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METHODOLOGIES FOR THE FORMULATION OF NATIONAL FOOD AND NUTRITION POLICIES AND THEIR INTERSECTORAL IMPLEMENTATION

This working document, prepared for consideration and analysis by the participants in the Technical Discussions of the XXIII Meeting of the Directing Council of the Pan American Health Organization, has primarily emphasized the role of the ministries of health in the formulation and implementation of national food and nutrition policies and plans, as well as the responsibilities that devolve upon them directly in executing and evaluating specific food and nutrition programs within the health sector itself.

The methodological aspects implicit in the formulation of national food and nutrition policies have not been dealt with in detail, since it was deemed to be of greater practical interest to analyze the strategies and activities that must be carried out by the health sector in that process.

Furthermore, various PAHO/WHO/FAO expert committees have produced documents on the methodological principles for the intersectoral formulation and execution of those policies.

More recently, methodological guidelines have been prepared for the Interagency Project for the Promotion of National Food and Nutrition Policies (PIA/PNAN), the Institute of Nutrition of Central America and Panama (INCAP) and the Caribbean Food and Nutrition Institute (CFNI), and have been used as an important reference source by the countries of the Region.

METHODOLOGY FOR THE FORMULATION OF NATIONAL FOOD AND NUTRITION POLICIES AND THEIR INTERSECTORAL IMPLEMENTATION

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METHODOLOGIES FOR THE FORMULATION OF NATIONAL FOOD AND NUTRITION POLICIES AND THEIR INTERSECTORAL IMPLEMENTATION

1. INTRODUCTION

It is an indisputable fact that proper nutrition is an essential element for the health, education and economy of a country, and therefore an important factor in social progress.

Some economic studies have calculated the monetary benefit of nutrition programs and activities among the younger age groups of the population and how they are reflected in the economic output of adults, thus demonstrating the importance of investing in the nutritional training and protection of human resources.

Moreover, apart from purely economic considerations, proper nutrition must be regarded as a fundamental right of the individual, since a person suffering from malnutrition accompanied by mental retardation loses the right to think, which is a requirement for the freedom of expression which today we all take for granted.

An analysis of the degree of development of nutrition programs in Latin America and the Caribbean shows that they have failed to attain any significant level in overall national planning. The building of airports, roads, hospitals and schools, inter alia, are tangible and politically more appealing actions than the solution of nutrition problems, which require more comprehensive, multisectoral approaches.

Until a few years ago, efforts to achieve better nutritional levels for the population were confined to ministries of health and institutes of nutrition, and their medical specialists, nutritionist/dietitians and food technologists; to a few research and teaching institutions; and to international technical cooperation agencies, with little participation on the part of financing agencies.

Furthermore, most of the nutrition programs for low-income groups, like food supplementation for groups of mothers and children, frequently carry a connotation of public assistance or social welfare, and not of comprehensive public health services.

In addition, their effectiveness is reduced by the limitations placed upon them by other socioeconomic factors affecting the health level of the population. In order to change that situation, it is essential for the health sector to coordinate its activities with those of all the other sectors directly or indirectly involved in food production, marketing, consumption and utilization; otherwise, its activities will continue to have very little effect.

Fortunately, the Latin American and Caribbean governments, faced with the prospect of a deterioration in the food and nutrition situation, have begun to show an increased awareness of the relevance which the health sector has traditionally attributed to nutrition, and there is now a broad multisectoral move to promote and support the formulation and implementation of food and nutrition policies and plans.

It is important to note that that recognition came about because governments and bilateral and international technical cooperation and financing agencies have understood that while the health sector receives the direct impact of the problems, a deeper analysis of the problem shows that the sectors of education, agriculture and the economy are seriously affected by its consequences.

Suffice to mention the fact that the economic and technical efforts being invested in primary education are to some extent being frustrated because a great many chuldren are entering school with diminished ability to learn because of mental retardation, which is due in part to malnutrition. The low output of agricultural workers in areas where malnutrition is prevalent is another serious obstacle to the economic and social development of the Region.

Those considerations lend strength to the argument that, in order to accelerate the economic development of a country, timely and effective measures must be taken to protect its human resources, for they will later become the most important instrument of the nation's advancement.

There is clearly a growing recognition that simultaneous and coordinated multisectoral action must be taken to fight malnutrition, not only on the part of international and bilateral technical assistance and financing organizations, but on the part of national development planners who are giving high priority to food and nutrition programs in the countries of the Region.

2. MINISTRIES OF HEALTH AND THE FORMULATION OF NATIONAL FOOD AND NUTRITION POLICIES AND PLANS

The dynamics of population variables in the Region and the rate of development of agricultural production and other economic activities seems to indicate that present conditions of malnutrition and undernourishment may worsen unless there are significant economic and social readjustments.

The average income of two-thirds of low-income population groups rose barely US$50 over a period of 20 years. That hardly favors future nutrition prospects of the vulnerable groups (children and pregnant and nursing women) and is beyond any doubt one of the determining factors of the high rates of malnutrition.

Once we recognize that the factors causing malnutrition affect several sectors at the same time, we have to envisage the need for coordinated programs

ensuring the availability and proper consumption of food and, at the same time, fostering the prevention, control and treatment of the diseases, especially acute communicable diseases that affect the biological utilization of nutrients.

On the other hand, the responsibility of the health sector in multisectoral nutrition and food programs is determined by its role in the diagnosis and surveillance of the nutritional status and dietary level of the population; by the importance of formulating recommendations on nutrient requirements and food consumption levels; by the implementation of specific programs for the prevention, control of and recovery from nutritional and infectious diseases; and by the necessary nutritional promotion and orientation of the food production and distribution plans that must be carried out in order to ensure the nutritional well-being and proper feeding of the population.

Of outstanding importance among the essential factors for improving the food and nutrition status of the population are the following:

Production, distribution and consumption of foods designed to satisfy the nutritional requirements of the community;

Development of integrated health and nutrition activities for high-risk population groups, including environmental sanitation; and

Education of the community in its broadest sense.

In order for those three factors to be translated into concrete and coordinated activities, the following requirements must be met:

A political decision to cope with the nutritional and food problem;

A broad knowledge of the nutritional and food situation of the country or region and its determining factors;

Adaptation of the infrastructure at the national and local levels for purposes of planning and carrying out plans and programs; and

Proper allocation of financial resources.

It is essential to bear in mind that the alignment of the economic, social and political variables related to the activities mentioned above requires a period of time which varies with each country and that, while that process is going on, large groups of the population will continue to suffer the consequences of malnutrition, and that the problem is likely to increase in magnitude and to take a toll difficult to justify in human terms.

Therefore, until the above-mentioned alignment is achieved, nutrition programs carried out by the health services will continue to be of inestimable value in reducing the impact of the harm and in fostering higher levels of health and nutrition.

The participation of the Ministries of Health in this important task may be summarized as follows:

a) To undertake studies on food consumption and nutrition levels of the population including an analysis of the indicators that directly or indirectly determine the nutritional situation;

b) To disseminate information on nutrition and food problems to the various decision-making levels of governments, universities and private enterprise, but also, and particularly, to the community itself, so that it will become an informed group demanding and obtaining greater government attention to the problem;

c) To promote intersectoral coordination as a means of ensuring a proper approach to the multisectoral activities to be undertaken;

d) To make recommendations on specific action and participate in the national planning process, including the analysis and identification of possible alternatives for solving nutrition and food problems;

e) To evaluate together with the other sectors the effectiveness of the activities undertaken; and

f) To carry out nutrition activities as an integral part of the provision of primary health services; that should be strengthened and expanded whether or not a national food and nutrition plan exists.

It must be recognized that the greatest obstacle to the formulation and execution of national food and nutrition plans is the lack of political will on the part of governments to establish the necessary intersectoral co-ordination. This may be explained by inadequate knowledge of the magnitude of the problem or by failure to recognize its existence. Even when it is recognized, governments may consider that it does not deserve priority because it does not fit in with the principles, objectives and styles of development adopted by those governments and/or because they do not clearly understand the alternatives for solving it proposed by the expert groups.

Traditionally, little attention has been paid by economists to the microeconomic variables of the problem, whereas nutrition experts have focused their analysis almost exclusively on the macroeconomic aspects related to income, overcrowding, unemployment, poor land distribution, lack of human resources, etc. That indicates the importance of bringing the two groups together and the need for the two disciplines to achieve a sufficient measure of mutual understanding to enable them to fix priorities which will satisfy the nutritional needs of the population on the one hand and the economic exigencies of the development process on the other.

So long as public health officers do not provide the economists with appropriate indicators, not only for measuring the magnitude of the problem

but also for evaluating the progress of the programs adopted, and especially their effectiveness, there will continue to be delays in taking important decisions in the field of food and nutrition.

Lastly, it is essential to understand that not all countries are on the same footing when it comes to formulating and executing national food and nutrition plans; therefore a single strategy cannot be adopted, rather the strategy must be geared to the level achieved in each country.[1]

The situation may be outlined briefly as follows:

i) There are countries which have the political will to formulate and execute a plan but do not have the necessary basic information or a sufficient infrastructure in planning and implementation to do so.

In such cases, the development of specific nutrition intervention programs will help to generate the facilities required for formulating plans of long-range importance.

ii) There are countries that have sufficient nutrition and food information but where national planning is weak and there is no coordination between the sectoral planning groups.

However, if there is the political will to strengthen the national planning process and the operational structures, the food and nutrition plan can be drawn up and incorporated in the medium-term national development plan.

iii) There are countries possessing all three requirements: satisfactory information and planning and operational infrastructures. This group includes countries which have the proper technical resources to implement a national food and nutrition plan.

However, the limiting factor is the political decision of the government to come to grips with the nutrition and food problem or to accord it high priority.

3. ACTIVITIES OF THE HEALTH SECTOR IN THE FIELD OF FOOD AND NUTRITION

The foregoing considerations relate to the basic role of the health sector in promoting national food and nutrition plans. This chapter deals with the general framework of the nutrition activities that are the specific responsibility of the health sector.

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[1] World Health Organization. Report of the Meeting of WHO Regional Advisors in Nutrition. (Document HP/NUT/74.1, mimeographed). Geneva, 1974.

Given the present nutrition and food situation and existing problems and restrictions, the following areas should receive the highest priority in the health sector's plans and programs:

a) Strengthening and expansion of nutrition activities in primary health services;

b) Measures of intervention for the control of specific nutritional diseases;

c) Surveillance of the nutritional status of the population;

d) Organization and strengthening of hospital feeding services; and

e) Preparation and training of nutrition personnel for the health services.

3.1 Strengthening and Expansion of Nutrition Activities in Primary Health Services

It is generally acknowledged that the primary health services in the Region are not satisfactory. In 1970, Latin America and the Caribbean had an estimated population of 270 million, 46 per cent of which (approximately 125 million) was concentrated in communities with fewer than 2,000 inhabitants or scattered over wide areas where the only health services available are those connected with vertical programs like malaria and Aedes aegypti eradication.

Furthermore, a large part of that population is unemployed, low-income, has a high rate of fertility and high rates of morbidity and mortality from infectious diseases and, most particularly, suffers from moderate and advanced degrees of malnutrition which seriously restricts its productive capacity.

It is also important to note that most of the development plans of the countries of the Region focus on aligning variables relating to the population as a whole and not specific groups, so that it is difficult to aim programs directly and exclusively at the marginal population groups in urban and rural areas. A distinction must therefore be made between a general health strategy which reaches a large segment of the population and a cluster of actions aimed at the most disadvantaged and vulnerable groups, which are estimated to comprise approximately 160 million people in Latin America and the Caribbean.

Nutrition activities in the primary health services should be part of maternal and child health, family health, immunization and environmental sanitation programs.

Basically, the following are nutrition activities:

a) assessment of the nutritional status of the individual;

b) nutrition education;

c) food supplementation; and

d) nutritional recovery.

Further, there are other activities broadly related to nutrition which should be incorporated in and/or coordinated with primary health services, namely prevention and treatment of infectious diseases, food hygiene and storage and provision of potable water supply and sewage disposal facilities.

3.1.1 Assessment of the Nutritional Status of the Individual

One of the routine tasks of the primary health services should be to assess the nutritional status of the individual by anthropometric methods, clinical examination and dietary history.

Measurement of weight and height and altertness to signs of malnutrition in children under five years of age should be a matter of the highest priority. Similarly, weight control and hemoglobin tests in pregnant women should be given priority wherever possible.

During the history-taking, information should be obtained on the diet of children, pregnant or nursing mothers and the family generally in order to know how to orient educational activities.

3.1.2 Nutrition Education

In carrying out their work in education, health services personnel must underscore the importance of breast feeding and the introduction of new foods of high nutritional value during the weaning period; teach how food should be correctly prepared and handled; and give advice on the feeding of the child and mother during pregnancy and nursing as well as in times of illness, particularly from gastroenteritis and other acute infections.

Nutrition education is an integral part of maternal and child care and is given individually at the time of the clinic interview or visit to the doctor and to special groups organized for that purpose (mothers' clubs, etc.)

3.1.3 Food Supplementation

The subsidized distribution of food supplements for the nutritional protection of vulnerable groups is fully justified so long as there is nothing done to change the various social and economic factors which cause malnutrition.

Increasing use should be made in food supplementation of locally produced foods (vegetable mixtures, fortified food pastes, etc.) and active community participation should be encouraged.

Faced with the prospect of a reduction in international food aid for food supplementation programs, it is essential for countries to consider the use of conventional and non-conventional foods by establishing a system of exchange of technology, where necessary, and by ensuring broad participation by local agricultural and commercial sectors.

Chile, Colombia, Ecuador and Guatemala, which have begun to replace external food aid by the production and distribution of local foods of high nutritional value and low cost, are clear examples of what could also be done in other countries.

3.1.4 Nutritional Recovery

Protein-calorie malnutrition in children will continue to require high priority in primary health services and hospital pediatric care so long as the basic factors creating the problem remain.

In view of the severity of protein-calorie malnutrition in children under 5 years, nutritional recovery measures may be adapted to the following classification proposed by Gomez et al:[1]

a) advanced malnutrition (third degree)

b) moderate malnutrition (second degree)

c) mild malnutrition (first degree)

In advanced malnutrition, generally associated with acute infections, the predominant factor is the danger that the child will die; it therefore requires immediate and concentrated action by medical and nursing personnel.

However, in groups with moderate and mild malnutrition, the danger that the child will die is not immediate, and the remedial measures should therefore be aimed at arresting the progress of the malnutrition and reducing the number of cases.

To achieve that objective, practical, viable and clearly defined standards should be established indicating the regimens or alternatives for treating malnourished children in hospitals, health centers and health stations and nutritional recovery services, and for establishing reference systems between care and follow-up of patients.

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[1] Gomez, F., G. R. Ramos, J. Cravioto, and S. Frank. Malnutrition in Infancy and Childhood with Special Reference to Kwashiorkor. In: Advances in Pediatrics. Levin S.(ed.), New York, Year Book Publishers, Vol. 7, p. 131, 1955.

In order to prepare health services personnel for those activities, the Pan American Health Organization has drawn up guidelines on the organization of health services in rural areas and the use of auxiliary personnel[1] and on the nutrition activities to be carried out locally by a general health service,[2] which give a detailed description of techniques and procedures. Moreover, WHO and UNICEF have jointly drawn up a guideline on nutrition activities in primary health services.[3]

For a quick review of the foregoing, Table 1 presents a summary of the nutrition activities which can be carried out by local health services.

Finally, it is absolutely essential for the primary health services to coordinate their activities with the local agricultural and educational services so that they will more effectively influence those sectors to change the social and economic factors affecting health and nutrition.

3.2 Measures for the Prevention and Control of Specific Nutritional Diseases

Vitamin A deficiency, nutritional anemias--especially caused by iron and folate deficiency--and endemic goiter are serious public health problems in some parts of the Region.

Measures for the prevention and control of those diseases may be instituted by adopting a vertical approach to the problem in which the primary health services need not necessarily participate. Those measures relate to the fortifying of foods on the national or regional scale.

On the other hand, when a horizontal approach is adopted, the local health services have a large part to play because it involves the distribution of specific nutritional supplements (iron sulfate, folic acid, vitamin A, etc.) to vulnerable groups.

3.2.1 Vitamin A Deficiency

On the basis of epidemiological and clinical evidence, a number of strategies have been advanced for solving the problem of vitamin A deficiency and xerophthalmia. Obviously, the action to be taken will be determined by the nature of the problem and the resources available, given the specific national and local conditions.

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[1] Pan American Health Organization. Scientific Publication No. 290, 1974.

[2] Pan American Health Organization. Scientific Publication No. 179, 1969.

[3] World Health Organization. A Guideline for Nutrition Activities Through Local Health Services for Joint WHO/UNICEF Strategy. (Document NUT/74.3, mimeographed). Geneva, 1974.

Table 1

NUTRITION ACTIVITIES IN LOCAL HEALTH SERVICES

Activity	Procedures
1. Assessment of the nutritional status of the individual	Clinical examination of children and pregnant and nursing women to determine: protein-calorie malnutrition, vitamin deficiency, anemia and goiter Identification of high-risk individuals based on clinical examination and socioeconomic status
2. Nutrition education	Interpersonal education (interviews and organized groups) with special emphasis on: Breast-feeding of the newborn Feeding of the healthy and sick child Feeding during pregnancy and lactation Counseling of the family on the best distribution of available foods in accordance with the nutritional needs of the most vulnerable groups and information on cost and nutritional value
3. Food supplementation	Distribution of conventional foods or highly nutritional food mixtures, preferably locally produced, to complement the diet, according to the following order of priorities: Pregnant or nursing mothers Children under the age of 2 Children between 2 and 6 Children between 7 and 14 Distribution of nutritional supplements to correct vitamin A and iron deficiencies, particularly among mothers and children
4. Nutritional recovery	Identification and selection of patients (children under 5) with moderate and severe degrees of malnutrition Medical and dietary treatment for malnourished children by doctors, nurses and duly trained health aides Organization of a system of home assistance through volunteers who would supervise the use of the foods distributed and instruct parents in improving family health
5. Other activities related to nutrition	Protection of the child population through immunizations: BCG, DPT, polio, measles, rubella and smallpox Proper treatment of children with diarrhetic and respiratory diseases Family counseling on spacing of births

Note: For these activities, there should be standards manuals showing clearly the tasks and procedures for each member of the health team.

Three methods are regarded as useful in this area:

- nutrition education;

- fortification of foods for general consumption (such as cereals and sugar);

- direct nutritional supplementation

The first method seeks to correct the deficiency by educating the community on the consumption of foods rich in vitamin A, although it is difficult to make significant changes in the short run in the dietary habits of the population. Moreover, the most efficient sources of vitamin A (animal products) are generally not available, for reasons of economic status, to those groups where the deficiency is a serious problem. However, foods of vegetable origin rich in B-carolene, a precursor of vitamin A, is an economically feasible alternative.

The fortification of cereals, rice, milk, butter, fats and sugar with vitamin A is feasible with present technological knowledge. There has been special interest in fortifying sugar with vitamin A as a solution to the problem in the developing countries. Sugar seems to be an appropriate vehicle for the following reasons: production is usually centralized; consumption is widespread and sufficient to bring the nutrient to the sectors of the population suffering from the deficiency in sufficient quantities; the taste of the fortified product is acceptable; and there is a satisfactory stability of the vitamin A incorporated in the fortified product and a high consumption of it does not produce the toxicity attributable to the nutrient.

Nevertheless, excess consumption of sugar may have adverse effects on the mouth and the general health of the individual. Therefore, if this method is used, a prohibition must be placed on propaganda and educational campaigns aimed at promoting increased consumption of sugar on grounds that it has additional nutritional value.

There is ample evidence that the absorption and storing of vitamin A enables certain vulnerable groups to consume progressively larger doses of the nutrient. In that way, the vitamin is stored and gradually released, that is, it "immunizes" against xerophthalmia for a relatively long period. It is best taken orally, which allows that method to be easily applied.

Based on the experiments performed by a number of research workers, PAHO/WHO has designed specific standards for vitamin A supplements to young children and nursing mothers. In essence, they call for distribution to children under seven years every three months of a water-soluble vitamin A capsule of 100,000 IU beginning the third month after birth, and the administration of an oral dose of 100,000 IU to mothers immediately following delivery[1].

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[1] Pan American Health Organization. Vitamin A Deficiency in the Americas, Scientific Publication No. 190.

Application of this method is limited by the extent of development of the health services, since that will determine the degree of coverage of high-risk groups.

It will be seen from the foregoing that there are methods for developing intervention in this area, which constitutes a serious nutritional problem in some countries. Not all local situations are identical and it is feasible to apply either one method or a combination of methods, but the important thing is to initiate action based on the present state of knowledge.

3.2.2 Nutritional Anemias

PAHO's collaborative study on nutritional anemias in Latin America and the Caribbean[1] established the fact that iron deficiency in pregnant and non-pregnant women is a common and significant cause of nutritional anemias among low-income groups. Moreover, folate deficiency is often found in the same groups.

On the basis of those findings and the recommendations of the WHO Group of Experts on Nutritional Anaemias,[2] a series of steps must be taken to prevent anemia based on iron deficiency in pregnant women; they involve direct nutritional supplementation with iron sulphate and folic acid.

For women 25 per cent of whose caloric intake is from foods of animal origin and who have iron reserves at the beginning of pregnancy, it is sufficient to administer a daily supplement of 60 mg of iron and 500 mg of folic acid in order to maintain optimal hemoglobin concentrations.

In countries where less than 10 per cent of caloric intake is of animal origin, iron deficiency is widespread and many women are anemic at the onset of pregnancy. Consequently, the supplementary dosage of iron should be much higher, up to 120-240 mg daily and 500 mg of folic acid. Iron and folic acid supplements should be given not later than the second trimester of pregnancy and continued until the end of the nursing period.

The most effective way of eliminating iron deficiency in any group is probably by enriching foods with that nutrient. However, there are problems of technology which should be resolved before recommending the strategy on a large scale.

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[1] Pan American Health Organization. Analysis of PAHO Collaborative Studies of Nutritional Anemias in Latin America and the Caribbean (Document RD/8/14). Washington, 1969.

[2] World Health Organization. Nutritional Anaemias. Technical Report Series No. 503, Geneva 1972.

3.2.3 Endemic Goiter

A review of the various programs now in progress to control endemic goiter indicates that salt iodization and the use of intramuscular iodized oil are the best ways of coping with the problem in the countries of the Region.[1]

Salt iodization programs in the United States of America, Colombia and Guatemala have demonstrated the effectiveness of this method in controlling endemic goiter. It is relatively easy to maintain at low cost per person/year. Iodization levels may vary from one part of iodide or potassium iodide per 10,000 to 50,000 parts of salt, depending on salt consumption and iodine levels.

However, there are some countries where goiter is highly prevalent in which there is no salt iodization program or there is only partial coverage. Among the various factors responsible for that sitution are inadequate coordination between salt producers (State and private), lack of technical and financial assistance for small producers, and failure at high decision-making levels and in the community itself to recognize the magnitude of the problem and the adverse effects of endemic goiter on the health of the population.

Given present technical knowledge about control of this serious health problem, ministries of public health bear a heavy responsibility to take the following measures:

a) Define the scope of the problem, ascertain available resources and analyze existing legislation on salt iodization;

b) Promote and/or strengthen the relevant legislation and its measures of implementation;

c) Define and approve standards for salt iodization;

d) Provide for the infrastructure required to carry out the program;

e) Train personnel to be in charge of controlling salt iodization; and

f) Compile, analyze, publish and disseminate information on the progress of the program and evaluate the results.

Depending on the situation in each country, there are a number of alternative methods for implementing the program:

a) Where salt mining is a State monopoly, the Government must assume responsibility for salt iodization either through the private sector or government industries established for that purpose;

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[1] Pan American Health Organization. Endemic Goiter and Cretinism: Continuing Threats to World Health. Scientific Publication No. 292, 1974.

b) Where salt mining is in the hands of private industry, the Government should draw up the relevant legislation, demand that it be enforced, and provide technical and financial aid to small producers as well as promote the organization of cooperatives.

The intramuscular injection of iodized oil is justified in the following conditions:

a) Areas with a high incidence of cretinism; and

b) Areas where communities do not have access to consumption of iodized salt owing to difficulties of marketing the product when it leaves the production centers.

In that case, it is recommended that iodized oil be administered intramuscularly every three years according to the following schedule:

Age	Dose	Amount of iodine
up to 1 year	0.5 cc	232.5 mg
1-45 years	1.0 cc	475.0 mg

3.3 Surveillance of the Nutritional Status of the Population

The World Health Organization has repeatedly pointed to the need for systems of nutritional surveillance which would enable countries to obtain adequate, timely and permanent information on the nutritional status of the population by compiling, analyzing and disseminating information on which national food and nutrition agencies could base appropriate action.

This system should provide periodic reports on the scope and determining factors of the problem, help to evaluate programs, offer a basis for developing research, and forecasting needs and future trends in the nutritional level of the population.

In this connection, the Pan American Health Organization is working on a scheme for using epidemiological surveillance systems for the continuous assessment of the nutritional status.[1]

WHO has also scheduled a meeting this year of a Committee of Experts on Nutritional Surveillance, which will probably propose specific indicators, standards and methods for organizing such a system.

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[1] Pan American Health Organization. Use of Systems of Epidemiological Surveillance of Communicable Diseases for Surveillance of the Nutritional Status. (Mimeographed document), 1975.

It should once again be stressed that the health sector has immediate responsibility for ensuring a proper nutritional level and monitoring it. The nutritional surveillance system adopted will depend on the level of development of the health structure in each country.

It should be borne in mind that the reporting of cases of malnutrition and other deficiency diseases should be done not only by the health services but by the community itself. The diversity in levels of care and health services will determine the type and number of nutritional surveillance activities that can be brought into the system.

In health areas with populations of known size and characteristics, nutritional surveillance can be organized on the basis of representative samples of the population. It could also be done for duly identified high-risk groups.

The following indicators may be of value in organizing a nutritional surveillance system:

Availability of foodstuffs;
Energy and protein consumption among vulnerable groups;
Family spending on food and quality of housing;
Mortality in the following age groups:

- Under 1 year of age
- 1-4 years of age
- Over 5 years of age

Weight
Height
Arm circumference
Hemoglobin level
Hematocrit reading
Clinical symptoms according to WHO criteria[1]

A surveillance system incorporating all those indicators is difficult to put into practice. In present circumstances, a minimum surveillance system in the primary health services should include the following indicators:

Age, weight, height and, optionally, depending on available resources, hemoglobin level and hematocrit reading

3.4 Organization and Administration of Hospital Feeding Services

Contemporary concepts of hospital administration recognize that the food services constitute an important aspect of patient care and that the operation of the food department represents a large item of expenditure in the budget and must be highly efficient.

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[1] World Health Organization. Evaluation of the Nutritional Status of the Community. Monograph series No. 53, 1968.

In other words. this essential hospital service depends for its proper organization and functioning on scientific knowledge of nutrition, the attitude and behavior of the patient and, most important, the basic principles of administration. Furthermore, the technical and administrative activities of the food service should be integrated with the other hospital departments.

According to a study made in 45 hospitals of six countries of Latin America and the Caribbean,[1] some of the factors affecting the efficient operation of the food services may be identified as follows:

a) Most hospitals do not apply proper principles of administration.

b) There is an obvious lack of appropriate techniques for solving problems of food hygiene and quality at the service level.

c) There are not enough personnel with sufficient technical training, knowledge and administrative experience. There are no clearly defined criteria for deciding the type and amount of human resources required for the food services.

d) Further, the shortage of nutritionist/dietitians with experience in administering food services reflects the lack of training programs in this field.

e) The introduction of technical and administrative standards for the organization and operation of food services in hospitals of different levels and complexity is a priority need in the countries of the Region.

The situation described above clearly requires priority attention, since one of the main obstacles is the lack of understanding of the functions of the food and dietary services and how they are related to the cost of hospital administration and, what is even more important, what is their essential function in the overall care of the patient.

3.5 Preparation and Training of Nutrition Personnel for Health Services

For purposes of the planning and implementation of nutrition programs in the health services, the various members of the professional team must possess some basic notions of nutrition, particularly those with direct responsibility for maternal and child care and family health activities.

Health programs require nutrition personnel of various categories: some will have primary responsibility and competence in the field of nutrition within the health services, while others will be working in disciplines other than health which are essential for coordinating multisectoral programs. Both categories of personnel should familiarize themselves with the basic concepts of nutrition during their training.

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[1] Pan American Health Organization. Report on the Administration of Hospital Food Services in Six Countries of Latin America and the Caribbean, 1972.

3.5.1 Nutrition Specialists with Primary Responsibility in the Health Sector

Among the professional personnel responsible for nutrition programs in public health, there is the medical nutritionist (a doctor trained in public health or clinical medicine, with specialization in nutrition). Ministries of public health must have one or more professionals of this category with responsibility for directing and coordinating nutrition programs and representing the health sector in the national planning process in all matters related to nutrition and food consumption.

Another specialist who very often is a member of the health team is the nutritionist/dietitian, who has had university training and holds a university degree.

The nutritionist/dietitian provides advisory services not only to health personnel but to teaching and supervisory personnel of institutional feeding programs. In some countries these professionals are assuming wider responsibilities for heading the intermediate-level nutrition programs of the health structures, which means that greater attention must be paid to their postgraduate training in administration and health planning.

There is another intermediate category of nutrition personnel, namely the assistant dietitian/nutritionist, who receives training in nutrition for work in the food services of hospitals and social welfare institutions. At the present time, this level of personnel should be given special attention in the developing countries as a strategy for improving institutional food services.

3.5.2 Health Services Personnel with General Responsibility in Nutrition

Most of the health service's direct work in nutrition is done by doctors, nurses and auxiliary health personnel and, for them to perform their functions competently, they should receive instruction in nutrition during their basic training, or at least intensive courses in postgraduate training.

Basic health services personnel vary according to the levels of the health structure. In most countries, the simplest health units consist of auxiliary personnel with four years of formal education and three months' training in public health. These multipurpose aides, who handle most of the health activities required by the community, should be trained in a realistic way to perform their functions, including maternal and child care, nutrition and family health activities.

The content of nutrition training programs depends on the priorities, responsibilities and functions established and prevailing local conditions. Nevertheless, consideration should be given to the following aspects:

a) The importance of nutrition in the health level of the individual and the community;

b) Watching diet during periods of pregnancy and nursing;

c) Breast feeding and its value in infant nutrition;

d) Food control and food hygiene and their relationship to gastro-intestinal diseases;

e) Control of infectious diseases (including water supply and waste disposal systems);

f) Surveillance of the nutritional state of pregnant women and children under 5 years; and

g) Health education, including family health.

For the reasons given earlier, emphasis is placed on the importance of the training given to health aides, who represent the best staff resource for widening the coverage of primary health services. Nutrition specialists, in collaboration with health administrators and nurses, should work out practical and simple methods for training those aides. It is urgently necessary to prepare descriptive manuals of the activities and tasks of auxiliary health personnel in all the countries of the Region.

3.5.3 Planning Officer in Food and Nutrition

In view of the multidisciplinary and interdisciplinary nature of nutrition, it is important for the health sector to promote and participate actively in training programs for high-level executive personnel who will be responsible for sectoral planning.

These planning officers may come from public health, economic activities, agriculture, the social sciences, inter alia, and should have a broad knowledge of economics, human nutrition and food science so that they can take an active part in the process of planning the economic and social development of the country.

4. PROSPECTS FOR IMPROVING THE NUTRITIONAL AND FOOD SITUATION IN THE REGION

The analysis of the main causes of the low nutritional and food level of the Region given in Annex I of this document indicates that distortions in income distribution are one of the priority elements of the problem. We know that 50 per cent of the population of the Region is made up of low-income groups which consume less than 16 per cent of the total available of goods and services.

On the other hand, the availability of land is not a factor which restricts the increase in food production, not even in countries where calorie and protein deficiencies go hand in hand with a high rate of population growth. It has been estimated that in order to attain the "high

demand for food" projected by FAO for 1980, the cultivated area would have to be expanded by 27.9 million hectares. By adding those new lands to the available arable area, the total land used in South America would still be only 27 per cent and in Central America 40 per cent, which means that the reserves of cultivable land would still be far from exhausted.

There is a consensus on the part of the governments of Latin America and the Caribbean that the region possesses lands, minerals and sources of energy which are awaiting, in addition to the necessary financial investment, the organization of institutions and the application of technology before their potential can be transformed into goods and services in the field of food and nutrition. With that prospect of additional resources, the existence of undernourishment and malnutrition in the Region represents a serious contradiction which must be eliminated for social and economic reasons.[1]

Consequently, the nutrition activities in public health described earlier would make it possible to raise the nutritional and food level of the Region provided measures were simultaneously taken to bring large groups of the population out of extreme poverty and marginality. The potential of the countries of the Region is sufficiently large that the increase in domestic consumption resulting from income redistribution will not adversely affect the foreign earnings obtained by exports of agricultural products; on the contrary, it would strengthen and benefit production.

5. PARTICIPATION OF THE HEALTH SECTOR IN THE SOLUTION OF THE NUTRITION PROBLEMS OF THE REGION

In view of the foregoing considerations and the effect of malnutrition on the health level of the population, malnutrition is obviously an important dimension of the overall problem, and must be systematically attacked. Governments should weigh whether malnutrition should be regarded as a phenomenon strictly limited to the health sector without regard for its repercussions on productivity and the general well-being of the population before adopting that conclusion as policy.[2]

Obviously, if the health sector merely deals with malnutrition as a disease, and better levels of food and nutrition are not fostered, there are not likely to be lasting effects on the health and well-being of the population.

Generally speaking, it may be said that the availability and effective consumption of food, and consumer education, are the most significant extrasectoral factors affecting the problem of malnutrition whereas, intrasectorally,

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[1] Pan American Health Organization. Ten-Year Health Plan for the Americas. Official Document 118. 1973.

[2] Pan American Health Organization. Nutrition in the Health Planning Process. (Mimeographed document), Washington, D.C. 1968.

the problem is confined to control of malnutrition as a disease in itself and as a determining factor in other pathological conditions. The interrelationship between the two areas makes it imperative to seek a solution through complementary efforts based on preventive and curative health activities, including the promotion of good nutrition.

The health sector should understand that this complementarity must be based on the recognition that changes in and control of the extrasectoral factors will have a decisive impact on the solution of the problem of malnutrition.

It therefore becomes necessary to create a unit or technical group to formulate national food and nutrition policies and plans within the organs with high-level responsibility and actual authority for overall development planning.

The unit should be organized as part of the national planning body, independent of any particular sectoral office but with close intersectoral coordination, and should be responsible to a high level of the government. This is important because the unit will have to work with a number of government sectors at the same time, and must not be considered as the instrument of any particular sector.

The unit's main function should be to formulate national food and nutrition policy on the basis of an analysis of the nutritional implications of sectoral policies and their interaction with and effects on the nutritional state of the population.

The policy should be submitted for approval by the government body responsible for establishing the country's social and economic development policies. In order to discharge its responsibility, the planning unit for national food and nutrition policies should take a series of successive steps, as suggested in Table 2.

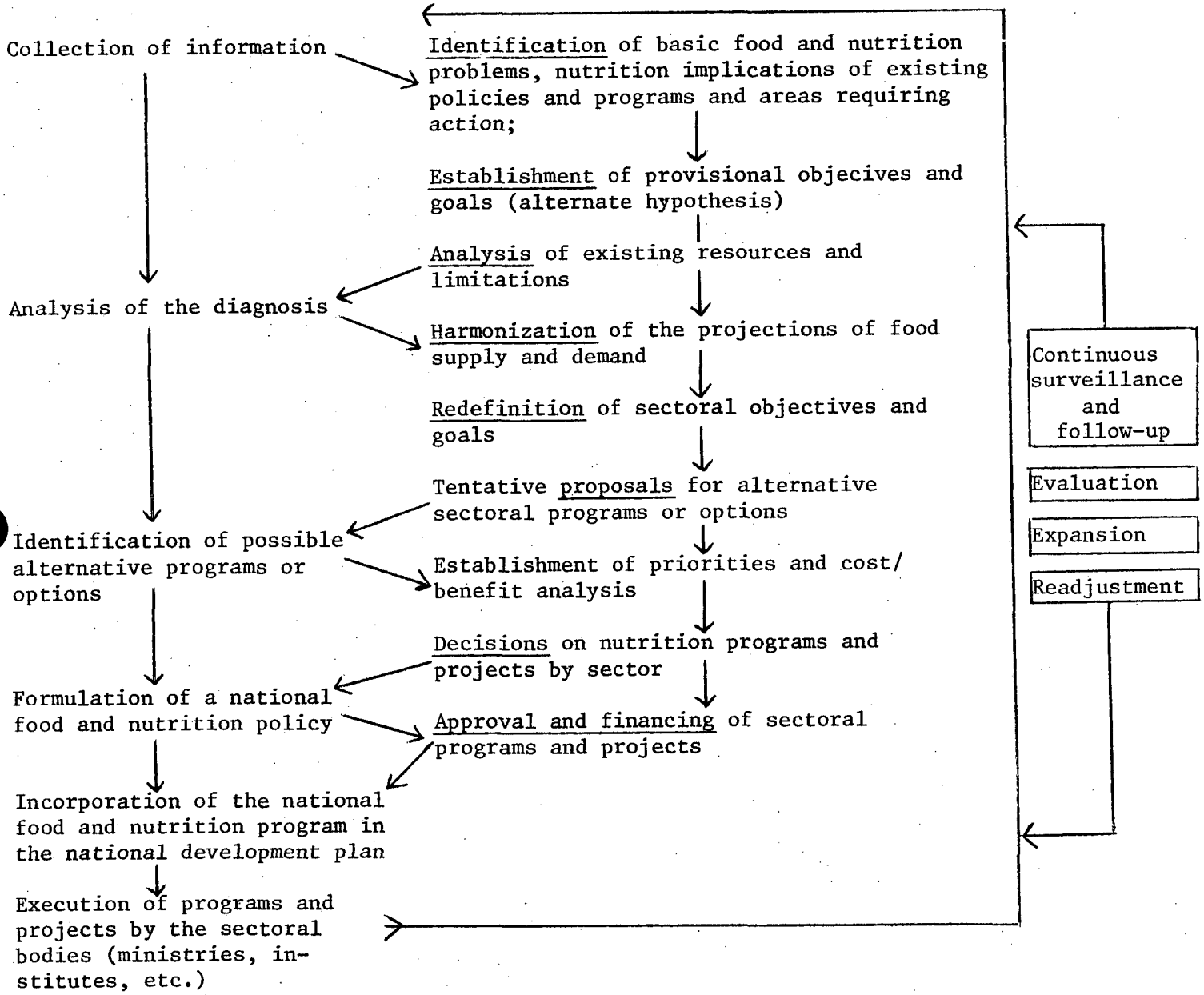
Bearing in mind the interdisciplinary and intersectoral nature of the various activities involved in the process, it would be advisable for the planning unit to include representatives of disciplines such as statistics, agronomy, economics, nutrition, public health and planning. The group should receive technical support and advice from the sectoral planning units of the various ministries engaged in carrying out the food and nutrition policy.

The health sector is basically responsible for acting as a catalyst of the process of formulating these policies, since it is in that sector that the availability and consumption of food produces an impact on the health level owing to the direct and indirect effects of malnutrition.

Since the investigation and collection of information on the food and nutrition problem is within the competence of the health sector, the ministries of health shall be directly responsible for the following:

Table 2

SUCCESSIVE STEPS IN THE FORMULATION, EXECUTION, EVALUATION AND READJUSTMENT OF A FOOD AND NUTRITION POLICY[1]



[1] Rueda-Williamson, R., and J.M. Bengoa. National Food and Nutrition Policies for Latin America. Colombian Institute for Family Welfare (ICBF), 1975.

a) Assessing the magnitude and nature, structure and extent of the phenomenon;

b) Estimating the quantity and quality of the nutrients and calories required to maintain satisfactory nutritional levels in the various population groups;

c) Determining the vulnerability of the population and making projections of nutrition requirements on the bais of anticipated variations within each sample group;

d) Translating those nutrition requirements in terms of quantity and quality of food which should be consumed; and

e) Investigating and proposing technical alternatives for the substitution and fortification of foods in the light of the specific nutrition problems and availability of food, cost of production, prices to the consumer and possible restrictions due to the needs of the economy as a whole as regards exports and imports.

In implementing a food and nutrition policy, while the most substantive and long-range actions must be taken by other sectoral areas, the health sector is responsible for giving them technical advice within the strict limits of its knowledge and competence, with a view to helping to achieve the established goals.

Despite variations in organization from country to country, the health sector is directly or indirectly responsible for treating the people suffering from malnutrition and for fostering a satisfactory nutritional situation through protective programs and nutrition education. It clearly bears responsibility for monitoring food quality and food hygiene.

As regards the evaluation of food and nutrition policy, the health sector has a dual responsibility: on the one hand, it must assess the effectiveness of the policy in terms of how it improves the nutritional status of the population and, on the other, it must evaluate its participation, as regards the sector, in the execution of that policy. That evaluation is essential because it will make it possible to identify the changes that may be required in the policy which has been adopted and to establish how the sector's role should be readjusted in continuing the policy.

In the absence of a well-defined interministerial policy, the ministries of public health and the nutrition institutes, where they exist, should program the nutrition activities of the national health plan and establish the rules and regulations for developing and evaluating the nutrition program.

The nutrition units or technical groups in the ministries of health or nutrition institutes should participate, together with the professionals

working in maternal and child health, communicable disease control, environmental sanitation and health education in planning and coordinating programs, including the prevention, control and treatment of deficiency diseases.

The ministries of health should establish standards governing recommended daily nutritional intakes by the various population groups, including model diets for individuals and groups in the care of the health services, standards for quality control of food and food hygiene, and recommendations for the treatment and prevention of specific deficiency diseases.

Guidelines should also be drawn up for organizing and operating nutrition education and nutritional recovery services, food demonstration units, food and dietary services in hospitals and industries, nutrition education and supplementary feeding in health centers, schools, kindergartens and other institutions.

The teaching of nutrition in schools of medicine, nursing, nutrition and diet, dentistry, veterinary science and educational science, as well as in courses for intermediate-level personnel--nursing aides, health promoters and nutrition and food aides--should be the constant concern and responsibility of the ministries of health. The latter should also be responsible for the teaching of nutrition in primary and secondary schools and for information programs on nutrition aimed at specific community groups--mothers, agricultural and industrial workers, etc.--based on general, easily applicable standards.

Lastly, there are logistical aspects to the nutrition program which require special attention, such as the administration of food supplement programs to vulnerable groups using the health services.

In some countries, this is the responsibility of the ministries of health or the nutrition or family welfare institutes. When it is not, the guidance they may provide and the leadership they exercise in coordinating international and bilateral food aid will help to maximize the use of resources and the effectiveness of action.

The advisory and supervisory role of health sector agencies in food and nutrition is quite clear and constitutes a most important responsibility.

6. CONCLUSIONS

This document reviewed the factors and strategies which go into the formulation and execution of food and nutrition policies and plans in the countries of the Region.

It underscored the role of the health sector and, basically, of the ministries of health in this process, which is of the utmost significance for the economic and social development of Latin America and the Caribbean.

The health sector should of course exercise undisputed leadership in the solution of food and nutrition problems affecting large numbers of people, particularly the economically, socially and geographically marginal groups.

The sector exercises its responsibility both directly, through the health services, in activities for the prevention of and recovery from the most prevalent nutritional deficiencies and, indirectly, by stimulating, advising and guiding the other sectors which help to shape a national food and nutrition system.

The formulation and execution of national food and nutrition policies through coordinated intersectoral action designed to develop and implement programs aimed at the production, consumption and proper use of foods required to meet the biological needs of the population is the catalyst the ministries of health need in order to achieve the objectives laid down by the Health Ministers of the Americas in the Ten-Year Health Plan, 1971-1980.

Annex

FOOD AND NUTRITION SITUATION IN THE LATIN AMERICAN AND CARIBBEAN COUNTRIES

TABLE OF CONTENTS

FOOD AND NUTRITION SITUATION IN THE LATIN AMERICAN AND CARIBBEAN COUNTRIES

1. PRESENT SITUATION

1.1 General Considerations

Nutritional deficiencies are highly prevalent in the countries of the Region and help worsen the health problems of the population.

The presence of nutritional diseases, in particular protein-calorie malnutrition in infants, is accompanied by high mortality and morbidity rates, primarily in children under five years of age.

The synergism between malnutrition and infectious diseases establishes a vicious circle, the end results of which are reflected in various degrees of retardation in the physical growth of children, often irreversible. Furthermore, this nutritional dwarfism is often accompanied by varying degrees of mental retardation, the characteristics and significance of which have been pointed out by a number of investigators.

Nutritional status has a specific effect on the capacity of the individual for physical work, both as regards its duration and its intensity. In Latin America and the Caribbean area, where automation and mechanization are limited, maximum individual output is a fundamental factor for the economy.

Finally, there are many factors determining nutritional problems; they are present in various development sectors and are not exclusive to the health sector. This multicausation is related in one way or another to the following three basic aspects: (1) availability of food; (2) balanced diet; and (3) control of diseases that can interfere with the proper utilization of nutrients or cause an excessive loss of them.

1.2 Population Characteristics

It is acknowledged that the characteristics of the population largely determine the nature and importance of health and nutrition problems, as well as the need for health services and the degree to which they are used.

These characteristics include age structure, growth rate, urban/rural ratio, cultural conditions, educational levels, income and employment level of the economically active population and, to a greater or lesser extent, constitute the background food and nutrition problems.

In 1972 the estimated population of the countries of the region was 290 million inhabitants and during the period 1965-1972 the average annual growth rate was 2.7 per cent (Table No. 1).

Table No. 1

ESTIMATED POPULATION (1972), ANNUAL PERCENTAGE INCREASE (1963-1972)
AND ESTIMATED POPULATION (1980-2000)

Country	Estimated mid-year population 1972(1)	Annual percentage increase (1963-1972) (1)	Estimated population (2)(3)				
			1980	1985	1990	1995	2000
Antigua	73,000	2.0					
Netherlands Antilles	230,000	1.5					
Argentina	23,923,000	1.5	26,856	30,107	31,909	33,637	35,274
Bahamas	185,000	4.1					
Barbados	240,000	0.1	276	303	-	-	-
Belize	128,000	2.9					
Bermuda	56,000	2.0					
Bolivia	5,195,000	2.6	6,456	-	-	-	10,081
Brazil	98,854,000	2.9	125,503	145,366	168,373	195,021	225,886
Canada	21,848,000	1.6					
Colombia	22,491,000	3.2	28,928	33,861	39,631	45,810	54,289
Costa Rica	1,843,000	3.2	2,493	2,961	3,493	-	-
Cuba	8,749,000	2.0	10,075	11,019	12,017	13,071	14,183
Chile	10,123,000	-	11,467	12,540	13,745	15,007	16,283
Dominica	73,000	1.7					
Ecuador	6,508,000	3.4	8,473	-	11,774	-	16,149
El Salvador	3,760,000	-	4,904	5,907	7,122	8,593	10,372
United States of America	208,230,000	1.1	230,955	248,711	266,238	282,766	300,406
Grenada	96,000	0.5					
Guadeloupe	337,000	1.4					
Guatemala	5,409,000	2.9	7,018	8,103	9,357	10,776	12,355
French Guiana	56,000	4.7					
Guyana	754,000	2.3	1,045	1,238	1,469	1,742	2,061
Haiti	5,073,000	2.1	5,988	-	-	-	12,347
Honduras	2,687,000	3.1	3,557	-	5,182	-	7,205

.../...

Table 1 (continued)

Country	Estimated mid-year population 1972(1)	Annual percentage increase (1963-1972)(1)	Estimated population(2)(3)				
			1980	1985	1990	1995	2000
Cayman Islands	11,000	2.3					
Falkland Islands	2,000	-					
Turks and Caicos Islands	6,000	-					
Virgin Islands (US)	67,000	4.8					
Virgin Islands (UK)	12,000	4.3					
Jamaica	1,923,000	1.4					
Martinique	344,000	1.8					
Mexico	52,641,000	3.5	67,288	-	-	-	-
Montserrat	12,000	-					
Nicaragua	1,988,000	-	2,818	3,347	3,957	4,646	5,460
Panama	1,524,000	3.0	1,939	2,254	2,621	3,046	3,541
Paraguay	2,581,000	3.4	3,456	4,121	4,860	5,677	6,619
Peru	14,456,000	3.1	18,527	21,612	25,142	29,099	33,491
Puerto Rico	2,809,000	1.3					
Dominican Republic	4,305,000	2.9	5,446	6,300	7,287	8,431	9,753
St. Kitts-Nevis and Anguilla	65,000	1.5					
St. Pierre and Miquelon	6,000	-					
St. Vincent	91,000	0.9					
St. Lucia	115,000	2.6					
Surinam	419,000	3.1					
Trinidad and Tobago	1,043,000	1.4	1,260	1,386	-	-	-
Uruguay	2,956,000	1.2	3,255	3,377	3,827	-	3,999
Venezuela	10,919,000	3.4	14,870	17,546	20,285	-	26,100

(1) Source: Demographic Yearbook, 1972, United Nations. Population and Vital Statistics Report, Series A, Vol. XXVI, No. 1, 1 January 1974, United Nations

(2) América en Cifras, 1974 - Situación demográfica: Estado y movimiento de la población, OEA, Instituto Interamericano de Estadísticas, 1974

(3) In 10,000 inhabitants

With respect to the age structure (Table No. 2), more than 40 per cent of the population is under 15 years of age and, on an average, 15 per cent belong to the age group under five years of age; because of this, priority consideration is given to its nutritional care, especially through maternal and child health services.

Table No. 3 shows that approximately 60 per cent of the population of the Region live in rural areas. Despite the fact that this proportion has gradually decreased, the rural population constitutes a high priority group in the extension of health service coverage and consequently in their nutritional surveillance and care.

1.3 Nutritional Level of the Population

According to various health and nutrition surveys carried out in the last ten years in the countries of the Region in which PASB, INCAP, CFNI, ICNND, the United States National Institutes of Health and various national groups of nutritional specialists have participated, two general conclusions may be drawn:

a) Although such studies are incomplete and do not reflect the situation prevailing in all countries of the Region or all the geographical areas of the same country, they clearly show that nutritional problems exist in most of the countries.

b) The results of an analysis of vital indicators and of the nutritional surveys undertaken show that protein-calorie malnutrition; iron, vitamin B_{12} and folate deficiency anemias; endemic goiter and cretinism; and hypovitaminosis A are serious public health problems in most of the countries of the Region. At the same time, cardiovascular diseases, diabetes and obesity connected with nutrition are becoming increasingly important as public health problems in Latin America and the Caribbean area.

1.3.1 Protein-calorie Malnutrition

Protein-calorie malnutrition is the cause of high mortality and morbidity rates in children under five years of age. As Table No. 4 shows, the prevalence of severe protein-calorie malnutrition (degrees II and III) ranges from 10 to 35 per cent in children under five years of age in 23 countries in the Region. This fact is undoubtedly responsible in part for the high mortality recorded, especially that due to infectious diseases and nutritional deficiencies, in that age group.

The findings of the Inter-American Investigation of Mortality in Childhood sponsored by PAHO shows that the basic associated cause of a high percentage of the deaths of children under five years of age is a nutritional deficiency; this ranges from 41 per cent in Viacha, Bolivia, to 69.8 per cent in Ribeirão Prêto, Brazil (Table No. 5).

Table No. 2

PERCENTAGE DISTRIBUTION OF POPULATION
BY AGE GROUP, ACCORDING TO RECENT CENSUSES (1)

Country	Under 5 years	5-14 years	15-44 years	45-64 years	65 years and over
Antigua	14.7	29.5	34.9	14.8	6.2
Netherlands Antilles	16.1	25.3	39.4	14.4	4.8
Argentina	10.1	19.2	44.5	19.2	7.0
Bahamas	15.9	27.7	41.1	11.9	3.5
Barbados	10.9	26.1	37.7	17.0	8.3
Belize	18.1	31.2	35.5	10.9	4.3
Bermuda	8.9	20.7	46.3	17.7	6.4
Bolivia	16.2	25.6	42.9	11.7	3.5
Brazil	14.9	26.8	a) 47.3	b) 9.1	c) 1.8
Canada	8.4	21.2	43.7	18.7	8.1
Colombia	17.6	29.0	40.2	10.2	3.0
Costa Rica	20.1	29.1	38.3	9.5	2.9
Cuba	13.8	23.2	41.9	15.2	5.9
Chile	12.7	26.9	42.7	13.0	4.7
Dominica	18.0	31.1	32.4	12.6	5.9
Ecuador	18.5	28.7	40.0	9.9	2.8
El Salvador	16.8	29.3	40.3	10.1	3.4
United States of America	8.4	20.1	41.1	20.6	9.9
Grenada	13.4	33.8	34.7	12.4	5.9
Guadeloupe	14.8	28.2	38.8	13.3	4.8
Guatemala	17.3	27.8	42.0	10.2	2.8
French Guiana	14.5	23.6	42.3	14.3	5.3
Guyana	15.8	31.3	38.5	10.8	3.6
Haiti	17.4	25.8	42.0	11.7	3.1
Honduras	18.9	27.8	41.4	9.5	2.4
Cayman Islands	5.6	d) 33.0	e) 39.2	14.7	7.5
Falkland Islands	10.6	15.5	a) 52.2	b) 17.6	c) 4.1
Turks and Caicos Islands	15.8	31.3	32.3	14.4	6.2
Virgin Islands (US)	13.3	22.4	47.6	12.9	3.8
Virgin Islands (UK)	14.8	24.4	43.8	11.8	5.2
Jamaica	16.0	30.2	34.7	13.7	5.5
Martinique	43.0		37.9	13.8	5.2
Mexico	16.9	29.3	40.2	9.9	3.7
Montserrat	13.5	26.2	31.9	17.5	10.8
Nicaragua	17.6	30.7	39.7	9.0	2.9
Panama	16.2	27.2	41.3	11.6	3.7
Panama Canal Zone	8.6	23.2	51.1	15.4	1.7
Paraguay	18.7	27.8	40.2	10.2	3.2
Peru	17.4	27.6	41.3	10.5	3.1
Puerto Rico	11.7	24.8	42.0	15.0	6.5
Dominican Republic	17.0	30.5	40.2	9.1	3.1
St. Kitts-Nevis and Anguilla	14.7	34.0	28.3	16.0	7.1
St. Pierre and Miquelon	11.3	21.0	42.7	17.9	7.1

.../...

Table No. 2 (continued)

Country	Under 5 years	5-14 years	15-44 years	45-64 years	65 years and over
St. Vincent	16.7	34.5	32.8	11.2	4.9
St. Lucia	18.4	31.3	32.9	12.2	5.3
Surinam	← 48.0 →		←	52.0 →	
Trinidad and Tobago	13.0	29.1	40.4	13.0	4.4
Uruguay	9.9	18.1	44.4	19.8	7.8
Venezuela	16.2	29.0	41.6	10.2	2.9
Northern America	8.4	20.2	41.3	20.4	9.7
Latin America	15.4	26.9	43.3	11.0	3.3
Middle America	16.6	28.3	40.5	10.8	3.9
South America	14.9	26.2	44.7	11.1	3.1

(1) Source: Demographic Yearbook, 1970 and 1972; United Nations and 1970 Population Census of the Commonwealth Caribbean, University of the West Indies, 1973. Published in Health Conditions in the Americas, PAHO Scientific Publication 287, 1974

(a) 15-49 (b) 50-69 (c) 70+ (d) 5-24 (e) 25-44

Table No. 3

RURAL POPULATION, BY COUNTRY, 1960-1980[1]

Country	1960 %	1970 %	1980 %
Netherlands Antilles	55.7	52.3	48.7
Argentina	26.4	19.6	14.2
Bahamas	38.1	28.6	20.5
Barbados	59.7	56.3	52.7
Belize	46.2	42.9	39.4
Bermuda	88.6	87.0	81.5
Bolivia	70.1	65.8	61.1
Brazil	53.9	43.5	33.6
Canada	31.5	23.8	18.0
Colombia	52.2	40.4	30.4
Costa Rica	66.7	63.5	60.1
Cuba	48.2	44.5	40.9
Chile	35.6	27.1	20.0
Dominica	-	79.0[2]	-
Ecuador	66.8	60.9	54.7
El Salvador	62.6	59.1	55.6
United States of America	30.2	25.9	22.0
Grenada	89.0[2]	-	-
Guadeloupe	56.0	52.5	48.9
Guatemala	72.4	69.0	65.5
French Guiana	34.4	31.7	29.3
Guyana	71.3	65.1	58.2
Haiti	85.9	82.2	77.8
Honduras	78.4	73.9	68.8
Cayman Islands	62.5	60.0	54.5
Falkland Islands	50.0	50.0	50.0
Turks and Caicos Islands	66.7	66.7	66.7
Virgin Islands (U.S.)	43.8	40.7	38.2
Virgin Islands (U.K.)	-	79.2[2]	-
Jamaica	70.5	62.4	53.5
Martinique	60.7	50.0	39.0
Mexico	50.7	43.5	36.5
Montserrat	-	90.2[2]	-
Nicaragua	62.8	57.9	53.0
Panama	58.8	53.1	47.2
Paraguay	64.6	61.3	57.8
Peru	54.8	49.1	43.5
Puerto Rico	56.1	52.5	48.7
Dominican Republic	70.0	61.6	52.4
St. Kitts-Nevis and Anguilla	-	71.1[2]	-
St. Pierre and Miquelon	60.0	60.0	60.0
Surinam	65.5	62.3	58.7

.../...

Table No. 3 (continued)

Country	1960 %	1970 %	1980 %
Trinidad and Tobago	60.5	49.8	38.9
Uruguay	28.1	21.6	16.3
Venezuela	41.7	31.6	23.0
Leeward Islands(a)	69.5	64.9	59.9
Windward Islands(b)	82.7	80.7	78.1

(a) Antigua, Virgin Islands (UK), Montserrat and St. Kitts-Nevis-Anguilla

(b) Dominica, Grenada, St. Lucia and St. Vincent

(1) Health Conditions in the Americas, PAHO Scientific Publication 287, 1974

(2) Four-Year Projections for the Eastern Caribbean, 1971

Table No. 4

PROTEIN-CALORIE MALNUTRITION IN CHILDREN UNDER FIVE YEARS OF AGE[1]

Country	Year	Total examined	% normal	Malnutrition[2]		
				I degree %	II degree %	III degree %
Antigua[5]	1970	322	70	27.6	2.1	0.3
Barbados	1969	248	24.6	39.0	11.0	1.2
Belize	1973	3,546[3]	40.8	40.0	18.0	1.2
Bermuda[4]		-	-	←	5.0	→
Bolivia	1966-69	968	60.1	29.0	10.2	0.7
Brazil	1968	569	31.7	48.4	17.2	2.7
Canada	1970-72	1,331	-	-	3.6	0.0
Colombia	1966	3,378	33.4	45.6	19.3	1.7
Costa Rica[6]	1966	-	42.6	43.7	12.2	1.5
Chile	1974	547,709	84.6	11.5	3.1	0.8
Dominica	1970	117	71.8	19.7	5.1	3.4
Ecuador	1965-69	9,000	60.3	28.9	9.6	1.2
El Salvador[6]	1969	-	26.6	48.5	22.9	3.1
Grenada[5]	1972	-	-	44.0	10.0	0.0
Guatemala[6]	1969	-	18.6	49.0	26.5	5.9
Guyana[5]	1971	964	39.3	43.0	16.0	1.7
Haiti	1961-65	-	21.0	43.0	27.2	7.0
Honduras[6]	1966	-	27.5	43.0	27.2	2.3
Turks and Caicos Is.	1973	-	-	-	7.0	0.3
Virgin Islands (UK)		-	-	-	← 5.0	→
Jamaica	1969-71	-	-	39.0	9.0	1.4
Montserrat[4]	1971	372	-	28.0	3.5	0.0
Nicaragua[6]	1966	-	43.2	41.8	13.2	1.8
Panama[6]	1967	632	40.0	48.8	10.8	1.1
Paraguay	1973	41,750	92.2	4.9	2.2	0.7
Peru	1965-71	83,165	56.0	32.8	10.9	0.8
Dominican Republic	1970	1,100	25.0	49.0	23.0	4.0
St. Kitts-Nevis and Anguilla	1974	1,209	61.2	33.3	5.4	0.1
St. Vincent[7]	1969	2,490	37.5	47.0	14.0	1.5
St. Lucia[5]	1974 (CFNI)	363	56.1	33.0	9.0	1.9
Trinidad and Tobago[4]		-	-	-	← 15.0	→
Venezuela (0-6 years)	1974	23,271	51.1	35.3	12.2	1.4

(1) Four-Year Health Projections, 1971-75 and various sources

(2) According to the Gomez Classification, I = slight, II = moderate, III = serio

(3) 5-1/2 years of age

(4) MCH Profiles English-Speaking Caribbean - WHO/PAHO - Zone I, 1975

(5) National Nutrition Surveys

(6) Estimated for 1965 population

(7) Gurney, G.M., Available Data on the State of Food and Nutrition of the Peoples of the Commonwealth Caribbean, CFNI, 1975

Table No. 5

MORTALITY FROM NUTRITIONAL DEFICIENCY AND IMMATURITY AS UNDERLYING OR ASSOCIATED CAUSE IN CHILDREN UNDER 5 YEARS OF AGE(1)

Project and area	Total deaths		% of total deaths		
	No.	Rate (2)	Both	Nutritional deficiency	Immaturity
ARGENTINA					
Chaco Province					
Resistencia	864	2,070.0	62.2	40.0	22.1
Rural departments	837	2,387.3	51.3	37.6	13.6
San Juan Province					
San Juan (city)	326	1,291.6	53.4	20.2	33.1
Suburban departments	780	2,194.7	57.8	27.4	30.4
Rural departments	1,050	2,403.8	54.9	31.1	23.7
BOLIVIA					
La Paz	4,115	2,660.0	47.6	36.0	11.5
Viacha	161	4,806.0	41.0	30.4	10.6
BRAZIL					
Recife	3,635	2,933.6	66.4	46.2	20.2
Ribeirão Prêto					
Riberão Prêto (city)	464	1,088.4	69.8	34.5	35.3
Franca	434	1,942.7	64.1	36.4	27.6
Communities	228	1,300.6	66.7	38.2	28.5
São Paulo	4,312	1,769.3	58.8	30.4	28.4
CANADA					
Sherbrooke	371	407.4	48.2	3.2	45.0
CHILE					
Santiago	2,489	1,298.7	55.5	23.7	31.8
Comunas	225	1,395.8	53.3	35.6	17.8
COLOMBIA					
Cali	1,627	1,607.7	56.2	36.4	19.7
Cartagena	1,255	1,459.3	64.9	44.7	20.2
Medellín	1,348	1,444.8	61.9	42.3	19.7
EL SALVADOR					
San Salvador	2,738	2,636.2	54.3	37.2	17.1
Rural municipios	1,082	5,049.0	54.8	46.9	7.9
JAMAICA					
Kingston-St. Andrew	1,903	1,038.5	59.1	19.4	39.7
MEXICO					
Monterrey	3,953	1,813.8	54.5	36.1	18.3
UNITED STATES OF AMERICA					
San Francisco	234	543.6	53.4	4.3	49.1
California, suburban	664	413.4	56.0	5.1	50.9
T O T A L	35,095	1,672.1	57.0	34.1	22.9

(1) Puffer, R. R. and C.V. Serrano: Patterns of Mortality in Childhood, PAHO Scientific Publication 262, 1973

(2) Rate per 100,000 population

The mortality rate in the age group 1-4 years in eight countries in the Region (Table No. 6) is 10 to 33 times greater than the rates recorded in developed countries, and the infant mortality rate ranges from 18.5 to 84.1 per 1,000 live births in the United States of America and Guatemala, respectively.

Enteric and diarrheal diseases are responsible for between 9 and 21.5 per cent of all deaths in 11 countries. In turn, according to the above-mentioned study on mortality in childhood, diarrheal diseases are the leading underlying cause of death in children under five years of age. The death rate per 100,000 inhabitants ranges from 216 to 1,436 in the places studied. Deaths due to diarrheal diseases in which nutritional deficiency is an associated cause ranged from 42.2 (Kingston) to 78.1 per cent (Ribeirão Prêto).

It should also be noted that between 30.2 (San Juan) to 83.8 per cent (Cartagena) of the deaths due to measles in children under five years of age are associated with nutritional deficiencies.

A common denominator of the children treated in hospital services is protein-calorie malnutrition, the prevalence of any degree of which ranged between 77 and 97 per cent according to observations made in Colombia, or between 8 and 13 per cent in the case of advanced kwashiorkor or marasmus in a study made in 10 hospitals in Brazil.

1.3.2 Nutritional Anemias

Nutritional anemias are prevalent in the countries of the Region and range from between 0.7 in Chile to 41 per cent in Guyana (Table No. 7).

In pregnant women the prevalence ranges from 22.2 to 62.7 per cent (Table No. 8). The most common type of anemia in this group is iron deficiency anemia. In Brazil, Peru and Venezuela a high prevalence of vitamin B_{12} anemia was recorded, and in Argentina and Venezuela a folate deficiency anemia was a frequent finding in pregnant women. Studies made by the CFNI in the Caribbean area in preschool and school-age children showed high prevalences of anemia, usually caused by iron deficiency (Table No. 9).

Among the adult population the prevalence of anemias is higher in females than in males (Tables Nos. 10 and 11). Here again, iron deficiency is the most common cause, although high prevalency rates of folate deficiency are found in the adult population.

1.3.3 Endemic Goiter and Cretinism

Endemic goiter is highly prevalent in the Andean area and in extensive areas distributed throughout the Western Hemisphere. It is estimated that approximately 13 million persons are affected. In 20 countries, the prevalence of endemic goiter is over 10 per cent (Table No. 12). Endemic cretinism

Table No. 6

SOME INDIRECT INDICATORS OF NUTRITIONAL STATUS[1]

Country	Year	Mortality					
		Crude Rate[2]	Maternal (3)	-28 days (3)	-1 year (3)	1-4 yrs (2)	-5 yrs (2)
Antigua (8)	1972	6.2	0	9.5	19.1	0.4	-
Netherlands Antilles	1971	4.9	-	-	27.6	0.6	-
Argentina	1970	9.6	1.54	27.2	65.2	3.2	15.7
Bahamas	1972	5.8	1.26	18.5	35.0	1.7	-
Barbados (8)	1973	8.8	0.75	26.9	33.9	1.3	7.7
Belize (8)	1973	5.9	0.19	13.3	38.5	4.3	-
Bermuda (8)	1972	6.5[9]	0	6.5	11.2	0.7	-
Bolivia	1969	5.1	-	-	-	7.4	-
Brazil		-	-	-	-	-	-
Canada	1972	7.4	0.16	12.4	17.1	0.9	4.2[5]
Colombia	1969	8.8	2.19	25.1	73.5	8.4	18.7
Costa Rica	1972	5.9	0.99	-	59.0	3.0	12.1
Cuba	1972	5.7	0.52	19.2	28.7	0.9	6.2
Chile	1972	8.8	1.63	29.0	71.1	2.6	16.1
Dominica (8)	1972	6.9[9]	0.74	13.4	32.0	3.7	-
Ecuador (7)	1973	9.8	1.9	23.0	75.8	14.0	26.2
El Salvador	1972	8.6	1.18	18.4[5]	58.5	10.1	19.6
United States of America	1972	9.4	0.24	14.2[5]	18.5	0.8	4.6[5]
Grenada (8)	1972	6.9	1.7[4]	8.8	16.0	1.4	-
Guadeloupe	1972	7.4	0.61	-	45.8	3.8	-
Guatemala	1971	14.1	1.64	-	84.1	25.9	39.6
French Guiana	1971	8.2	0.62	-	43.1	3.7	-
Guyana (8)	1970	6.7	-	-	44.7[4]	-	-
Haiti		-	-	-	-	-	-
Honduras	1972	8.0	1.99	11.6	43.0	9.1	17.1
Cayman Islands	1970	5.9	-	-	11.0	-	-
Falkland Islands	1972	6.0	-	-	25.6	-	-
Turks and Caicos Islands	1971	9.8	-	-	47.4	-	-
Virgin Islands (U.S.)	1970	7.6	-	-	24.3	-	-
Virgin Islands (U.K.) (8)	1972	5.2[6]	0	32.6	44.9	1.2	<1 1-4
Jamaica (8)	1974	7.2	-	-	25.9	4.5	9.4
Martinique	1971	6.5	0.43	-	27.1	1.5	-
Mexico (7)	1972	9.1	1.3	19.9	60.9	9.1	23.3
Montserrat (8)	1972	12.0	0	25.2	31.4	2.9	-
Nicaragua	1969	8.3	1.64	11.3	54.4	8.7	19.6
Panama	1972	6.0	1.11	17.5	33.7	5.5	11.7
Paraguay	1973	9.1	4.16	-	84.0	3.2	25.2[5]
Peru (7)	1973	8.85	2.21	-	66.9	12.4	23.5
Puerto Rico	1972	6.8	0.39	-	27.1	1.0	-
Dominican Republic	1971	6.4	0.99	23.8	49.2	7.3	15.7
St. Kitts-Nevis and Anguilla (8)	1972	11.3	0.81	42.1	69.6	3.6	-

.../...

Table No. 6 (continued)

Country	Year	Crude rate(2)	Mortality				
			Maternal (3)	-28 days (3)	-1 year (3)	1-4 yrs (2)	-5 yrs (2)
St. Pierre and Miquelon	1970	13.0	-	-	33.3	-	-
St. Vincent (8)	1972	9.8	0.81	23.5	69.6	6.2	-
St. Lucia (8)	1972	8.4	0.47	27.9	52.3	4.1	-
Surinam (8)	1971	5.7(6)	0.65	-	21.2	2.4	- 1971
Trinidad and Tobago (8)	1972	6.6	1.49	13.4	25.2	1.5	7.3
Uruguay	1971	9.8	0.7	21.4	40.4	1.1	9.8
Venezuela	1972	6.7	0.95	23.6	51.7	5.7	16.3

(1) Health Conditions in the Americas, PAHO Scientific Publication 287, 1974

(2) Per 1,000 population

(3) Per 1,000 live births

(4) 1965 data

(5) 1971 data

(6) 1972 data

(7) Data provided by the Ministry of Health

(8) English-speaking Caribbean. Source: MCH Profiles

(9) 1973 data

Table No. 7

PREVALENCE OF IRON, FOLATE, AND VITAMIN B_{12} DEFICIENCY ANEMIA IN THE GENERAL POPULATION(1)

Country	Total (2)		Iron deficiency (3) %			Folate deficiency (4) %			Vitamin B_{12} deficiency (5) %		
	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Bolivia(1.3)	-	3.0	-	-	-	-	-	-	-	-	-
Brazil, N.E.(1.3)	-	10.0	-	-	-	-	-	-	-	-	-
Colombia(1.3)	-	6.9	-	-	-	-	-	-	-	-	-
Costa Rica(1.1)	-	3.0	6.0	17.0	-	9.0	19.0	-	-	-	-
Chile(1.2)	-	0.7	-	-	-	-	-	-	-	-	-
Ecuador(1.3)	-	2.7	-	-	-	-	-	-	-	-	-
El Salvador(1.1)	4.0	-	18.0	13.0	-	8.5	24.0	-	3.2	8.0	-
Guatemala(1.1)	6.0	-	10.0	17.0	-	22.0	17.0	-	-	15.0	2.0
Guyana	-	41.0	-	-	-	-	-	8.4	-	-	-
Honduras(1.1)	6.0	10.0	18.0	17.0	-	36.0	13.0	-	-	1.0	-
Nicaragua(1.1)	3.0	-	11.5	7.0	-	18.0	36.0	-	1.0	2.0	-
Panama(1.1)	8.0	-	12.7	20.0	-	19.7	18.3	-	-	-	-
Peru(1.2)	-	4.5	-	-	-	-	-	-	-	-	-

(1.1) National Nutrition Surveys - INCAP, 1965-69

(1.2) National Nutrition Surveys - ICNND, 1960 (military personnel)

(1.3) National Nutrition Surveys - ICNND, 1960

(2) Hb < 11g/100 ml in pregnant women and preschool-age children (0-5 years); Hb < 12g/100 ml in adult females and school children (6-14 years); Hb < 13g/100 ml in adult males

(3) Transferrin iron < 15%

(4) < 3 ng/ml

(5) < 80 pg/ml

Table No. 8

PREVALENCE OF IRON, FOLATE AND VITAMIN B_{12} DEFICIENCY ANEMIA IN PREGNANT WOMEN[1]

Country	Total (2)	Iron deficiency[3] %	Folate deficiency[4] %	Vitamin B_{12} deficiency[5] %
Argentina[1]	62.7	57.6	39.0	16.9
Brazil[1]	28.6	24.3	4.3	35.7
Guatemala[1]	47.1	72.4	12.6	10.3
Guyana[6]	55.0	-	-	-
Jamaica, 1967[9]	24.0	-	-	-
Mexico[1]	41.7 to 50.8	21.7 to 60.0	2.6 to 9.3	1.8 to 6.2
Peru[1]	33.3	34.7	6.9	27.8
Dominican Republic[7]	28.0	-	-	-
St. Lucia[8]	22.2	-	-	-
Venezuela[1]	57.3	56.3	19.4	37.9

(1) Analysis of PAHO Collaborative Studies of Nutritional Anemias in Latin America and the Caribbean, RD 8/14, 9 June 1969.

(2) Hb < 11g/100 ml in pregnant women and preschool children (0-5 years); Hb < 12g/100 ml in adult women and schoolchildren (6-14 years); Hb < 13g/ml in adult males

(3) Transferrin iron < 15%

(4) < 3 mcg/l

(5) < 80 pg/ml

(6) National Nutrition Survey, CFNI, 1971

(7) National Nutrition Survey, 1970

(8) National Nutrition Survey, CFNI, 1974

(9) Pathak, U.N., et al; Obs. and Gyn. 29: 500, 1967

Table No. 9

PREVALENCE OF IRON, FOLATE, AND VITAMIN B_{12} DEFICIENCY ANEMIA IN PRESCHOOL AND SCHOOLCHILDREN[1]

Country	Total[2]		Iron Deficiency[3] %		Folate Deficiency[4] %		Vitamin B_{12} Deficiency[5] %	
	Pre-school (0-5)	School (6-14)	Pre-school (0-5)	School (6-14)	Pre-school (0-5)	School (6-14)	Pre-school (0-5)	School (6-14)
Barbados, CFNI (1969)	32.7	9.3	40.0	-	34.0	-	-	-
Brazil, N.E. (1963)	22.3	19.0	-	-	-	-	-	-
Chile	-	5.0	-	-	-	-	-	-
Grenada (1972)	38.5	65.4	7.7	0.0	13.0	-	0.0	0.0
Guyana (1971)	41.0	41.0	-	-	-	-	-	-
Paraguay (1965)	26.0							
Dominican Republic (1970)	24.0		-	-	-	-	-	-
St. Lucia, CFNI (1974)	14.3	43.1	-	-	-	-	-	-

(1) National Nutrition Surveys

(2) Hb < 11g/100 ml in pregnant women and preschool children; Hb < 12g/100 ml in adult females and schoolchildren; Hb < 13g/100 ml in adult males

(3) Serum iron < 50 mcg/100 ml

(4) < 3 ng/100 ml

(5) < 80 pg/ml

Table No. 10

PREVALENCE OF IRON, FOLATE AND VITAMIN B_{12} DEFICIENCY ANEMIA IN ADULT WOMEN(1)

Country	Total (2)	Iron Deficiency(3) %	Folate Deficiency(4) %	Vitamin B_{12} Deficiency(5) %
Argentina	-	62.0	-	-
Barbados(7)	19.0	-	-	-
Grenada, 1972(7)	49.0	7.7(6)	-	-
Guatemala	19.6	27.5	21.6	-
Guyana, 1971(7)	41.0	-	-	-
Mexico	20.4	58.8	6.4	-
Peru	13.7	17.5	8.2	-
Dom. Rep., 1970(7)	14.0	-	-	-
St. Lucia, 1974(7)	23.4	-	-	-
Venezuela	30.3	20.0	10.1	1.0

(1) Analysis of PAHO Collaborative Studies of Nutritional Anemias in Latin America and the Caribbean, RD 8/14, 9 June 1969.

(2) Hb < 11g/100 ml in pregnant women and preschool children (0-5 years); Hb < 12g/ml in adult females and schoolchildren (6-14 years); Hb < 13g/100 ml in adult males.

(3) Transferrin iron < 15%

(4) < 3 ng/ml

(5) < 80 pg/ml

(6) Serum iron < 50 mcg/100 ml

(7) National Nutrition Survey

Table No. 11

PREVALENCE OF IRON, FOLATE AND VITAMIN B_{12} DEFICIENCY ANEMIA IN ADULT MALES(1)

Country	T o t a l (2)	Iron Deficiency(3) %	Folate Deficiency(4) %	Vitamin B_{12} Deficiency(5) %
Barbados(7) (1969)	2.3	(1)(6)	-	-
Guatemala(1)	2.9	2.9	25.7	-
Guyana(7) (1971)	35.0	-	-	-
Jamaica(8)	11.9	-	-	-
Mexico(1)	4.9	3.9	2.9	1.0
Peru(1)	5.3	5.2	10.5	2.6
Dominican Republic, 1970	30	-	-	-
St. Lucia,1974-CFNI	26.7	-	-	-
Venezuela(1)	2.3	-	11.4	-

(1) Analysis of PAHO Collaborative Studies of Nutritional Anemias in Latin America and the Caribbean, RD 8/14, 9 June 1969

(2) Hb < 11g/100 ml in pregnant women and preschool children (0-5 years); Hb < 12g/100 ml in adult women and schoolchildren (6-14 years); Hb < 13g/100 ml in adult males

(3) Transferrin iron < 15%

(4) < 3 ng/ml

(5) < 80 pg/ml

(6) Serum iron < 50 mcg/100 ml

(7) National Nutrition Survey

(8) Miali, W. E., P. F. Milner, H. G. Lovell, and K. L. Stanford, Haematological Investigations of Population Samples in Jamaica. Br. J. Prev. Soc. Med.; 21: 45, 1967

Table No. 12

PREVALENCE OF ENDEMIC GOITER AND SALT IODIZATION PROGRAMS[1][2]

Country	Prevalence				Salt Iodization	
	-10%	10-19%	20-29%	30-39%	Legislation	Coverage %
Argentina		12-50			1967	90
Barbados	x				-	-
Belize	x				None	-
Bolivia			x		1968	1
Brazil		11-59			1953	84
Colombia	x				1955	85
Costa Rica[3]		2			1941	100
Chile	x				1966(1931)	-
Ecuador			x		1968	75
El Salvador[3]			x		1961	80
Guatemala[3]	x				1954	80-95
Guyana		x			No	-
Haiti		x			No	-
Honduras[3]		x			1960	100
Jamaica	x				None	-
Mexico		x			1963	-
Nicaragua[3]				x	No	-
Panama[3]		x			1955	100
Paraguay		x			1958	100
Peru			x		1940[5]	25
Dominican Republic		x			-	-
Nevis[4]		x			No	-
Anguilla[4]			x		No	-
St. Lucia[4]		x			No	-
Surinam	x				No	-
Trinidad and Tobago	x				No	-
Uruguay			x		1953	-
Venezuela		x			1966	30

(1) Endemic Goiter and Cretinism: Continuing Threats to World Health. Report of the IV Meeting of the PAHO Technical Group on Endemic Goiter. PAHO Scientific Publication no. 292, 1974

(2) Guidelines for Food Fortification in Latin America and the Caribbean. PAHO Scientific Publication 240, 1972

(3) National Nutrition Surveys, INCAP, 1965-1969

(4) Four-Year Health Projections, 1971-1975

(5) Only in goiterous areas

exists in these geographical areas but it is not always defined as a problem to which specific priority is assigned in the health field.

1.3.4 Hypovitaminosis A

The surveys made during the period 1959-1971 in 20 countries in the Region (Table No. 13) indicate a prevalence of vitamin A serum level deficiencies in the general population of between 1.9 and 45.1 per cent. The same studies show that the prevalence in the population under 15 years of age is significantly greater than in the total population.

The studies made by INCAP, CFNI and other institutes have demonstrated the presence of ocular lesions in 14 per cent of malnourished children and in 1.5 per cent of children under five years of age.

1.3.5 Cardiovascular Diseases and Diabetes

Although the information available on the mortality and morbidity caused by these diseases is not complete, it was found that by 1970 cardiovascular diseases were the leading cause of death in 10 countries of the Region. Studies made on the prevalence of diabetes in several Latin American and Caribbean countries indicate rates ranging from 11.3 to 48 per 1,000 inhabitants.

1.4 Food Situation

According to data on the availability of food in 1970, in five countries the average number of calories per capita available for consumption was under 2,000 (Table No. 14). Furthermore, in 11 countries the availability of protein per person/day is less than 60 grams and approximately two-thirds of this protein is of vegetable origin.

It must be pointed out that data on the per capita availability of food do not reflect the true consumption by the population. The food consumption surveys give a more realistic indication of the intake of foods and nutrients in the various groups studied.

The consumption of calories per person/day in eight countries is below the requirements estimated by FAO for the Region. In nine countries it is less than 2,000 calories per person/day.

The per capita/day consumption of protein ranges from 43.8 to 116 grams in the Region, and animal protein as a percentage of total protein consumed varies from 17 to 50 per cent.

Substantial differences are to be noted in the per capita consumption of calories between the urban and the rural areas. In seven countries, between 8 and 34 per cent of the rural families consumed less than 75 per cent of the established requirements.

Table No. 13

SERUM VITAMIN A LEVELS IN THE GENERAL POPULATION AND IN PERSONS UNDER 15 YEARS OF AGE[1]

Country	General Population				Persons under 15 years			
	No. of subjects	Serum level[2] <20 ng %	10-19 ng %	<10 ng %	No. of subjects	Serum level <20 ng %	10-19 ng %	<10 ng %
Bolivia	413	45.1	37.0	8.1	197	57.0	47.0	10.0
Brazil	342	43.0	29.0	14.0	133	49.0	32.0	17.0
Colombia	156	17.2	16.0	1.2	-	-	-	-
Costa Rica	1,095	14.6	13.0	1.6	482	30.0	26.0	4.0
Chile	143	32.8	30.0	2.8	68	21.6	18.5	3.1
Ecuador	253[3]	1.9	1.9	-	124	3.2	3.2	-
El Salvador	896	21.3	20.0	1.3	337	38.0	36.0	2.0
Guatemala	1,219	11.5	9.8	1.7	-	-	-	-
Guyana[5]	370	9.5	4.1	5.4	-	-	-	-
Honduras	923	21.5	18.0	3.5	820	34.0	29.0	5.0
Nicaragua	983	10.1	9.6	0.5	388	9.3	9	0.3
Panama, INCAP, 1967	763	7.1	6.8	0.3	521	10.4	10.0	0.4
Paraguay	886	6.6	6.5	0.1	435	11.7	11.5	0.2
Peru	335[4]	2.7	2.7	-	-	-	-	-
Dominican Republic	516	9.0	7.0	2.0	-	-	-	-
St. Lucia[6]	-	-	-	-	48	37.0	-	2.1
Trinidad and Tobago[6]	-	-	-	-	137	6.6	6.0	2.0
Uruguay	111	12.0	12.0	-	81	23.0	23.0	-
Venezuela	329	4.9	4.9	-	123	8.0	8.0	-
West Indies	-	-	-	-	-	-	-	-

(1) Hypovitaminosis A in the Americas, PAHO Scientific Publication 198, 1970

(2) A population is considered to have a vitamin A nutrition problem when 15 per cent or more of the persons surveyed have serum values of less than 20 mcg per 100 ml and/or 5 per cent or more present serum values of less than 10 mcg per 100 ml

(3) ICNND, 1960

(4) ICNND, 1959 (military personnel)

(5) CFNI, National Nutrition Survey, 1971

(6) ICNND, 1961

Table No. 14

DAILY PER CAPITA AVAILABILITY[1] AND CONSUMPTION[2] OF PROTEIN AND CALORIES

Country	Calories		Protein (g)			
			Animal		Total	
	Availability	Consumption	Availability	Consumption	Availability	Consumption
Argentina	3,036	-	60.0	-	98.4	-
Barbados	2,476[3]	2,151	34.1[3]	35.9	64.6[3]	64.8
Bolivia	1,902	2,345	13.6	21.4	49.1	72.3
Brazil	2,613	-	22.4	-	64.5	-
Colombia	2,160	1,812	22.9	18.7	48.1	46.1
Costa Rica	2,344	1,961	26.9	20.5	61.3	55.7
Cuba	2,688	-	27.9	-	63.1	-
Chile	2,540	2,250	27.2	-	66.4	73.6
Ecuador	1,906	1,780	16.5	16.0	48.0	49.0
El Salvador	1,873	2,161	13.5	20.1	46.0	68.4
Grenada	-	1,610	-	15.8	-	43.8
Guatemala	1,972	2,048	12.2	12.1	49.7	51.0
Guyana	2,399	-	22.1	-	58.8	-
Haiti	1,896	-	4.9	-	46.5	-
Honduras	2,420	1,884	15.4	21.3	52.3	60.9
Jamaica	2,585[3]	-	26.2[3]	-	68.2[3]	-
Mexico	2,660	2,077	15.9	-	67.1	-
Nicaragua	2,314	1,986	19.1	-	64.4	-
Panama	2,429	2,091	26.9	-	65.4	62.2
Paraguay	2,776	2,350	37.1	32.8	71.4	65.5
Peru	2,194	2,133	19.6	-	57.1	59.0
Dominican Republic	2,143	1,634	19.6	-	48.5	44.6
St. Lucia	2,244[3]	1,684	24.0[3]	-	52.0[3]	51.4
Surinam	-	2,470	-	16.0	-	54.0
Trinidad and Tobago	2,442	2,948	28.3	36.4	66.8	82.5
Uruguay	3,105	3,259	73.0	-	108.2	116.0
Venezuela	2,524	1,523	26.9	17.0	63.8	59.4

(1) La alimentación en América Latina dentro del contexto económico regional y mundial. ECLA, preliminary version, August 1974 (1970 data).

(2) Local consumption surveys

1952 Surinam
1960 Peru (INN)
1962 Uruguay (ICNND)
1963 Bolivia (ICNND)
1965 Colombia (INN), El Salvador (INCAP/ICNND), Paraguay (ICNND)
1966 Costa Rica, Honduras, Nicaragua
1967 Panama (INCAP/ICNND)
1969 Barbados (CFNI), Guatemala (INCAP/ICNND), Venezuela (INN)
1970 Trinidad & Tobago, Dominican Republic
1971 Ecuador (INNE)
1972 Grenada (CFNI)
1974 Chile (ECEN), St. Lucia (CFNI)

(3) CFNI-1973.

1.5 Factors Determining Nutritional Status

Simplified to a maximum, the factors determining nutritional status may be divided into three large groups: (1) availability of food to meet the needs of the population; (2) sufficient and balanced diet; and (3) appropriate utilization of food by the organism.

The availability of food depends on a number of circumstances related to agricultural livestock and fisheries production, such as soil quality, water, climate, rainfall, irrigation, land tenure, seeds and animal species, animal and plant diseases, fertilizers, and agricultural and fishing technology.

In analyzing the figures that show the changes that agricultural and livestock production in Latin America has undergone during the last 20 years, a persistent decrease in the growth rate of production is to be noted. Whereas the annual output growth rate between 1952 and 1962 was 3.2 per cent, which was slightly higher than the population growth rate of 2.8 per cent, during the period 1962-1972 the output growth rate averaged 3.1 per cent annually while the population growth rate in that period amounted to 2.9 per cent. However, the per capita production level was 2 per cent lower that that in the period 1952-1962.

It should be emphasized that animal diseases in the Region at present cause a significant loss of foodstuffs of animal origin. It has been estimated that in Latin America and the Caribbean area losses of animal products due to livestock diseases exceed 35 per cent of total production. This means a loss of 4.4 grams of animal protein per person/day, or 50 per cent of the present animal protein supply of the Region, estimated by FAO at 9 grams per person/day.

Another general feature that helps to define the framework in which agriculture production takes place in the Region is the low fertility of the land. In this situation, the Region uses 20 kg of fertilizers per hectare whereas Japan and the Netherlands use about 400 kg. With respect to the reserves of land it is estimated that 400-600 million hectares are available, i.e., an area six times greater than that at present used.

The consumption of food by the members of a family or of a community depends on other correlated economic or sociocultural factors. On the one hand, capital and employment and wage levels determine the purchasing power of the family unit; on the other, customs and food habits, beliefs and taboos about food, health and child rearing practices determine individual and family preferences and feeding practices.

In this regard it should be mentioned that in 10 countries the average annual per capital income is less than US$500 (Table No. 15). As is well known, the internal distribution of these average values is very unequal in the different countries, and therefore it may be assumed that there are large population groups whose income is extremely low.

Table No. 15

ANNUAL PER CAPITA INCOME - VARIOUS COUNTRIES IN THE REGION

1973

Country	Per capita income in US$ (1)
Argentina	1,136.9
Barbados	620.8
Bolivia	222.4
Brazil	500.3
Chile	801.9
Colombia	405.9
Costa Rica	645.3
Dominican Republic	464.1
Ecuador	337.5
El Salvador	310.0
Guatemala	442.9
Haiti	100.1(2)
Honduras	313.4
Jamaica	799.2
Mexico	738.7
Nicaragua	461.3
Panama	820.0
Paraguay	292.4
Peru	533.8
Uruguay	807.6
Venezuela	1,168.6
Latin America	617.7

(1) in 1970 dollars

(2) 1972

Source: Statistical Profile of Latin America.

Inter-American Development Bank

Furthermore, illiteracy rates range between 26 and 97.4 per cent and influence the prevalence of taboos and false beliefs about food in the community (Table No. 16).

Finally, there are a number of factors that hinder the proper utilization of the food consumed and cause losses of certain nutrients. Infectious and parasitic diseases are determining factors of malnutrition, not only as a result of poor absorption and loss of nutrients but also as a result of the loss of appetite which they cause and the frequent dietary restrictions to which patients are subject because of ignorance or mistaken feeding practices.

The importance of the foregoing is clearly brought out by the fact that only six countries in the Region have achieved an effective DPT vaccination level (60 per cent or more) and that in the remaining countries the DPT immunization level is below 59 per cent (Table No. 17). In the case of measles, the situation is even more dramatic, since in about half the countries the immunization level of the susceptible population is below 40 per cent (Table No. 18).

As for environmental sanitation, only 57 per cent of the population of the Region have water supply services, and more than 70 per cent lack sewage disposal services (Table No. 19).

1.6 Impact of Nutritional Problems on Economic and Social Development

In a study made in Jamaica in 1968, the direct cost of the loss of children's lives due to malnutrition (cost of pre- and postnatal care, rearing of the infant and even of burying it) was estimated at between US$110 and US$190 in the case of children who died before reaching five years of age. Taking these figures as a basis, the annual cost of the loss of the lives of children under five years of age in the Region would total US$110 million. These figures include only the excess mortality or preventable deaths of children under five years of age, which has been estimated by PASB at 768,000 if the death rates in Latin America and the Caribbean area in 1968 had been similar to those in the United States of America. However, this excess mortality of more than 2,000 deaths a day, at an approximate cost of US$300,000 per day, could have been prevented by programs for the prevention of malnutrition and infectious diseases.

Another serious obstacle to the educational and economic development of the countries of the Region are the serious sequalae of malnutrition in children that survive its adverse effects; they show manifest retardation in their physical growth, frequently accompanied by a reduced intellectual quotient that limits their learning capacity. Although most countries assign high priority to education, and allocate between 5 and 25 per cent of their total budget to this sector, these efforts are limited by the low scholastic performance of children with a background of malnutrition.

Table No. 16

LITERACY RATE - VARIOUS COUNTRIES IN THE REGION

Country	Literacy %	Year
Argentina	94.0	(70)
Barbados	97.4	(60)
Brazil	67.9	(70)
Bolivia	39.8	(71)
Colombia	78.5	(71)
Costa Rica	85.7	(63)
Chile	86.0	(70)
Cuba	97.0	
Ecuador	71.1	(72)
El Salvador	59.6	(71)
Guatemala	37.9	(64)
Haiti	26.0	(71)
Honduras	47.3	(61)
Mexico	76.2	(70)
Nicaragua	57.6	(71)
Panama	79.4	(70)
Paraguay	80.0	(70)
Peru	67.0	(70)
Dominican Republic	67.2	(70)
Uruguay	90.5	(63)
Venezuela	77.1	(71)

Source: Economic and Social Progress in Latin America. Annual Report 1972. Inter-American Development Bank

Table No. 17

NUMBER OF COUNTRIES AND POPULATION UNDER 5 YEARS OF AGE BY CATEGORIES, ACCORDING TO THE PERCENTAGE OF CHILDREN UNDER 5 YEARS OF AGE VACCINATED WITH DPT

(1972)

Category	No. of countries	Population under 5 years of age (in thousands)	Percentage[1]
I. 80% and more	2	1,197	4.1
II. 60 to 79%	4	3,853	13.1
III. 40 to 59%	7	18,262	62.1
IV. 20 to 39%	6	3,472	11.8
V. Less than 20%	3	2,621	8.9
Subtotal countries with data	22	29,405	100.0
Countries without data	3	17,942	37.9
Total	25	47,347	100.0

(1) Population of the countries in each category as a percentage of the population under 5 years of age of countries for which data are available

I	II	III	IV
Barbados	Chile	Bahamas	Ecuador
Cuba	Nicaragua	Colombia	Guyana
	Uruguay	Costa Rica	Honduras
	Venezuela	El Salvador	Jamaica
		Mexico	Paraguay
		Panama	Dominican Republic
		Peru	

V	No data available
Bolivia	Argentina
Guatemala	Brazil
Haiti	Trinidad and Tobago

Source: PAHO/WHO Department of Communicable Diseases, 1974

Table No. 18

NUMBER OF COUNTRIES AND POPULATION BY CATEGORIES ACCORDING TO THE POPULATION UNDER 5 YEARS OF AGE VACCINATED AGAINST MEASLES (1972)

Category	No. of countries	Population under 5 years of age (in thousands)	Percentage[1]
I. 80% and more	2	3,975	9.8
II. 60 to 79%	2	3,509	8.7
III. 40 to 59%	5	3,254	8.0
IV. 20 to 39%	2	11,184	27.6
V. Less than 20%	5	18,568	45.9
Subtotal countries with data	16	40,490	100.0
Countries without data	9	5,857	14.5
Total	25	47,347	100.0

(1) Population of the countries in each category as a percentage of the total population of the countries for which data are available.

I		II	III		V	
Chile	103.2	Guatemala	Costa Rica	43.3	Brazil	6.8
Peru	86.9	Argentina	Honduras	57.2	Ecuador	0.1
			Panama	56.2	El Salvador	19.2
			Uruguay	44.8	Haiti	0.7
			Venezuela	40.0	Paraguay	1.1

No data available

Bahamas
Barbados
Colombia
Cuba
Guyana
Jamaica
Nicaragua
Dominican Republic
Trinidad and Tobago

Source: PASB/WHO Department of Communicable Diseases, 1974

Table No. 19

POPULATION WITH WATER SUPPLY AND SEWAGE DISPOSAL SERVICES
IN THE COUNTRIES OF THE REGION

Country	Water supply service %	Sewage disposal service %
Argentina (79)	67	29
Barbados (75)	100	-
Belize (74)	57	3
Bolivia (74)	23	12
Brazil (73)	58	18
Chile (74)	70	32
Colombia (74)	61	41
Costa Rica (73)	72	16
Cuba (73)	53	26
Ecuador (74)	32	24
El Salvador (74)	53	15
Guatemala (74)	38	14
Guyana (74)	79	11
Haiti (74)	12	-
Honduras (74)	41	15
Jamaica (73)	88	-
Mexico (74)	57	26
Nicaragua (74)	54	12
Panama (74)	76	36
Paraguay (74)	9	6
Peru (74)	46	29
Dominican Republic (74)	54	19
Surinam (74)	68	21
Trinidad and Tobago (70)	96	50
Venezuela (73)	73	33

Source: PASB/WHO Department of Engineering and Environmental Sciences

A study recently presented at an international conference on malnutrition, national planning and development showed that the cumulative cost of a program of milk distribution for 100,000 children during the first two years of life would be between US$2.5 and US$5 million; that the value of the real benefits would be between US$25 and US$40 million (as a measure of the increase in the income of the adults generated by a program of food supplementation during the first two years of life); and that the value of the net benefit would be between US$20 and US$37.5 million. The estimated rate of return on the investment made to protect these human resources would be between 19 and 25 per cent.

The foregoing considerations clearly show that the various sectors involved in the development of a country directly suffer the impact of the nutritional problems of its population, and also that the factors determining such problems are especially present in the economic, agricultural, health and education sectors.

Therefore, there are two reasons for stating that, if it is desired to prevent and successfully control malnutrition and other deficiency diseases, this responsibility can not be vested solely in the health sector, and that coordinated multisectoral programs aimed at simultaneously eliminating the various determining factors must be undertaken.

2. HUMAN RESOURCES FOR NUTRITION

2.1 Availability

At present no country in the Region has a sufficient number of nutritionists/dietitians to effectively carry out its nutrition programs (Table No. 20). What is more, in many countries, the responsibilities assigned to these professionals are not in line with the training they have received, and therefore the programs do not make progress at the desired rate. Approximately 2,300 nutritionists/dietitians are working in the health services of 19 countries of the Region and, of these, 95 per cent are in Brazil, Chile and Colombia.

One hundred and sixteen medical nutriologists and physicians with nutrition training are working full time in nutrition institutes and the ministries of health in eight countries in the Region; in this regard, special mention must be made of Colombia and Venezuela, which have professionals assigned to the intermediate levels of the health structure.

2.2 Utilization

Specialized nutrition personnel are usually employed by public agencies of the health sector and by universities. In most countries the nutrition services are primarily concentrated in urban areas. Twelve countries have begun to recruit nutritionists/dietitians for the intermediate levels of their health structures.

Table No. 20

HUMAN RESOURCES IN NUTRITION AND EDUCATION AND TRAINING CENTERS

Country	Nutritionist/Dietitian university level			Dietitian non-university level			Postgraduate course in nutrition
	No.	Rate per 10,000 pop.	Schools	No.	Rate per 10,000 pop.	Schools	Schools
Argentina	-	-	3	-	-	-	-
Bahamas(5)	0	0	0	2	0	0	0
Barbados(5)	1	0	0	1	0	0	0
Belize	0	0	0	1	.08	0	0
Bermuda(5)	1	0	0	2	0	0	0
Bolivia	1	00	1(1)	24(2)	.05	-	-
Brazil	886	-	8	0	0	0	2
Colombia	147(3)	.06(3)	4	-	-	-	-
Costa Rica	7	0	0	3	0	0	-
Chile	645(4)	.63(4)	5	-	-	-	1
Dominica(5)	0	0	0	0	0	0	0
Ecuador	2	.00	1(1)	10	.02	-	-
El Salvador	5	.01	1	16	.04	0	-
Grenada(5)	0	0	0	0	0	0	0
Guatemala	11	.02	1	0	0	0	1
Guyana(5)	1	0.0	0	0	0	0	0
Haiti	0	0	0	0	0	0	0
Honduras	2	.008	0	1	.004	0	0
Jamaica(5)	7	.03	0	11	.06	0	1
Mexico	42	.00	2	-	-	-	4
Montserrat	0	0	0	1	.01	0	0
Nicaragua	6	.03	0	0	0	0	0
Panama	12	.08	0	1	.007	0	0
Paraguay	3	.03	0	-	-	0	0
Peru	5	-	-	266	.18	3	-
Puerto Rico	-	-	-	-	-	-	1

Table No. 20 (continued)

Country	Nutritionist/Dietitian University level			Dietitian non-university level			Postgraduate course in nutrition
	No.	Rate per 10,000 pop.	Schools	No.	Rate per 10,000 pop.	Schools	Schools
Dominican Republic	0	0	0	0	0	0	0
St. Kitts-Nevis and Anguilla(5)	0	0	0	0	0	0	0
St. Pierre and Miquelon							
St. Vincent(5)	0	0	0	0	0	0	0
St. Lucia(5)	0	0	0	0	0	0	0
Surinam(5)	0	0	0	3	0	0	0
Trinidad and Tobago(5)	3	0	0	14	0	0	0
Uruguay	-	-	1	-	-	-	-
Venezuela	458	0.38	3	-	-	-	3

(1) First graduation 1975

(2) 1969 data - Four-year Health Projections 1971-1975

(3) 1974. Personnel of the Instituto Colombiano de Bienestar Familiar. No data available on personnel of other sectors.

(4) 1974. Personnel of National Health Service. No data available on personnel of other sectors.

(5) Bosley, B. and E. Wagner: Human Resources Study in Nutrition, Dietetics and Home Economics - Caribbean Region. PAHO Report HP/AMRO-4207.1

Very little information is available about the working conditions of nutrition personnel in the countries of the Region. However, some national agencies report the following in this regard: (a) salaries and working conditions in institutes and universities are better than those in hospitals and other agencies of the health sector; (b) the physical facilities and the equipment of hospitals and health centers in semi-urban areas are unsatisfactory and receive little support from the central level; (c) means of transportation in rural communities are sometimes extremely limited; (d) nutritionists and dietitians receive inadequate support from the medical profession; (e) there are very few opportunities for continuing education programs and refresher programs in nutrition and dietetics; (f) in most cases there are no incentives in terms of promotion, salary increases or better working conditions for nutrition personnel; and (g) the responsibilities and functions of nutrition personnel are inadequately defined.

2.3 Education and Training

a) Nutritionists/Dietitians

As a result of a conference on the training of nutritionists/dietitians, held in Caracas in 1966 and sponsored by PASB/WHO, the former schools of dietetics were gradually converted into university level programs which are in the process of consolidation.

At present there are 30 schools of nutrition and dietetics in the Region, and the annual number of graduates varies from 10 to 50 per school. (Table No. 20). However, the schools face serious limitations because of lack of educational material and of suitably trained faculty members.

In recent years the quality of the curricula of most of the schools has been improved, but this process must be continued and their role in planning the development of human resources in nutrition must be analyzed. Account must be taken of the needs of the country as regards the number of nutritionists/dietitians, training of intermediate personnel that will help improve the effectiveness of nutritionists/dietitians, continuing education of graduates and the nutrition training of personnel of other sectors.

b) Medical Nutriologists

Brazil, Chile, Colombia, Guatemala, Puerto Rico and Venezuela have academic programs for the training of nutriologists which meet not only local needs but also requests from other countries in the Region.

c) Physicians with Training in Nutrition

Some countries such as Chile, Colombia and Venezuela are conducting nutrition courses for physicians consistent with their needs. The duration of these courses varies from six weeks to two months.

d) Post-basic Courses for Nutritionists/Dietitians

Brazil, Chile, Colombia, Puerto Rico and Venezuela have organized post-basic courses in the planning and administration of health services with emphasis on nutrition.

e) Nutrition or Dietetic Auxiliaries or Assistants

In order to improve the organization and management of food services in hospitals and other social welfare institutions, 11 countries in the Region are training intermediate level personnel in courses whose duration varies from two to six months. These courses are conducted according to the needs of each country.

f) Nutrition Training of Auxiliary Personnel for Primary Health Care Services

It is important to point out that the incorporation and development of the aspects of food and nutrition in health auxiliary training programs is deficient in most of the countries.

If it is borne in mind that the extension of primary health care services to increase coverage is the principal strategy of the health sector, the inservice education and training of this personnel has the highest priority.

3. FOOD AND NUTRITION PROGRAMS

3.1 Technical Nutrition Units

Generally speaking, there are technical nutrition units at the central level of the ministries of health in the countries of the Region but very little outreach to the intermediate and local levels, as part of the primary health care services.

Only a few of these technical units have established appropriate intra- and extrasectoral coordination arrangements that make for the active participation of the health disciplines and of other national agencies concerned with the solution of the food and nutrition problems of the population.

Thus the degree of development of the nutrition services of the ministries of health varies considerably between the various countries (Table No. 21). Some have established appropriate systems for the planning, management and evaluation of the nutrition activities that are integrated into the health program; others show weaknesses in the administrative process, especially with respect to the establishment and implementation of technical standards.

Table No. 21

TECHNICAL NUTRITION UNITS IN HEALTH STRUCTURES

(Information available by country)

Country	Organizational structure				Personnel	
					Central level	Intermediate level
Argentina	Ministry of Health		Nutrition Section		2 medical nutritionists	
	Ministry of Health	Salta Institute of Nutrition			2 nutritionists/ dietitians	
Barbados	Ministry of Health	National Nutrition Center			1 medical nutritionist 1 medical officer 1 nutritionist/ dietitian	
Bolivia	General Health Directorate	Department of Medical Services	Nutrition Division	Nutrition Education Food Supplementation Mothers' Club	1 medical nutritionist 4 nutritionists/ dietitians	5 nutritionists/ dietitians
Brazil	Ministry of Health	INAN			2 medical nutritionists 1 nutritionist/ dietitian	
	Ministry of Health	Pernambuco Nutrition Institute				

Table No. 21 (continued)

Country	Organizational structure				Personnel	
					Central level	Intermediate level
Chile	National Health Service	Health Promotion Sub-department	Nutrition Section	Food supplementation Epidemiological surveillance	3 medical officers 1 nurse 2 nutritionists 9 nutritionists/ dietitians	636 nutritionists/ dietitians
Colombia	Office of the President of the Republic	Colombian Institute of Family Welfare	Nutrition Sub-directorate	Research Applied Nutrition Education	12 medical nutritionists 33 nutritionist/ dietitians	26 medical officers 114 nutritionists/ dietitians
Costa Rica	Ministry of Health	Institute of Hygiene and Epidemiology	Nutrition Section		1 medical officer 1 nutritionist/ dietitian	
Cuba	Ministry of Health	Institute of Hygiene and Epidemiology	Nutrition Section			
Dominican Republic	Ministry of Health and Welfare		Nutrition Section			
Ecuador	General Health Directorate	Technical Department	National Nutrition Division National Institute of Nutrition	Nutrition in Health Institutional Food Services Research and Education	1 medical nutritionist 2 nutritionists/ dietitians	2 medical nutritionists 1 nutritionist/ dietitian
El Salvador	Ministry of Health		Nutrition Section		1 medical officer 3 nutritionists/ dietitians	
Guatemala	Ministry of Health	M.I. Health Department	Nutrition Section		1 medical officer 1 nutritionist/ dietitian	
Guyana	Ministry of Health		Nutrition Section		1 nutritionist/ dietitian	

Table No. 21 (continued)

Country	Organizational structure				Personnel	
					Central level	Intermediate level
Haiti	Department of Public Health and Population	General Directorate Technical Services	Division of Public Health, Preventive and Community Medicine	Nutrition Office	2 medical nutritionists 1 medical officer	
Honduras	Ministry of Health		Nutrition Section		1 medical officer 1 nutritionist/ dietitian	
Jamaica	Ministry of Health		Nutrition Section		1 nutritionist/ dietitian	9 nutritionists/ dietitians
Mexico	Ministry of Health	National Nutrition Institute	Nutrition Division		3 medical nutritionists 7 nutritionists/ dietitians	
	Ministry of Health	Coordinated Health Services	Nutrition Department Nutrition Section		5 nutritionists/ dietitians	13 nutritionists/ dietitians
Montserrat	Ministry of Education, Health and Social Welfare		Nutrition Section		1 nutritionist/ dietitian	
Netherlands Antilles	Ministry of Health		Nutrition Section		1 nutritionist/ dietitian	
Nicaragua	Ministry of Health		Nutrition Section			
Panama	Ministry of Health		Nutrition Section		1 medical officer 3 nutritionists/ dietitians	

Table No. 21 (continued)

Country	Organizational structure			Personnel	
				Central level	Intermediate level
Paraguay	Ministry of Health and Welfare	General Directorate Policy Setting Department	Nutrition Department	1 medical nutritionist 1 nutritionist/ dietitian (part-time)	2 nutritionists/ dietitians
Peru	Ministry of Public Health	General Directorate Special Health Programs	Food Directorate	2 medical officers 5 nutritionists/ dietitians	3 nutritionists/ dietitian
		National Nutrition Institutes	Institute of Nutrition	4 medical nutritionists 4 nutritionists/ dietitians	
Puerto Rico	Department of Health		Nutrition Section		
St. Kitts, Nevis, Anguilla	Ministry of Health and Education	Health Department	Nutrition Section		
St. Lucia	Ministry of Health and Education	Health Department	Nutrition Section		
St. Vincent	Ministry of Health		Nutrition Section		
Surinam	Ministry of Health		Nutrition Section	1 nutritionist/ dietitian	

Table No. 21 (continued)

Country	Organizational structure				Personnel	
					Central level	Intermediate level
Trinidad and Tobago	Ministry of Public Health		Nutrition and Metabolism Unit	Nutrition in Public Health Research	1 medical nutritionist 2 nutritionists/ dietitians	
			Nutrition Section	Food Supplementation	1 nutritionist/ dietitian	
Uruguay	Ministry of Health	Hygiene Division	Nutrition Department		3 medical nutritionists 5 nutritionists/ dietitians	
Venezuela	Ministry of Health and Social Welfare		National Nutrition Institute	Research Education Nutrition in Public Health Clinical Nutrition Center	← 45 medical officers →	23 nutritionists/ dietitians
	Ministry of Health and Social Welfare	Medical Care Division	Nutrition and Dietetics Department	Institutional Food Services		

A very few countries have officially included the nutrition component in their national health plans. This situation is to be explained in part by the complexity of the factors determining nutritional problems and the failure to recognize their impact on health problems. This prevents adequate consideration of nutrition aspects as part of health plans, in particular those for protecting mothers and children.

Nutrition activities in health programs for the control of cardiovascular diseases, diabetes and obesity are conspicuous by their absence in most of the countries and, generally speaking, are only undertaken as part of hospital care.

3.2 Surveillance of Nutritional Status

The food and nutrition information systems are insufficient and not always suitable. With the exception of eight countries in the Region in which knowledge about the nutritional status of the population has been updated, most of the countries rely on studies made in the period 1960-1964, which usually related to limited geographical areas of each country and whose results can therefore not be extrapolated to the country in general.

No country in Latin American and the Caribbean area has clearly defined methods for periodically and appropriately conducting epidemiological surveillance of the nutritional status of the population (Table No. 22).

3.3 Food Supplementation

Many of the countries have food supplementation programs aimed at the vulnerable groups of the population: mothers, preschool and school-age children that attend local health services, primary schools, and welfare institutions.

For the most part these programs are based on the importation of food donated by international (World Food Program) and bilateral agencies (USAID/CARE and CARITAS). Some use locally produced foods, including nonconventional foods (vegetable mixtures of high nutritional value).

However, coverages are still limited and administration is weak in many cases and in particular the education component is not integrated in such a way as to effectively contribute to the improvement of the food habits of the population.

Table No. 23 contains the information available on food supplementation programs in certain countries, and points up the absence of data on coverage levels.

Table No. 22

SURVEILLANCE OF THE NUTRITIONAL STATUS OF THE POPULATION

Antigua	Surveillance of children under 5 years of age through the health centers.
Chile	SINS (Subsistema de Información de Nutrición en Salud), 1973. The National Health Service tabulates the weight by age of the population under 6 years of age that attends its clinics. ECEN (Encuesta Continuada sobre el Estado Nutricional de la Población Chilena), 1974. CONPAN (Consejo Nacional para la Alimentación y Nutrición).
Costa Rica	Periodic anthropometric survey.
Dominica	Surveillance of children under 5 years of age through the health centers.
Guyana	Surveillance of children under 5 years of age through the health centers.
Montserrat	Surveillance of children under 5 years of age through the health centers.
St. Kitts, Nevis, Anguilla	Surveillance of children under 5 years of age through the health centers.
St. Lucia	Surveillance of children under 5 years of age through the health centers
St. Vincent	Surveillance of children under 5 years of age through the health centers.
Venezuela	Nutritional Diseases Report Form, 1974, prepared by the Institute of Nutrition (it is not part of the information system of the Ministry of Health).

Table No. 23

FOOD SUPPLEMENTATION PROGRAMS

Country	Preschool and unweaned children		Pregnant women and unweaned children		Schoolchildren		Adults		Welfare institutions	
	No.	% coverage	No.	% coverage	No.	% coverage	No.	% coverage	No.	% coverage
Bolivia (1972)	7,200	-	-	-	317,000	-	-	-	-	-
Colombia (1972)	530,737	-	147,827	-	1,540,325	-	189,452	-	-	-
Costa Rica	60,000	-	-	-	-	-	-	-	-	-
Chile (1974)	1,414,942	-	343,419	-	-	-	-	-	-	-
Ecuador (1972)	40,000	4	50,014	18	360,000	26	39,000	-	34,178	-
Mexico	18,000	-	45,000	-	-	-	-	-	10,150	-
Nicaragua	-	-	-	-	-	-	-	-	1041 esc - 93 C.S.	
Paraguay (1974)	7,785	-	3,641	-	13,768		-		-	
Peru (1972)	35,000	-	18,000	-	500,000	-	-	-	-	-
Venezuela (1974)	144,809	-	-	-	769,645	-	-	-	-	-

Vigorous efforts will be needed to change the emphasis of these programs, especially now that external food aid is being sharply reduced because of the difficulties facing the international agricultural surpluses market.

3.4 Nutrition Education

All the countries are carrying out nutritional information and extension activities, but they do not always have defined objectives and standards with respect to content, methodology and target groups.

There are still traditional educational programs in which little attention is given to food habits, local availability of foods, and especially to the limited purchasing power of the population groups whose nutritional needs are greatest.

Noteworthy is the fact that food supplementation programs as part of maternal and child and family health programs lack clear-cut policies for nutrition education activities that provide appropriate advice on the feeding of healthy or sick individuals.

3.5 Institutional Food Services

Few countries have proper standards for the administration and management of food services in such institutions as hospitals, sanatoriums, day care centers, or school lunchrooms.

Thus, very few institutions can serve as an example to the community and to patients of the importance of providing nutritionally balanced diets and of preparing foods under acceptable sanitary conditions.

This situation helps to prolong the period of hospital stay and to increase the operating costs of hospitals, and interferes with the proper use of these institutional resources in programs for the education and training of personnel in food and nutrition.

3.6 Fortification of Foodstuffs

A number of countries in the Region have enacted legislation on the fortification of foodstuffs with vitamins and minerals (Table No. 24). However, some of the existing standards do not define the minimum and maximum levels of nutrients that should be added to foods. Therefore, food producers have great freedom in this respect, with the result that the advantages this technical advance represents in the control of specific nutritional deficiencies is not obtained.

Sixteen countries in the Region have salt iodization programs. However, nine of these countries have not been able to effectively implement the program

Table No. 24

FOOD FORTIFICATION IN THE WESTERN HEMISPHERE
(per kilogram)

Country/Item	Thiamine mg	Ribo-flavin mg	Niacin mg	Iron mg	Calcium* g	Remarks
1. Argentina	-	-	-	-	-	(1)
2. Brazil	-	-	-	-	-	Enrichment of wheat flour and cassava with lysine
3. Belize	-	-	-	-	-	(1)
4. Bolivia	-	-	-	-	-	(1)
5. Canada						
Wheat flour	4.4-5.5	2.6-3.3	35-44	28-36	1.1-1.4	Enrichment not compulsory; labelling is compulsory when enrichment is applied
6. Chile						
Wheat flour	6.3	1.3	13	13	1.7	Enrichment compulsory; enriched wheat flour must be labelled as such
7. Colombia	-	-	-	-	-	(1)
8. Costa Rica						
Wheat flour	4.4-5.5	2.6-3.3	35-44	28-36	1.1-1.4	Enrichment compulsory; enriched wheat flour must be labelled as such (at cost of consumer)
9. Cuba	-	-	-	-	-	(1)
10. Dominican Republic						
Wheat flour	4.4-5.5	2.6-3.3	35-44	28-36	1.1-1.4	Enrichment of wheat flour and rice compulsory
Rice	4.4	2.6	35	28	-	
11. Ecuador	-	-	-	-	-	(1)
12. El Salvador						
Wheat flour	4.4	2.6	35	28	1.1	Enrichment compulsory (at cost of consumer)
13. Guatemala						
Wheat flour	4.4	2.6	35	28	1.1	Enrichment compulsory (at cost of private industry)

Table No. 24 (continued)

Country/Item	Thiamine mg	Ribo-flavin mg	Niacin mg	Iron mg	Calcium* g	Remarks
14. Haiti						
Wheat flour	Yes	Yes	Yes	Yes	Yes	Enrichment of wheat flour; no legislation
15. Honduras						
Wheat flour	4.4	2.6	35	28	1.1	Enrichment compulsory (80% at cost of private industry, 20% at cost of consumer)
16. Mexico						
Wheat flour	4.4-8.8	2.6-5.2	35-70	28-57	-	Enrichment compulsory
17. Nicaragua						
Wheat flour	4.4	2.6	35	28	1.1	Enrichment compulsory if used in production of bread
18. Panama						
Wheat flour	4.4	2.6	35	28	1.1	Enrichment compulsory if used in the production of bread (at cost of consumer)
19. Paraguay	-	-	-	-	-	(1)
20. Peru	-	-	-	-	-	Only protein enrichment of food products
21. Puerto Rico						
Wheat flour	4.4-5.5	2.6-3.3	35-44	28-36	1.1-1.4	Enrichment of wheat flour and rice compulsory
Rice	4.4	0.7	35	28	-	
22. Surinam	-	-	-	-	-	(1)
23. United Kingdom						
Rice flour	2.4	-	16	16	-	Enrichment compulsory
24. United States of America						
Wheat flour	4.4-5.5	2.6-3.3	35-44	28-36	1.1-1.4	Enrichment not compulsory
Corn meal and grits	4.4-6.6	2.6-4.0	35-53	28-57	1.1-1.7	Enrichment not compulsory
Rice	4.4-8.8	2.6-5.3	35-70	28-57	1.1-2.2	Enrichment not compulsory
Macaroni and noodle products	8.8-11.0	3.8-4.9	60-75	28-36	-	Labelling is compulsory when enrichment is applied

Table No. 24 (continued)

Country/Item	Thiamine mg	Ribo-flavin mg	Niacin mg	Iron mg	Calcium* g	Remarks
25. Uruguay						
Wheat flour	Yes	Yes	Yes	Yes	Yes	Enrichment not compulsory (at cost of private industry and consumer)
26. Venezuela						
Wheat flour	4.2	2.5	30	26	-	Enrichment not compulsory (at cost of private industry and consumer)
27. West Indies						
Wheat flour						Enrichment not compulsory
Antigua	4.4-5.5	2.6-3.3	35-46	28-36	1.1-1.4	Imported flour enriched
Barbados						Some imported flour enriched
Dominica						Imported flour enriched
Grenada						Imported flour enriched
Guyana						Imported flour enriched
Jamaica						Imported flour enriched
Montserrat						Imported flour enriched
Nevis						Imported flour enriched
St. Kitts						Imported flour enriched
St. Lucia						Imported flour enriched
St. Vincent						Imported flour enriched
28. Trinidad and Tobago	4.4-5.5	2.6-3.3	35-46	28-36	1.1-1.4	Enrichment compulsory

*Calcium fortification optional in all countries

(1) No enrichment program

Source: Guidelines for Food Fortification in Latin America and the Caribbean - Report from PAHO Technical Group Meeting, PAHO Scientific Publication 240, 1972.

for the control of endemic goiter because of technical and administrative problems, and quantifiable information is not available on the present coverage of the salt iodization program, a simple and effective measure for the control of this endemic disease.

In a number of countries the enrichment of wheat flour with iron and B complex vitamins is compulsory while in others it is optional. Projects for the fortification of sugar with vitamin A are being carried out in other countries.

3.7 Food Mixtures

The growing development of food industries in the Region is making an effective contribution to the improvement of storage and distribution systems and, in this way, more good quality food is becoming available to the population. However, the price of the food is still beyond the reach of large population groups. Furthermore, the coverage of food fortification projects is still limited.

To solve the serious problem involved in the limited availability and low consumption of proteins by the most vulnerable groups of the population, whose economic and social level is low, some countries of the Region are carrying out programs for the production of vegetable mixtures with a high protein content that are well accepted and low priced (Incaparina, Bienestarina, Duryea, Acamil). However, the coverage of these programs is still limited.

Chile, Colombia, Guatemala and Mexico have developed low-cost, highly nutritious food formulas, primarily for infant feeding, and it is hoped that they will shortly go into large-scale industrial production.

Bolivia, Ecuador and Haiti are also developing three new products, the production of which will begin shortly.

Table No. 25 shows the situation with respect to the development of these foods in some countries of the Region, but the information needs to be completed with up-to-date figures of production, cost, coverage, etc., since this is another promising program within the framework of technological and industrial integration.

Special consideration should be given to the marketing of new products, since earlier experiments in which this component was not properly planned were unsuccessful.

4. NUTRITION RESEARCH

In the last two decades important studies have been carried out in the Region on the epidemiological and clinical aspects of nutritional problems and on effective methods of controlling them (Table No. 26).

Table No. 25

HIGHLY NUTRITIONAL NONCONVENTIONAL FOODS

Country	Product	Production/year Metric tons
Bolivia	MAYSOY	(project)
Colombia	COLOMBIARINA	120 (1972)
	BIENESTARINA	100 (1973)
		5,000 (1975)
Chile	FORTESAN	10,800
	SUPERCHIL	1,200
	FORTALIN	1,000
	NUTRILAC/LACTO-DA	400
Ecuador	LECHE AVENA	800 (1975)
		4,000 (1976)
Guatemala	INCAPARINA	1,600
Haiti	ACAMIL	(project)
Mexico	NUTRINPI	

Table No. 26

NUTRITION RESEARCH

Argentina	- Nutrition Survey NOA
Barbados	- Survey of the nutritional status of the population, 1975 (continuation of the National Survey 1969)
Bolivia	- Endemic goiter and cretinism - Effect of iodine deficiency on the mental capacity of children and its correction by means of iodized oil - Protein-calorie malnutrition in children under five years of age
Chile	- Continuing survey of the nutritional status of the population (ECEN)
Colombia	- Nutrition and mental development
Ecuador	- Endemic goiter and cretinism and its prevention by means of iodized oil
Mexico	- National Nutrition Survey
Peru	- Endemic goiter and iodized oil in its prevention - Nutrition survey
Venezuela	- Prenatal iron supplementation - Evaluation of the endemic goiter prevention program - Prevalence of malnutrition in preschool children - Detection of diabetes mellitus in adults - Epidemiological study of nutritional diseases - Food consumption surveys - Composition and digestability of pulses and effect of processing - Possibility of using some pulses and protein concentrates in the preparation of widely accepted protein foods - Composition and use of maize varieties that have a high lysine content - Fortification of maize floor with soybean flour - Chemical analysis of the most widely consumed foods - Availability of iron in foods for human consumption - Possible association of the selenium content of foods and public health problems

At present a number of countries are conducting research relating to protein-calorie malnutrition in children under five years of age.

One Caribbean country, with the assistance of CFNI, is making a study of the effectiveness of nutrition education in rural areas.

With respect to endemic goiter, Bolivia and Ecuador are making studies of salt iodization and the intramuscular administration of iodized oil and its effect on the control of goiter.

A complete analysis of the effectiveness of the hypovitaminosis A control program, based on the enrichment of sugar with vitamin A, is being conducted by INCAP in five countries in the Central American area.

In recent years important studies have been undertaken in five countries of the Region for the purpose of establishing the relations between protein-calorie malnutrition and the mental development of children under 15 years of age. As a result of the interest investigations of this type have awakened, there has been an increased demand in the Region for training of Latin American scientists in aspects relating to this subject.

With respect to cardiovascular diseases, diabetes and obesity, very little information is available at the country level; consequently few nutrition activities relating to the prevention and control of these diseases have been incorporated into health programs.

In the field of foodstuffs, important studies are being undertaken in various countries of the Region. These studies deal with the improvement of the protein of some cereals, the development of highly nutritious, low-cost vegetable mixtures, and the fortification of basic foods with vitamins, minerals and proteins.

Mention must also be made of the fact that, according to the foregoing consideration, there are large gaps in our knowledge about the prevalence of certain diseases and of the methods of controlling them, and therefore this field of research needs to be strengthened and fostered.

At present, research groups must review their objectives, exchange experiences through a continuing flow of scientific information and, in particular, give special attention to the application of scientific and technological knowledge to the solution of food and nutrition problems that are hindering the economic and social development of the Region.

Basically what is required is to focus research on those areas in which the findings can be immediately applied to the solution of problems.

In so far as an appropriate balance is achieved between basic and operational research, nutrition programs can count on elements or interventions that ensure effectiveness and efficiency.

5. FOOD AND NUTRITION POLICIES

Activities to prevent undernourishment and malnutrition and to ensure the appropriate nutritional status of the population call for the simultaneous participation of the public and private sectors.

If initiation and operation of the various programs relating to food and nutrition in Latin America and the Caribbean area are analyzed, it may be seen that in the past they have not been in line with the development of previously established policies at the national level, nor have they been aimed at satisfying the nutritional needs of the population.

However, it must be recognized that, in the past decade, a clear awareness has been growing that it is necessary to formulate and execute in each country a clear-cut national food and nutrition program as the basis for the necessary coordination of the various sectoral plans relating to these fields, and that coordinated action makes it possible to deal simultaneously with the complex factors determining the problem and thus to obtain a more comprehensive solution.

Within the general framework of these policies, objectives are established for the measures the government must take to encourage the production of foodstuffs; to import or receive in the form of external aid the foodstuffs indicated by internal conditions; to protect specific population groups; to conduct research; to educate consumers in the area of food and nutrition; and to educate and train the human resources necessary for executing the programs.

Beginning in 1971, some countries in the Andean area, Central America and the Caribbean initiated activities with international assistance;[1] progress has been made in studying food and nutrition problems, their determinants and the resources available for tackling them, with a view to formulating and implementing policies that satisfy the nutritional requirements of the population.

These countries have set up multidisciplinary and intersectoral working groups that have prepared preliminary documents on the subject. As a general rule, these groups are attached to or coordinated by the national planning units (Table No. 27).

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[1] Inter-agency Project for the Promotion of National Food and Nutrition Policies (PIA/PNAN)

Table No. 27

NATIONAL FOOD AND NUTRITION POLICIES (NFNP)

Country	Implementation Mechanisms		
	Agency responsible	Work done	
		Formulation NFNP	Approval NFNP
Bolivia	Transitional committee, Ministry of Health (January 1975)	-	-
Brazil	National Institute of Nutrition (30 November 1972)		
Chile	CONPAN, National Food and Nutrition Council (November 1974)	-	-
Colombia	Population and Nutrition Division National Planning Department (November 1975)	Yes	Approved by National Economic and Social Policy Council, March 1975
Ecuador	Higher Council for National Food and Nutrition Policy (proposed establishment May 1974)	-	-
Guyana	Ministry of Health		
Jamaica	Advisory Council on Nutrition (1974-1975)	Yes	
Paraguay	Proposed Planning of National Food and Nutrition Policy National Planning Secretariat (September 1974)		
Peru	Ministry of Food (August 1975)	-	-
St. Lucia	National Nutrition Committee (1974-1975)	Yes	-
United States of America	Special Senate Committee on Nutrition and Human Needs (93rd Congress)	Yes (1974)	

Jamaica, Colombia and Costa Rica have formulated policies that are being translated into national food and nutrition plans; these emphasize the protection of the more vulnerable groups of the population.

6. CONCLUSIONS

6.1 As a general rule, the information on the food situation and on the nutritional status of the population is incomplete, out of date, and unrepresentative, which seems to indicate that there are trends that do not necessarily correspond to local conditions in all the countries.

6.2 However, the availability and consumption of calories and protein is obviously less than that recommended in various countries. It can therefore be stated that there are surely large population groups whose nutritional status is borderline or substandard.

6.3 Protein-calorie malnutrition, nutritional anemias and endemic goiter continue to be highly prevalent problems in several countries, thereby lowering the collective health and welfare levels.

6.4 In some countries the present nutrition structures at the central, intermediate and local levels do not appear to exercise sufficient leadership in guiding and channeling resources in the planning, execution and evaluation of food and nutrition programs.

6.5 There are nutrition structures without the necessary program coordination to enable them to act on the basis of common objectives and complementarity of resources both in the health sector and in the other related sectors.

6.6 Hardly any countries have nutritional surveillance systems for regularly providing the up-to-date information required for the planning, execution and evaluation of programs geared to the actual needs of each country.

6.7 There is a lack of information about the quantity and quality of human resources in food and nutrition and their relation to the present nutrition needs of each country.

6.8 Centers for the education and training of professional personnel in nutrition do not have sufficient teaching, bibliographic or educational resources.

6.9 Food supplementation and nutrition education programs do not establish priorities in selecting target groups, have limited coverage, and do not include educational activities adequate to existing food problems.

6.10 Food fortification is almost entirely limited to salt iodization, and reaches effective coverage levels in hardly any of the countries and especially in those in which the problem of endemic goiter is high.

6.11 Despite the fact that valuable studies of non-conventional feeding formulas have been made, few countries have reached the stage of actual production or marketing of these products.

6.12 Nutrition research has made praiseworthy progress in understanding the physiopathological mechanisms of malnutrition and its consequences, but additional efforts are needed to find feasible solutions that can be applied in the short term.

6.13 With respect to national food and nutrition policies and plans, the advances made in some countries will make it possible gradually to use the methods developed and applied throughout the Region.

In this task, national efforts can be supplemented by bilateral and international technical assistance.

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