

LIFE STYLES AND NUTRITIONAL STATUS OF CHILDREN FROM DIFFERENT ECOLOGICAL AREAS OF EL SALVADOR

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Life styles and the nutritional status of children were studied in a coffee, a cotton (intensive) and a basic grain (subsistence) growing region of El Salvador, as well as in populations living in the slums of the capital city, San Salvador. The objectives of the paper were to identify ecological regions with greater magnitude of growth retardation and to describe living patterns that require different social and economic actions in order to reduce the number of people living in deprived conditions in the country.

The data includes information on quantitative characteristics of the population and their environment, summaries of anthropological reports describing life styles and infants' and children's diets from representative communities of each region, and weight and height of children from 6 to 59 months of age.

A higher proportion of children suffering from weight-for-age, and height-for-age retardation was observed in the coffee and subsistence regions compared with the intensive and urban slums. The quantitative and descriptive studies identified general and region-specific social, economic and cultural problems leading to poverty and malnutrition. This suggests that general programs for all regions and specific actions for some regions should be designed in order to effectively combat deprivation and, as a result, to reduce the magnitude of nutritional problems in El Salvador.

KEY WORDS: Nutritional Status; Functional Classification; Malnutrition; El Salvador; Nutrition Planning; Epidemiological Surveys; Socioeconomic.

INTRODUCTION

There is growing interest in developing nations in organizing data collection systems for orienting the design and monitoring the impact of programs attacking deprivation and malnutrition. Traditionally, national food and nutrition assessments have not defined the nature of malnutrition with regional and population type specificity, failing to describe the specific underlying social and economic factors and processes determining the quality of life in various types of poor families (INCAP/CDC, 1972).

Abercrombie (1975) has pointed out that the definition of the type of poor groups is the first step towards identification of the interventions likely to improve the living conditions of deprived families in developing countries. Joy (1973) has suggested a methodology for food and nutrition planning for data collection and analysis—called functional classification of undernourished populations—based on various sources of information disaggregated at the regional level and identifying within

regions, categories of families with different patterns of living and different problems.

The literature on functional classification (Joy, 1973; Joy and Payne, 1975; FAO, 1975) has stressed that malnutrition in preschool children and mothers is the reflection of underlying social and economic factors affecting families and communities and that programmes most likely to reduce poverty and malnutrition are those that modify the social and economic conditions of families and communities and not necessarily those directed towards target individuals within a family.

Some attempts have been made to determine the geographical distribution of malnutrition in countries like Costa Rica (Villarejos, *et al.*, 1971; Valverde and Rawson, 1976) and to identify specific groups such as small tenant farmers and to classify them by categories of land holdings, small scale merchants, urban migrants, landless and wage earning agricultural workers. Such a classification assumed or is based on factual data that nutritional problems may be more widespread

in some groups than in others (Veil, 1975; Abercrombie, 1975; Valverde, *et al.*, 1977).

There is general agreement among nutritionists and development economists that the wide range of factors affecting nutritional status and the problems in obtaining valid estimates of dependent and independent variables at the individual, and sometimes at the group level, make the isolation of a single factor responsible for the levels of malnutrition in a given population, an almost impossible task (Valverde, 1979).

The objectives of this paper are to present information on the magnitude of some existing social and economic problems, to understand differences and similarities in patterns of living and feeding practices, and to rank problems of growth retardation in different ecological regions of El Salvador. The use of these and other sources of data to identify homogeneous and region-specific interventions have been discussed elsewhere (INCAP, 1977; Valverde, *et al.*, 1978).

MATERIAL AND METHODS

Data were gathered as part of a functional classification project conducted in El Salvador in 1976. A detailed description of information sources and the procedures of data collection and analysis of this project has already been published (INCAP, 1977; Valverde, *et al.*, 1978).

The rural area of El Salvador was divided into three agricultural regions and an urban "region" was also defined, consisting of towns with 10,000 or more inhabitants. These regions were subdivided into 11 subregions, based on geographic location or, in the case of the urban region, on population size as shown in Table I. These served as sample frames for subsequent surveys and for aggregating other data available in the country (Valverde, *et al.*, 1978).

Quantitative socioeconomic variables describing the characteristics of the populations living in the different regions were elaborated from the population, housing and agricultural censuses of 1971, and computer files containing 120 socioeconomic variables are available at the smallest administrative unit of El Salvador, the *can-tón*,† for any desirable form of aggregation.

† El Salvador is administratively divided in departments, counties (municipios) and small villages denominated cantones.

TABLE I
Regions and subregions included in the functional classification project of El Salvador

| Regions | Subregions |
|-------------|--|
| Coffee | Western Central Eastern |
| Subsistence | Northern Central Coastal |
| Intensive | Central Coastal |
| Urban | Large-size cities (40,000 and more inhabitants) Medium-size cities (15,000 to 39,999 inhabitants) Small-size cities (10,000 to 14,999 inhabitants) |

Anthropological studies, employing the techniques of participant observation and the use of key informants, were conducted in the urban slums of the capital city and in the central coffee, coastal intensive and northern subsistence subregions in order to collect qualitative data at the community and family level on social and economic factors related to poverty, health and nutrition. The data presented here are summaries of two sections of more detailed reports (INCAP, 1977) covering 18 areas on family and community life (Valverde, *et al.*, 1978).

A total of 5348 children of both sexes, ages 6 to 59 months, were selected for anthropometric studies using a population-based sample of 140 rural communities and urban slums. Data on weight and height were gathered from February to July, 1976, in household visits. Anthropometrists were carefully trained and standardized and equipment was periodically calibrated. Weight was determined in a spring-type balance with intervals of 0.1 kg (Salter-Equipment, Ltd., London), and height was measured using a wooden infantometer which could be read to the nearest 0.1 cm. Anthropometric data were compared with standards from Iowa (Meredith, 1935).

RESULTS

Quantitative data describing the demographic, educational and environmental characteristics of regions and subregions derived from the censuses

of 1971 are summarized in Tables II and III.

The anthropological non-quantitative studies described the styles of life in the various regions studied.

Region of Subsistence Agriculture Exploitation

Approximately 45 percent of the 4,200,000 inhabitants of El Salvador in 1976 lived in areas of marginal agricultural exploitation (subsistence), which are the most isolated communities of the country. These are generally mountainous areas

with poor quality marginal land. Many of the people live in small villages called *cantones* that are small seminucleated or dispersed groups of houses linked by dirt roads and a network of footpaths. The house plot and the structure usually belong to the family. Others live in larger communities with a higher concentration of non-agricultural, full or part-time specialists, like artisans, cottage industry labourers and workers in the service sector called *cabecera municipal* (county seat). Agricultural production in the subsistence region consists principally of corn, beans, rice, seasonal fruits and vegetables, mostly for family consumption. The

TABLE II
Characteristics of the population and distribution of some services in different regions of El Salvador

| Variables | Urban areas | | | Coffee region | | | Intensive region | | Subsistence region | | |
|---|-------------|------|------|---------------|-------|------|------------------|----------------|--------------------|-------|----------------|
| | L | M | S | W | C | E | C | C ^a | N | C | C ^a |
| Population 0-14 as percent of population 15-64 | 65.8 | 77.1 | 83.3 | 93.7 | 101.6 | 96.7 | 96.2 | 103.2 | 104.3 | 103.4 | 106.7 |
| School attendance (percent) of children 6-11 yrs. | 79.3 | 76.0 | 68.1 | 49.4 | 54.9 | 51.8 | 62.3 | 51.0 | 40.5 | 52.4 | 41.7 |
| Birth rate | 30.0 | 31.4 | 36.2 | 39.0 | 42.6 | 34.4 | 37.4 | 38.8 | 41.0 | 39.1 | 39.2 |
| Fertility rate (women 25-29 yrs.) | 180 | 202 | 225 | 274 | 322 | 257 | 285 | 300 | 307 | 295 | 289 |
| Teachers per 1000 children 5-14 yrs. | 48.2 | 45.3 | 36.0 | 6.5 | 6.1 | 20.1 | 11.5 | 7.7 | 6.2 | 8.7 | 4.3 |
| Medical personnel for 10,000 inhabitants | 61.2 | 52.5 | 25.9 | 4.6 | 8.2 | 6.3 | 10.5 | 4.4 | 2.1 | 5.4 | 2.7 |

L = large; M = medium; S = small; W = western; C = central; E = eastern; C^a = coastal.

TABLE III
Characteristics of the houses in different subregions of El Salvador (expressed in percentages of all houses)

| Variables | Urban areas | | | Coffee region | | | Intensive region | | Subsistence region | | |
|--------------------------|-------------|------|------|---------------|------|------|------------------|----------------|--------------------|------|----------------|
| | L | M | S | W | C | E | C | C ^a | N | C | C ^a |
| <i>Floors</i> | | | | | | | | | | | |
| Cement, brick, wood | 79.3 | 65.6 | 54.1 | 32.0 | 20.9 | 22.7 | 30.6 | 14.5 | 14.6 | 19.7 | 12.6 |
| Dirt | 20.1 | 34.4 | 45.9 | 67.5 | 79.1 | 77.3 | 69.4 | 85.5 | 85.4 | 80.3 | 87.4 |
| <i>Water supplies</i> | | | | | | | | | | | |
| Piped: private or public | 93.8 | 91.3 | 78.1 | 51.0 | 52.5 | 52.6 | 43.5 | 23.5 | 24.4 | 27.3 | 23.8 |
| Rivers, rain and others | 1.8 | 2.4 | 7.6 | 41.9 | 43.0 | 40.1 | 34.9 | 31.5 | 61.3 | 59.9 | 51.7 |
| Wells | 4.4 | 6.3 | 14.2 | 7.1 | 4.4 | 7.4 | 21.6 | 45.0 | 14.2 | 12.8 | 24.6 |
| <i>Excreta disposals</i> | | | | | | | | | | | |
| Private service | 76.5 | 71.7 | 54.2 | 27.1 | 21.2 | 24.6 | 29.6 | 17.9 | 7.6 | 18.4 | 12.5 |
| Public service | 18.4 | 19.9 | 25.8 | 13.0 | 11.1 | 7.4 | 13.1 | 4.8 | 1.2 | 4.5 | 3.7 |
| No service | 5.1 | 8.3 | 20.0 | 59.9 | 67.8 | 68.0 | 57.3 | 77.2 | 91.3 | 77.0 | 83.7 |

L = large; M = medium; S = small; W = western; C = central; E = eastern; C^a = coastal.

population is mainly composed of small subsistence farmers working small plots of land, either as owners, share-croppers, or renters. When there is surplus production or a need for cash, they will sell part of the agricultural products in their own community or in other communities. Cash availability is always limited, and some families sell semi-processed foods or other homemade products in nearby markets to supplement their incomes. As their own plots are of poor quality, they often rent better quality land in nearby medium to large farms called *haciendas*. Those who do not own plots, or cannot rent sufficient land either share-crop, work as wage earners locally or as seasonal migrants in order to supplement their incomes. They form the majority of the seasonal labour force working from October to January in both coastal cotton and sugar cane plantations and in coffee plantations located in the middle and high altitude areas. Seasonal migration in the Northern subsistence subregion is seen as an unfortunate necessity, since otherwise they will not have enough cash income for the year.

During the first months of life the diet of infants consists of breast milk or, in very rare cases, of formula supplemented with thin gruels made from cornstarch. Purées of cooked vegetables are introduced at three to four months of age. Eggs are considered hard foods for infants to digest until they are ten months old; fresh milk and derivatives are associated with diarrheal episodes in adults and are considered to be potentially harmful foods for young children. Milk formulas, however do not fall in the same category, as they are not considered a food item but rather some sort of medicine.

Solid foods such as a mush of rice, beans, cheese, tortillas soaked in water and sips of warm sweet coffee are offered at six months, when children start teething. Meat, if available, is introduced once the child is a year old, and at two children are eating most food items of the family diet—corn, beans, rice, seasonal vegetables. Cassava and other tubers are also consumed, but in smaller portions, and also very diluted milk, if available at the family level.

The child is allowed to eat by himself when he can sit up and hold foods. He eats some of the food, drops or spills some, plays with the rest, gives it to older brothers or shares it with the family cat and dog. Mothers state that, although they would like to, they do not have the time to supervise young children while they eat. If a child does not eat, it is

assumed that he is not hungry and is not forced to ingest food. Sick children are given sugar water, soups and broths, thin gruels, teas from local medicinal herbs and tortillas in bean soup.

Coffee Growing Region

Approximately 13 percent of the population of El Salvador lives in the coffee region. The product is grown in the most expensive fertile land in the middle and high altitude areas of El Salvador, and land is utilized at near maximal efficiency.

Coffee farms are located as satellites of nearby medium and large cities. The workers (*colonos*) usually live in houses owned and provided by the plantation. Employment of *colonos* is usually in a full-time, year-round basis. Another less frequent arrangement is half-time some months and full-time during the three months of the harvest season. Some women supplement family income by selling homemade bread, sausages and other snacks to the workers, or by employing themselves and older children during the harvest. Few agricultural activities are practiced outside the plantations, even by the small numeral families who may own a small plot of land. These few families work seasonally during the harvest in the plantations or in other activities in nearby towns and cities.

By law the coffee plantations must provide all of their workers with one and a half pounds of dry corn, four ounces of dry beans, and salt every day. Other products in the family diet, such as instant coffee, processed sugar, rice, additional corn and beans, are bought at the local shops. In smaller gardens surrounding the house, chickens are kept; and fruits, eggs and some vegetables are available.

Vegetable oil or milk is given in a bottle to children in the first 24 hours of life, as breastfeeding does not begin until the "yellow milk" has terminated. Infants of working mothers are breastfed for one or two months, after which time powdered milk is introduced; and they are completely weaned two months after birth, when mothers return to work. Non-working mothers often breastfeed their children for eight or nine months, and some continue for another year. At around eight to nine months of age, mashed beans, bean soup, soft cheese and crumbled up tortillas soaked in bean soup are introduced. Milk is considered a nutritious food for children and, when available, preference is given to infants. At age three, children are eating all products present in the family diet, and a portion one third the size of that con-

sumed by the father is given from three to seven years of age. Young children are usually fed and cared for by older siblings, or by neighbours or grandmothers if the mother works and has no older children.

Region of Intensive Agricultural Exploitation

The region of intensive agricultural production is dedicated to cotton and sugar cane production, cattle raising, corn, cassava, tropical fruits and other cash crops. Approximately 15 percent of El Salvador's population lives in this region, the majority in the coastal subregion working as permanent labourers with no agricultural activities of their own, residing at the edge of or inside the plantations. Houses and the land plot are owned by the plantations and are made of mud, cane and palm leaves with dirt floors and no electricity. Those who live outside the plantations own their dwellings.

The climate is hot and humid on the coast, and malaria is a serious health problem. Work is often unsure, except during the four months of the cotton harvest when there is full employment for local residents and their families. The typical household structure of the nuclear family is very rarely observed. Usually women have children from different fathers who share no responsibility for them, and mothers have to work to support their children who are cared for by a grandmother, a neighbour or older siblings.

A cinnamon flavoured sugar water is given in bottles to the infants during the first three days of life, as mothers do not begin breastfeeding until the fourth day. Powdered or boiled fresh milk and juices are introduced by working women forty days after birth, while those who do not work wait, for economic reasons, until three to four months of age. There is a wide variation in the duration of breastfeeding imposed mainly by the need to work. Children are usually breastfed for 9 to 12 months, but some may not receive mother's milk at all while, in some situations and as an attempt to lower their own fertility, mothers may prolong breastfeeding up to 16 months. Weaning begins at six or nine months, and it is completed in a period of three months. The variety of weaning foods is limited to crumbled up tortillas soaked in soups of rice and beans and cooked corn gruel sweetened with processed sugar. The actual rice and beans are rarely given to the child. Children between 12 to

24 months old also receive, once or twice a week, soft cheese, sweetened coffee, frozen kool-aid drinks and easily chewable fruits such as watermelons. By two years of age, they eat all of the food items included in the family diet, but only about one fourth of the portion given to the adults. At five years of age they are given half of an adult portion, and by age 12 or 13 they are consuming the same quantities as their parents or other adults living in the household.

A variety of foods such as milk, cheese, fish, chicken, eggs, beans, rice, wheat products, vegetables and fruits are available in the community, either having been grown in the area or that are brought from outside. For economic reasons, poor families eat meat, fish or chicken, avocados and vegetables only once a week. Eggs, cheese, rice and onions are consumed two to three times a week, and tortillas, beans and tropical fruits two to three times daily. Sick children are restricted to a diet consisting of soups or gruels.

Urban Slums

The urban communities studied were slum areas, shanty towns and houses of substandard quality in the capital city of San Salvador. Around 300,000 out of the 800,000 inhabitants of the city lived in marginal communities in 1976. They have sprung up on any available land—adjacent to a luxurious shopping center, near industrial enterprises, in the ravines that run through the most prestigious, medium or low class residential districts, behind high-class hotels, or around open markets.

Houses are built as close as possible to one another, and are constructed from cardboard, newspapers, tin cans, plastic and cloth. Water has to be carried from nearby public fountains, and very few communities have private or even public latrines.

Most residents have come from rural areas, but there is a wide variation in migration patterns. Their decision to move to the city was due to increasing land shortages and unemployment in rural areas and their belief that economic opportunities abound in the city. There is a remarkable sense of community solidarity expressed in their understanding that they are the ones at the bottom of society—the destitute, the unemployed, the socially and economically underprivileged in the lower categories of any occupational scale, street sweepers, garbage collectors, maids, prostitutes, etc.

Food availability is not a question of variety restrictions as a result of the location of the community, but rather of what is economically feasible for the family to buy. Foods are usually bought in small stores inside of the community or from food vendors who come daily to sell meats, fruits, vegetables, tortillas and other products.

Infants are not fed the mother's colostrum, as breastfeeding begins the fourth day after the child is born. Most infants are breast fed for three to four months when soft boiled eggs, soups, vegetable purées and mashed fruits are introduced. Plastic bottles filled with orange juice, oat gruel or powdered milk solutions are introduced 30 days after birth and the weaning period is completed within a week or two after semisolid foods are introduced. In rare cases children are not breast fed at all, or are breast fed for over a year. Mashed fried beans and crumbled up tortillas are introduced between six to nine months of age. Solid foods present in the family diet are usually prepared with large quantities of lard or cooking oil. Beans (not mashed), tortillas (not crumbled), plantains, fried rice, fruits and meat are given at around one year of age, but are only tasted and the rest left uneaten, until around two years of age when the child becomes accustomed to them. At two the child is given a diet that consists of semisolid foods distributed in three major meals and three snacks. Soft boiled eggs, fried mashed beans, tortillas or white rolls, milk, oat gruels, bananas or other fruits, cookies or cakes, fried plantain, soups with noodles, vegetables or beans are to be found in adequate amounts in the daily meals of two-year-olds. Milk and/or oat gruels are given four or five times a day. The diet continues to be semisolid until the age of three, when more fried plantains, whole beans, fried rice, boiled noodles and hard boiled eggs replace soft boiled eggs, mashed beans and other

semisolid foods. The food items and consistencies remain the same until six years of age but, as the child gets older, quantities are increased.

Anthropometric Studies

Anthropometric studies were conducted to determine regional differences in growth retardation among children. The age and sex distribution of the anthropometric sample are very similar for each region. Nevertheless, to reduce the risk of confounding effects, the analyses of weight-for-age, height-for-age, and weight-for-height are also given by age groups.

Weight-for-age. Data on weight-for-age were analyzed using the classification of Gómez *et al.* (1956) and are presented in Table IV. While in the subsistence and coffee regions, 22.7 percent and 22.6 percent of children had second and third degree malnutrition: only 15.3 percent and 14.0 percent from the urban slums and intensive agricultural exploitation regions were in the same categories. All comparisons of the intensive and urban slum regions with the subsistence and coffee regional indicated statistically significant differences ($P < 0.01$).

The proportion of children with second and third degree malnutrition by age groups is illustrated in Figure 1. The lowest proportion of children with moderate and severe malnutrition is found at ages 6 to 11 months. Regarding regional differences, age is not an important factor in the prevalence of malnutrition in the urban slums, but it is in the remaining regions.

Height-for-age. The results of height-for-age are presented in Table V. Height retardation, less than 90 percent of height-for-age, is high in all regions,

TABLE IV
Nutritional status of children between 6–59 months (Gómez classification) for four regions of El Salvador, 1976

| Regions | Number of cases | Percentage of children | | | | Total |
|-------------|-----------------|------------------------|--------------|---------------|--------------|-------|
| | | Normal | First degree | Second degree | Third degree | |
| Subsistence | 1447 | 23.5 | 53.8 | 21.0 | 1.7 | 100.0 |
| Coffee | 1043 | 23.1 | 54.3 | 20.4 | 2.2 | 100.0 |
| Intensive | 1489 | 37.2 | 48.8 | 12.5 | 1.5 | 100.0 |
| Urban slums | 1369 | 33.6 | 51.1 | 14.0 | 1.3 | 100.0 |

Urban slums vrs. coffee and subsistence region significant ($P < 0.01$).

Coffee vrs. subsistence not significant ($P > 0.05$).

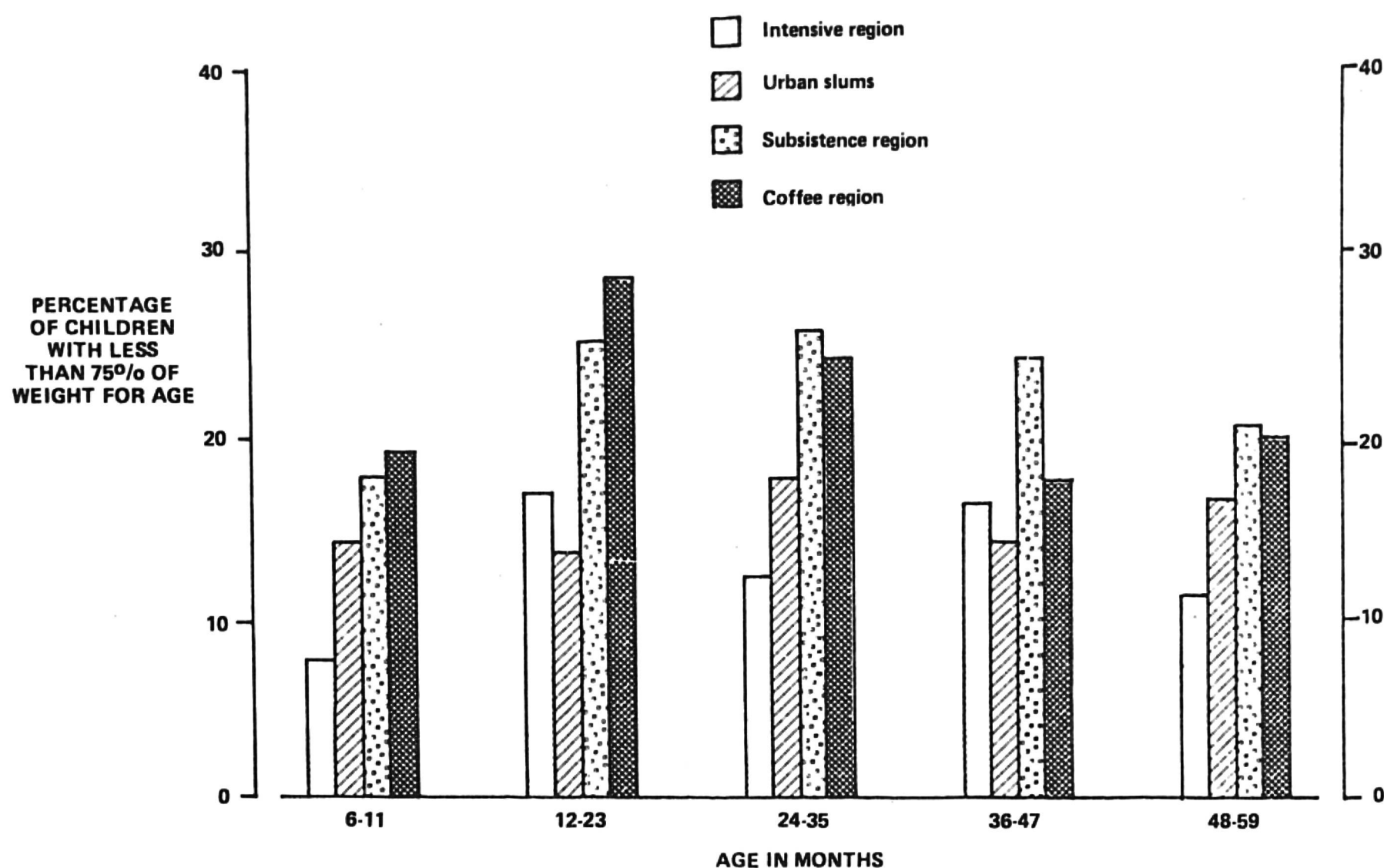


FIGURE 1 Percentage of children with less than 75 percent of weight-for-age by age groups and regions. El Salvador, 1976.

especially in the coffee region. The proportion of children with height retardation is only 51.8 percent in the coffee region, 39.6 percent in the subsistence region, 33.6 percent in the intensive agricultural region and 33.4 percent in the urban slums. All comparisons of urban slums and the intensive agricultural exploitation region with coffee and subsistence regions are statistically significant ($P < 0.01$), as well as the comparison between the coffee and subsistence regions.

As expected, age is an important factor determining the prevalence of height retardation in all regions. The younger the children, the less severe

are the problems in height retardation. As presented in Figure 2, only five percent of children less than 12 months old in the intensive agricultural exploitation region are height retarded. However, in the urban slums as opposed to the other regions, after the period of 24 to 35 months, age is not an important factor in height retardation. Finally, 62 percent of children 36 to 47 months old have a height measurement below 90 percent of standard values in the coffee region.

Weight-for-height. Data on weight-for-height is

TABLE V

Nutritional status of children between 6-59 months, using height-for-age index for four regions of El Salvador, 1976

| Regions | Number of cases | Percentage of children | | | | Total |
|-------------|-----------------|------------------------|--------------------------|-------|--------------|-------|
| | | 95 and more | Percentage from standard | | | |
| | | | 94-90 | 89-85 | Less than 85 | |
| Subsistence | 1447 | 25.5 | 37.5 | 28.8 | 10.8 | 100.0 |
| Coffee | 1043 | 16.5 | 31.7 | 31.8 | 20.0 | 100.0 |
| Intensive | 1489 | 23.5 | 36.9 | 25.2 | 11.9 | 100.0 |
| Urban slums | 1369 | 29.7 | 36.9 | 23.9 | 9.5 | 100.0 |

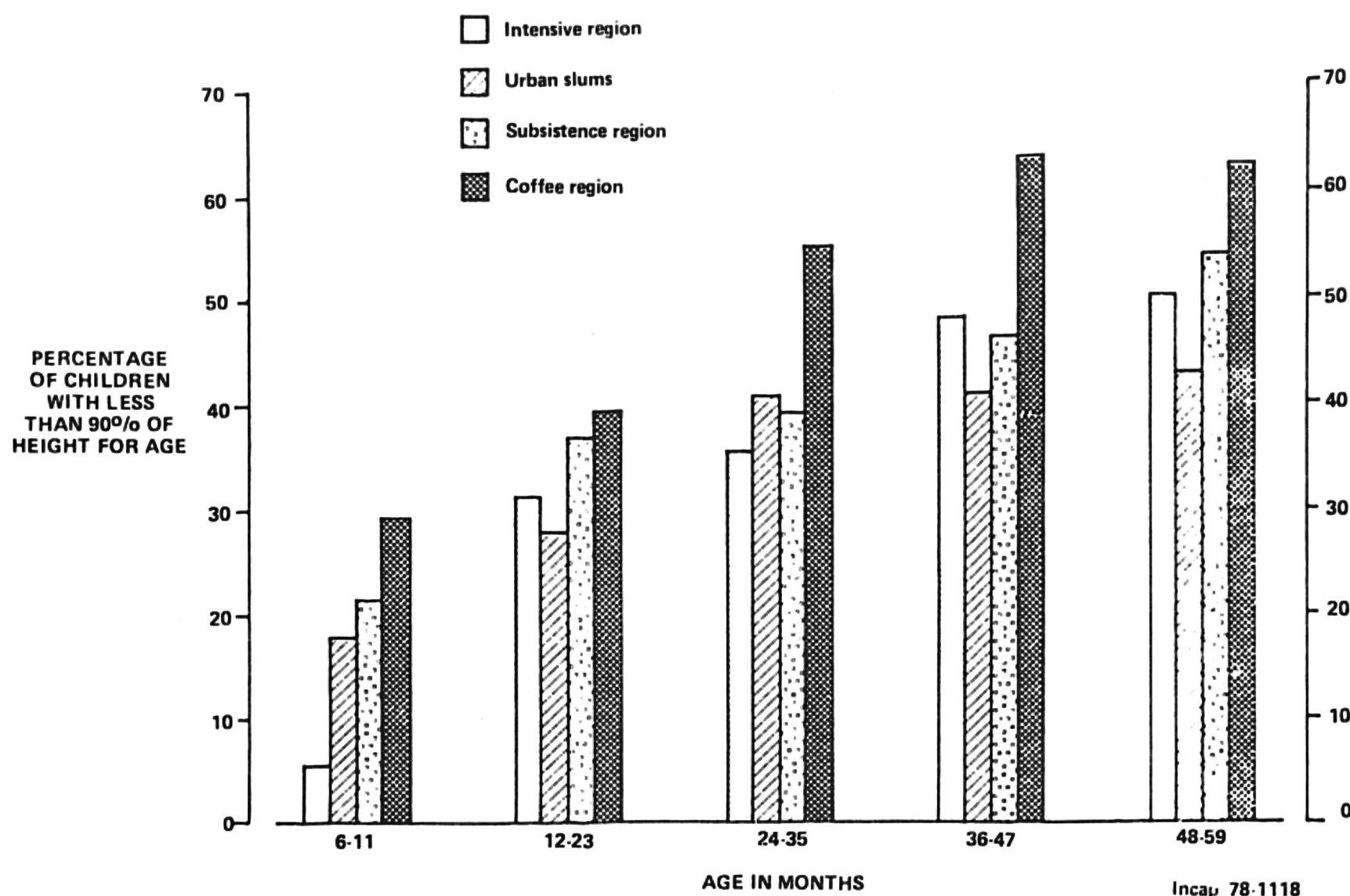


FIGURE 2 Percentage of children with less than 90 percent of height-for-age by age groups and regions. El Salvador, 1976.

not in agreement, in terms of growth retardation, with that of weight-for-age and height-for-age previously discussed. Using the level of 90 percent of weight for a given height to define wasting or thinness, Table VI shows that a higher proportion of thin children are found in the subsistence region than in other regions ($P < 0.01$). Children from the coffee region are in that respect like their counterparts from the intensive agricultural region and urban slums.

Considering all regions combined, the highest

proportion of thin children is found in the 12- to 23-month group, as shown in Figure 3, decreasing in the 36- to 47-month period. All statistical comparisons between children 12-23 months old and other age groups are significant at least to $P < 0.05$. However, in the subsistence region and in the urban slums, the highest proportion of thin children is found from 48 to 59 months. Age is not an important factor in prevalence of children under 90 percent of weight-for-height in the urban slums.

TABLE VI

Nutritional status of children between 6-59 months, using weight-for-height index for four regions of El Salvador, 1976

| Regions | Number of cases | Percentage of children | | | | Total |
|-------------|-----------------|------------------------|--------------------------|-------|--------------|-------|
| | | 100 and more | Percentage from standard | | | |
| | | | 99-90 | 89-80 | Less than 80 | |
| Subsistence | 1447 | 28.7 | 45.8 | 22.9 | 2.6 | 100.0 |
| Coffee | 1043 | 41.9 | 43.2 | 12.8 | 2.1 | 100.0 |
| Intensive | 1489 | 51.1 | 36.8 | 11.0 | 1.1 | 100.0 |
| Urban slums | 1369 | 37.0 | 46.4 | 15.3 | 1.3 | 100.0 |

Coffee vrs. urban slums and subsistence significant ($P < 0.01$).

Urban slums vrs. subsistence significant ($P < 0.01$).

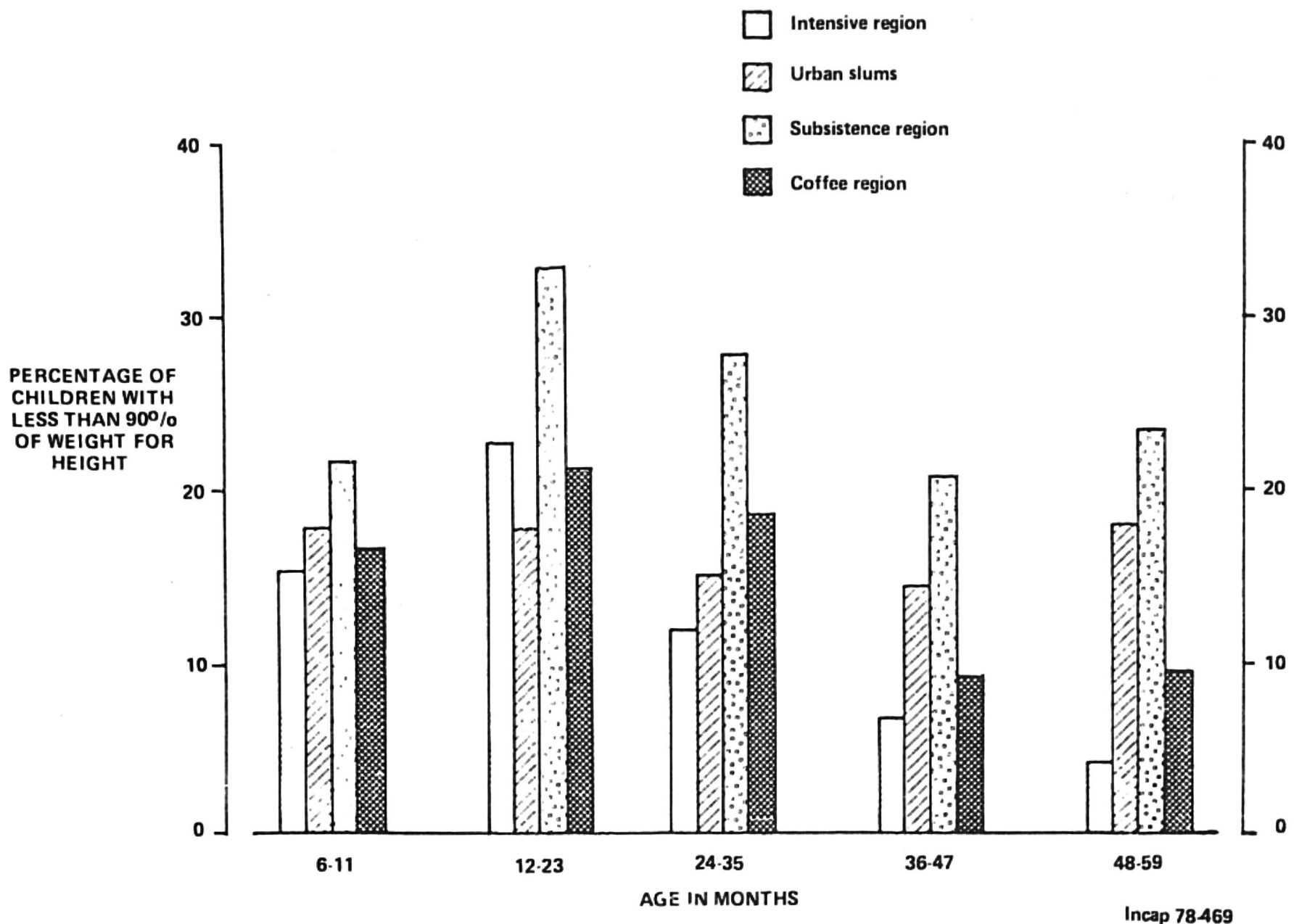


FIGURE 3 Percentage of children with less than 90 percent of weight-for-height by age groups and regions. El Salvador, 1976.

DISCUSSION

The descriptive studies and the quantitative socioeconomic information derived from census data (INCAP, 1977) suggest different patterns of living among the regions under study in El Salvador. Problems shared by all regions are related to the lack of potable water, unsanitary waste disposal, inadequate housing, education and medical care, structural unemployment, and a very low income for the majority of the population (INCAP, 1977). In all regions, a high proportion of the population is poor and underprivileged.

Differences among regions are principally related to income generating activities, food availability at the community and family level, climate, isolation, level of effective community organization, family composition, access to government programmes and the intensive need for seasonal labour that contributes to important changes in child care as parents travel to find work (INCAP, 1977).

It is clear that both homogeneous and region-specific programmes are necessary to effectively reduce poverty and, thus, the prevalence of malnutrition. For example, programmes emphasizing the introduction of potable water and environmental sanitation are likely to be needed in all areas. On the other hand, nutritional and day-care centers might be appropriate in the coffee and intensive regions during the harvest seasons, whereas training programmes, to take advantage of labour industrial opportunities, would have a greater impact on the urban slum population. The report integrating the different types of data has identified programmes that need to be implemented in all regions, activities to be conducted mainly in two or three regions and specific programmes for each region (INCAP, 1977). Thus, this type of information has provided planners with the necessary data to make more rational decisions concerning the allocation of both human and capital resources for social and economic development.

All regions have an important proportion of children suffering from moderate and severe malnutrition. Information on weight-for-age and height-for-age suggest that the nutritional status of children in the urban slums and intensive agricultural region is less affected than in the coffee growing and marginal agricultural regions.

The patterns observed in weight-for-height, by age categories, suggest that children are more affected by malnutrition in the period from 12 to 23 months. However, the problem may begin earlier, during the period of weaning. The highest prevalence of growth retardation in height is observed in the 36- to 47-month period.

The results of weight-for-height, in contrast to the age dependent anthropometric indexes, deserve further discussion. When, based on weight-for-height data, children in the coffee region are compared with those in the urban slums and the intensive agriculture region: the proportion of apparently malnourished children is not higher, as was the case using weight-for-age and height-for-age classification. Hence, if one wants to rank problems of malnutrition in distinct regions or to study secular trends in growth in developing countries, weight-for-height can be extremely misleading (Valverde and Rawson, 1976; Guzmán, 1976).

Although anthropometric results indicate more normal child growth in the urban slums, we do not conclude that general living conditions are better there than in rural areas.

The former group, however, receives more attention from government programmes, more information on child feeding practices and have more possibilities of obtaining food or generating income.

In addition to demonstrating differences in growth retardation, the measurement of levels of malnutrition in different ecological regions has served as the basis for the evaluation of indicators for nutritional status surveillance in El Salvador (Trowbridge and Valverde, in press). As action programmes are developed, this surveillance system will be of significant practical value in monitoring nutritional changes and evaluating the impact of intervention efforts.

While the statistical analyses show significant differences in the degree of malnutrition among regions, one may question their practical relevance for planning purposes. This must be assessed in terms of the goals that politicians and planners establish to reduce the levels of poverty and the

magnitude of nutritional problems in various regions, and the results they obtain.

Finally, it should be noted that the availability of even the best data for a rational allocation of resources in social development and nutrition planning does not assure effective action. In order to achieve effective results, knowledge of factors leading to deprivation and the extent of malnutrition needs to be complemented by the willingness of political and power structures to permit improvements in the living conditions of the traditionally deprived population groups.

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