readily accepted as a natural and convenient food for small children. However, its use is somewhat restricted due to its high cost and limited availability. Ladinos frequently recognize the need for specially prepared foods for infants and small children. These preparations are, however, usually selected more by their physical consistency and according to beliefs about what children of this age can "tolerate" than by their nutritional value. Thin noodle soup (vermicelli) is, for instance, a popular food of this type.

Figure 2 shows that the nutritional situation among Ladinos is very similar to the one presented for the Indian groups. The Ladino village studied is typical of a large number of poor towns in the arid eastern section of the country. The lack of vitamin A in the diet is particularly evident, being even more pronounced than for the Indians, and is probably the result of the change from yellow to white corn and to the lower consumption of green leaves. The same inadequate intrafamilial distribution of foods to the disadvantage of the small children, is also observed. Cultural factors play a fundamental role in this unfortunate situation.

## CHILD-REARING PRACTICES

### *Pre-natal care and delivery*

Any discussion of child-rearing practices should logically begin with pre-natal care. This critical period can have an enormous effect on the health and well-being of the child, and it also partially determines the

rate of miscarriages, stillbirths, and maternal deaths. Among both Indians and lower-class Ladinos in Guatemala, the usual procedure for a woman who believes she is pregnant, is to seek the services of a midwife.<sup>12</sup> Although the government maintains a public health training program for midwives which gives them a certain amount of modern medical knowledge, the majority of the midwives have only limited empirical training. The body of knowledge utilized by these folk midwives includes a number of tools and techniques not generally recognized by scientific medicine, but which are thought to be essential by the majority of their clients. The primary concern throughout pregnancy is to ease the discomforts of the mother, if any, and to prepare her body for an easy delivery. The midwife may, therefore, use massage and prescribe herbal teas both during gestation and actual labor. Some foods may be proscribed either because they cause indigestion or because they make the body "cold," a condition which is considered highly dangerous for any delicate person, including pregnant women, the elderly, the sick and the very young. A pregnant woman is also directed to consume large quantities of corn-meal gruel (*atol*), beer, sweet wine and eggs. The reasons given for consuming these items are sometimes stated in terms of the growth of the unborn child, but more often are simply magical prescriptions aimed toward "warming" the mother's body. The eating of eggs appears also to have a magical basis, the egg being considered a kind of fertility symbol, although this is not universally expressed even by those who feel they should eat them.

Throughout the pregnancy, usually counted in "moons," and therefore, lasts ten months, the midwife visits her client regularly. The mother-to-be continues with her regular duties up to the time of delivery, although during the last month or so she may be relieved of the heavier tasks by her husband, older children, or female relatives. She wears no special clothing during pregnancy, and generally makes no formal preparations for the coming birth.<sup>12</sup>

A difficult delivery may be made easier by administering various hot drinks, compresses, massages, in some cases by sweat baths, and by passing smoke from the fire or a brazier over the body of the woman. The baby is usually born into the arms of the midwife, who cuts the cord, ties it with a bit of thread, cauterizes it with a blade heated red-hot in the fire and then usually applies a bit of hot candle wax. This practice probably explains why tetanus neonatorum is practically never seen in these populations. In the program for the training of midwives previously mentioned, however, recommendations for the care of the

umbilical cord follow the aseptic modern practice. This is very difficult, if at all possible, to be understood and applied by these empirically trained women under the conditions in which they work. The cauterization of the cord is not mentioned in their training. Modern medicine may in this way be more harmful than useful if it is successful in abolishing a convenient practice, better adapted to the situation.<sup>12</sup>

The newborn baby is, in most cases, not given anything to eat until the mother's milk comes in on the third day or so. Colostrum is generally thought to be unfit for consumption, and the child is not permitted to suck as long as any trace of this substance is present. However, great variations occur from area to area in this. Among the more traditional Indians the baby may be put to the breast almost immediately, regardless of colostrum. In other cases, another lactating woman, usually a relative of the mother, may nurse the child for the first few days. Others may give sugared water by spoon or bottle.

An almost universal practice is the administration of a laxative—usually oil with certain herbs added—to purge the baby and to protect against worms. Some believe that a child may be born with worms, and will die if they are not expelled immediately.

### *The first year*

Breast-feeding is all but universal among these groups<sup>13</sup>—only in very unusual cases is a child fed with a bottle. Even if the mother dies at birth, every effort is made to find a lactating woman to feed the baby. The numerous remedies and precautions for lactating women to follow indicates the importance of breast-feeding in these populations.

The baby is given the breast whenever it cries, which may be every few minutes. No "schedule" is followed and if a child continues sleeping for several hours, the mother never wakens it to be fed. Neither does she consider it unusual for the child to suck every half hour. The women almost always say, in answer to questioning, that the child is fed "every little while" (*cada ratito*), but in three studies the three children (all between the ages of two and five months) actually nursed about every two and one-half to three hours. A child usually sucks until it falls asleep. Although burping is unknown, the motion of the mother's body and the more-or-less upright position of the infant while tied on her back in the traditional manner, may accomplish the expulsion of air.

Under ordinary circumstances, breast milk is considered the only food a child actually *needs* for almost the entire first year. However,

most children are introduced to solids before this. Again, the customs of Indians and Ladinos differ in this. Ladinos tend to start solid foods a bit earlier, and the more sophisticated urban women, who have had access to the well-baby clinics in the larger towns and the city, tend to wean and give solids earlier. Among all groups studied, however, the first solids are given irregularly and in very tiny amounts. If the child likes the food and it apparently does him no harm, the amounts will be gradually increased to more substantial servings.

Careful supervision of the diet is considered necessary to protect the child against intestinal upsets, including both diarrhea and constipation, against magical "coldness" and against "worms." Actually, the presence of intestinal parasites is considered to be almost normal, and the mother must be careful to avoid foods which will upset the worms and cause them to "rise" or become active. If they do become active, medicines must be given to expel them, or to put them back into their dormant state. These range from sweat baths, herbal teas, and laxatives, to patent worm medicines purchased in the drugstore. Among all groups, a healthy child is one which gains weight, becomes "fat," is happy, and does not cry too much.

### *Weaning*

Weaning begins during the second half of the first year when the first solids are introduced.<sup>13</sup> A study carried out by INCAP among Ladinos, modified or acculturated Indians, and traditional Indians in 1963, found that complete weaning from the breast occurred earliest among urban Ladinos, where the average age was one year.<sup>13</sup> Most of these Ladino mothers tried to continue giving their child some cow's milk, either by the bottle or by cup after weaning.

Modified Indians and rural Ladinos weaned their children on the average a bit later—at about 15 months of age. Milk was sometimes added to the child's diet, but more often not. Finally, among the traditional Indians, weaning occurred at an average age of 18 months, and cow's milk was very rarely given as part of the regular diet. Milk products have never formed a part of the traditional Indian's diet. Domesticated dairy animals were introduced at the time of the conquest, but Indians did not become herders of either goats or cows—an occupation which was totally unknown to them. Therefore, milk products, except for dry cheese, were difficult to obtain, were very expensive, and never became a desirable commodity to most Indians. In recent years, canned

powdered milks have become largely available even in the smaller towns throughout Guatemala, but their cost is still high and most Indians do not buy them.

The weaning period is a most critical one in Guatemala for a number of reasons. The most frequent reason for weaning a child is pregnancy of the mother. The very traditional Indians believe that continued nursing will be bad for the child as well as for the developing fetus. Although a child is treated gently for the most part, occasionally bitter substances will be used on the nipples to discourage further sucking, and the mother will repeatedly thrust the child away from her each time it desires to nurse. At this point the child is removed permanently from the parents' bed. The psychological trauma is further increased upon the birth of the next sibling, which is often seen by its elder brother as an intruder and usurper of privileges. Sibling rivalry or jealousy is a well-recognized cultural pattern. A child is thought to feel or sense pregnancy in the mother before she herself becomes aware of it. Women may be teased and said to be pregnant if their small children become sad and irritable.

The weaning period is characterized by another change in the type of care given the young child. Before a child is able to walk, it is carried about by its mother or older sibling and rarely allowed to crawl about freely. It may be set inside a large box or playpen (appropriately enough, termed "corral" in Spanish). The only things it plays with are those items given it by someone else, and from the point of view of sanitation, it leads a relatively "clean" life. However, when the child begins to walk—anywhere from a year to 18 months of age—it is no longer so restricted, but actually encouraged to go about more on its own. Although not generally allowed outside the house or yard, the child enjoys relative freedom within these limits. Since the yards are also widely used as latrines by both animals and humans, the risk of contamination is greatly increased. The child also begins at this age to come into first-hand contact with larger numbers of persons who enter the yards to visit or on business. In addition to all this, the mother's attention will soon be concentrated upon the new baby, and she has less time to supervise the actions of the toddler, who is now left almost completely in the charge of older siblings, if any, who may themselves be only five or six years old.

## THE ACCULTURATIVE PROCESS AND ITS EFFECTS ON CHILD HEALTH

The culture of the Guatemalan Indian as well as that of the Ladino is now undergoing a process of relatively rapid change.<sup>1</sup> This process includes social, economic and ideological factors, all of which are involved in the matter of child health.

Developing nations have benefited in the years since World War II from a world-wide movement sparked by the heavy industrialization and prosperity of the relatively few highly developed countries of the world. The United Nations' subsidiary organizations—especially WHO, FAO and UNICEF—have been especially active in combating poverty, illiteracy, malnutrition, and diseases throughout the world. In addition, the governments of individual developed countries have provided aid of various descriptions in an attempt to raise the general economy and standards of living in the less developed parts of the world. This aid consists not only of money and goods, but also of technical advisors who have gone to these countries personally. Furthermore, private organizations, both secular and religious, have also sent money, goods, and personnel all over the globe to an extent never before known in history. Qualified persons from the developing nations have been enabled to attend universities and technical courses in the industrialized nations by a flood of grants provided by their own governments as well as by the various sources mentioned above.

The effects of this aid have been many, and in a sense, we have not even begun to analyze the changes which have been set in motion. But clearly, changes have occurred, and some of these can be discussed in a fairly general way. Today, most countries of the world have active governmental departments of public health and education. These departments usually work hand in hand with foreign advisors and are often materially aided by them. The phenomenal increase in population in Latin America, as well as elsewhere, has been largely due to a declining death rate rather than an increasing birth rate. This, in turn, is undoubtedly related to better medical care, and all the modern important advances in public health. In Guatemala, the population increase has produced greater pressure on the land in rural areas, with generally greater poverty, and a movement into the cities—especially Guatemala City. Many persons inheriting a little or no land and finding no wage employment in the rural areas, move into the city in the hope of finding jobs in construction, in factories, in stores,

or in domestic service. The process of urbanization, whether it brings greater poverty or relative prosperity to the individuals concerned, necessitates an entirely new way of life involving family and household form, education of the young, values, hopes and aspirations. For the Indian, urbanization also necessitates changes in language, dress, and even motor habits. In short, his whole sociocultural and psychological world must be reformed.

The masses of lower-class people in Guatemala today are being constantly bombarded with new goods and ideas. This is true even in the rural areas although perhaps to a lesser extent than in the cities. Not only are they lectured by teachers, agricultural extension workers, doctors, nurses, and missionaries, but they are beginning to become aware of those of their fellows who have made changes and who are, they believe, better off. Thus, they seek to emulate not only foreigners, but more importantly, members of their own country's middle and upper classes. The developing middle class is probably the most instrumental and effective agent of change today. The existence of this class is visible evidence that changes are possible for everyone. A desire for something different, and a belief that it is attainable are necessary prerequisites for any lasting and significant culture change.

The middle class in all countries has been shown to be highly upwardly mobile, and this by definition means that its members are receptive to change. Since they are also at least literate, if not fairly well educated, they are easier to reach through the mass media such as television, radio, newspapers, etc. The lower classes will generally follow when the economic situation permits them. George Foster recently discussed this point at length.<sup>14</sup>

Recent acculturation in Guatemala will probably affect child health—largely through changes in weaning patterns and diet in general. Evidence shows that even the rural Indian is gradually becoming Ladinoized.<sup>1</sup> This means that he is taking on the ways of the Ladino, which are largely based on a medieval Spanish cultural pattern. In terms of diet, as Ladinoization takes place, bread partially replaces tortillas, more fat is used in cooking, and more meat and milk are consumed. But along with this change in diet go changes in ideas concerning food and its effect on the body. The whole concept of magical hot and cold seems to be far more developed among Ladinos than among Indians, and they show a greater concern over the effect of particular foods upon the body during illness or during infancy, childhood, pregnancy and old age. This over-awareness of food as a causa-

tive agent of disease or as an irritating factor can have detrimental effects, as when protein foods are withdrawn from a child suffering from diarrhea.

Among Ladinos, as well as among Indians who become urbanized, different sorts of changes occur. The concept of hot and cold foods for instance, seems to be losing its magical quality and in some cases is no longer an important factor in food selection.

Another effect of the recent barrage of health education has been to make the Ladino aware of the concept of a "good diet." Formerly, and still among less acculturated Ladinos, the attitude was that food was something one ate without too much concern so long as one was healthy, but which was withheld when one became ill. Now many Ladino women state that children and adults must have certain "health-giving" foods. Such foods include meat, milk, eggs, vegetables, tortillas, and cereal products. They are also aware of vitamins, although they tend to think of these as medicines to be administered to the unhealthy.

The greater dependence upon cash rather than home-grown and prepared products has also had an effect on the dietary pattern. The ability to buy foods in stores, as well as a greater susceptibility to commercial advertising has led the acculturated Guatemalan to use items such as soft drinks, jellies, jams, mayonnaise and pickles, often instead of the more nutritive traditional foods. This tendency can be used to advantage by public health officials and others. An outstanding example is the commercial success of *Incaparina*, a high-protein cereal product formulated by INCAP, but manufactured and sold through private enterprises.<sup>15</sup> The rising urban middle class is precisely the type of population most inclined to accept novelties of any sort, and when the novelty is further promoted by medical and school authorities, as well as by strictly commercial propaganda, it will be successfully adopted.

Perhaps the most dramatic change produced by the combined agents of acculturation mentioned above is in weaning. Overwhelming evidence indicates that the average age of final weaning from the breast is declining throughout Guatemala. This age may go as low as six to eight months among lower-class urban Ladinos, and is only lower among the middle and upper classes who most frequently wean at three months, if they breast-feed at all.<sup>16</sup>

A number of reasons are behind this trend among the lower classes. One is imitation of the upper classes, which includes ideas of pre-

serving the figure, modesty, and that nursing a child is too much bother. In addition, the advice given to mothers at the free well-baby clinics places emphasis on earlier supplementation of breast milk with solids and an earlier final weaning. Many of the public health nurses strongly recommend weaning at the age of eight months, and even suggest that breast-feeding a baby for as long as a year is shameful. Naturally, in a home where resources permit a balanced diet for the baby, earlier weaning is not detrimental and may be beneficial to the mother's own health. But in many homes where studies have been carried out, the baby is given only low-protein cereal supplements, tortillas and bread, broth or bean juice, and a few mashed vegetables and fruits. The protein content of the infant diet then, is supplied almost entirely by breast-milk. When this is diminished or removed entirely, malnutrition—often serious—is inevitable.

Another factor involved in this earlier weaning trend is the change in family form which frequently occurs in urbanization. In recent years, anthropologists have come to recognize a type of grouping which is called the matrifocal family. In this, the husband-father figure is either absent entirely, or at best only marginal in his economic and social importance to the other members of the family. The mother then becomes the central figure in the group, and as such, is often responsible for its maintenance. Since she must be out of the house frequently during the day, either to work or take care of household business, she often has someone else give her baby a bottle.

When weaning from the breast occurs earlier than about eight months, supplementary milk is usually given, but the dilution, when made from powdered concentrates, is often too great, and proper nutrition is not actually accomplished. Even fresh cow's milk may be diluted with water to make it stretch further in a family which cannot afford to buy much, as well as for the fear that it may be "too strong" and produce "indigestion" or diarrhea. Needless to say, rarely can milk be provided for all children in a family, and usually only the smallest child gets any substantial amount. Sometimes a tablespoonful or so is added to the sweetened coffee customarily given to the children to drink.

Many women in the more sophisticated groups believe that they must use one of the milks which simulate the composition of breast-milk. These are, of course, more expensive, but the mother simply gives a lesser concentration, thinking that her child will benefit more from this than from larger quantities of a cheaper milk. Some groups

consider any powdered milk inferior. Some say that it causes indigestion because of the lumps remaining after it is mixed. Others say that this milk is not really milk at all, but powdered chalk or powdered bone, and that it does not have the same nutritive qualities as fresh milk. Again, in such cases, the same amount of money available to buy milk will be used for fresh milk which will perhaps be watered, and which may turn sour or become contaminated before the day is over if purchased in quantity and left unrefrigerated.

In addition to the hazards of malnutrition, bottle-feeding presents the problem of contamination through improperly washed and sterilized equipment. Bottle sterilization was never witnessed in any home studied among the lower classes. Occasionally a mother says that she rinses the bottle with boiling or boiled water. These families cannot afford to have several bottles and the equipment necessary for sterilization. Since they also have no means for refrigerating milk or bottles made up in advance, the whole technique as taught in the United States or among Guatemalan upper-class populations is non-functional. Most families own only a single bottle, usually made of plastic. They seldom own a bottle brush, and obviously this one bottle is rarely properly cleaned. If the child does not finish the entire bottle at one feeding, the balance remains in the bottle for the next. The nipples are not inverted or covered, and of course the bottle itself is not refrigerated, and often not even put inside a closed cupboard. Under such conditions, powdered concentrated milks may provide a solution, but only if the mothers are properly educated in their use. The use of bottles should probably be abandoned in favor of feeding directly from glasses. This is possible by the time these children are given milk and would be safer.

Great progress in wiping out the widespread poverty among Indians and Ladinos in the near future is not likely. In fact, the rapidly increasing population size, which means larger numbers of children to feed and support in any given family, will contribute to even greater poverty for many. Since effective birth control programs on a large scale are not practical in Guatemala at the present time, this situation is likely to become worse before it becomes better. Medical or public health authorities are unable to improve the economic conditions of the country, but they may help the poor make better use of what is available to them. This is all the more necessary in view of the probability that the present trends toward earlier weaning will result in a worsened nutritional status for children under one year. In the ab-

sence of contraceptive measures, earlier weaning may further contribute to an even greater birth rate, thus aggravating the already grave situation in regard to population increase.<sup>17</sup>

On the positive side, the trend toward an interest in a better diet and in health-giving foods is encouraging. Greater use of the low-cost, high-protein mixture, *Incaparina*, will go far toward alleviating some of the worst nutritional problems. Nutrition education must also be aimed at better selection and preparation of foods already available and at least partially acceptable, such as powdered milk, meat, cheese, beans and vegetables.

A greater interest in formal education and a consequent higher school attendance will probably be evident in all areas. This is related in part to a realization that better jobs are available to the better educated. Even farmers are now becoming aware of the fact that they may improve their yields, and thus their incomes, by using more modern agricultural techniques. Some are also developing interests in keeping bees, chickens and other animals on a larger scale than before. An ability to read and keep accounts is more appreciated as these enterprises grow.

The problem thus arises of how best to teach nutritional habits in the school. Classroom instruction alone may have negligible immediate results, since the children in these populations have little to say about how the family income will be spent. Also parents are frequently scornful of what they consider to be new-fangled and impractical ideas concerning diet brought home by the youngsters. But such education may have long-range effects when the children grow up and become husbands and housewives themselves. This will be especially true among those who leave their villages and/or social class and strive for a position as a member of the middle class.

Of even greater effectiveness is classroom instruction accompanied by actual supplementation of the diet while in school—either through school lunch programs, or through mid-morning or mid-afternoon refreshment periods. When possible, supplementation will not only improve the health of the children, but may create a taste for the new items.

Other trends which will probably be effective in changing the status of child health are those which induce more women to go to hospitals for pre-natal care and delivery and to attend well-baby clinics, although pre-natal care for primiparas among Indian groups may require more time. This contact with modern medical personnel

can be an extremely important means of directing culture change in regard to sanitation, hygiene, and infant and child diet. These agencies could emphasize the value of breast-feeding for as long as possible. They could also give instructions for realistic preparation of formulas and care of bottles or of other utensils for those who must be weaned from the breast.

In conclusion, the present trend toward cooperative studies between medical and social scientists has been and will continue to be effective in providing raw data and in suggesting ways and means of implementing programs of directed culture change in health practices. This trend, in and of itself, must be considered as one of the many factors in future acculturation of primitive and peasant peoples in the underdeveloped countries of the world. Presumably, better understanding of the importance of culture and of how it changes should result in more successful educational programs and in greater acceptability of new ideas and practices.

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