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**NUTRITION PROMOTION AND PROTECTION PROGRAMME:
PERSPECTIVES TO THE YEAR 2000**

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EXECUTIVE SUMMARY

In the English-speaking Caribbean countries, considerable progress has been made in the last thirty years in the nutrition and health of young children. During this period infant and child mortality, of which malnutrition was one of the major contributors, declined dramatically. Severe cases of malnutrition such as kwashiorkor and marasmus are not seen frequently. Malnutrition which affected a large percentage of children in the 1960s and before is now found in about 2-18 per cent of children. The undernutrition that persists is not widespread in most of the countries, but is found in 'pockets' and in special at-risk groups.

While the nutritional status of young children has dramatically improved, it is being increasingly recognized that in CFNI member countries a large proportion of adult population suffers from obesity - a condition mostly associated with increased caloric intake and a sedentary life-style. It is not surprising that these countries also report a very high rate of mortality and morbidity, due to nutrition-related chronic diseases such as diabetes, high blood pressure, heart attack, stroke and some forms of cancers.

A large proportion of the population, particularly pregnant and lactating women and preschool children, also suffer from iron deficiency anaemia - some of which are of a severe degree and at times life threatening.

While there are management issues in the nutrition promotion and protection of the population which needs serious consideration, most of the problems are preventable. CFNI proposes that in all three problem areas emphasis should be placed on the community level management, embracing policy decisions as well as the development of tools, systems and procedures, adequate training of staff and full participation of the people.

Recognized needs in the area of undernutrition in young children are decentralization of information processing, decision-making, targeted intervention and accountability for action which needs to be shifted more to the peripheral level of the system. This requires reorganization of the system and reorientation of the staff, some of which have already been initiated and are being implemented.

Since a large percentage of pregnant women do attend clinic, the problem can be ameliorated to a great extent by strengthening the clinic management through close surveillance and proper iron therapy. A long-term solution through nutrition education of the public and fortification of foods with iron, needs to be given close consideration.

Obesity and related chronic diseases are a major problem area where systematic and concerted efforts in the proper management of cases and their secondary prevention, particularly through non-drug therapeutic measures are of immediate concern. However, urgent attention is also needed for their primary prevention through the adoption of positive health life-styles by the population, beginning early in school age children and a massive public education campaign.

In all these areas enough knowledge is available on "What to do", but a variety of operational research is needed to understand the process of "How to do it" within the constraints and facilitating conditions of the Caribbean countries.

NUTRITION PROTECTION AND PROMOTION PROGRAMME OF CFNI, PERSPECTIVES FOR THE YEAR 2000

INTRODUCTION

Adequate nutrition is essential for the health of the individual, for collective productivity and for the social well-being. Nutrition, health and national development are, thus, inseparable.

Considerable progress has been made in the last thirty years in the nutrition and health of young children in the English-speaking Caribbean countries. During this period, infant mortality rates declined from 80-150 to 10-41 per thousand live births (Appendix Figs. 1 & 2). Mortality rates for children 1-4 years also declined sharply from 6-37 to 0.7-2.8 per thousand population (Appendix Fig. 3). The major biomedical factor responsible for this decline has been the reduction in mortality due directly or indirectly to malnutrition, gastroenteritis, respiratory and other infections. In some countries these diseases were responsible for as high as 75% of deaths of children under five years of age in the mid-1950s. In the mid-1980s, however, they accounted for not more than 5-10% of the total deaths in that age group.

Those biomedical determinants were greatly influenced by the changes, mostly distributive in nature, in the social, political, economic, cultural and demographic factors. Examples of such changes are political independence from colonial rule and mass consciousness in health education and welfare matters leading to substantial expenditure of government revenues on health education and other social services; increase in the number of years of schooling including that of the female population; a substantial degree of female autonomy; a considerable improvement in environmental sanitation and extensive expansion and utilization of health services, particularly for the care of mothers and children; a near normal national food availability and greater awareness about food and nutrition at all levels - policy, executive and community; massive immigration, decline in birth rate and the slow rise in population, resulting in low population pressure on the resources and services [1].

Despite these positive changes, food and nutrition remains a public health problem. The magnitude and the nature of the problem, of course, have changed. Malnutrition in young children is not as prevalent today as it was in the 1960s and persists in specific geographic 'pockets' and in those at high social and biological risk. The only nutritional deficiency disease which persists today in a large segment of the population, particularly pregnant women and preschool children, is iron-deficiency anaemia. Vitamin and other mineral deficiencies are not as major a public health concern as in former years.

While the nutritional status of young children has dramatically improved, more and more countries of the Caribbean are now discovering that a large percentage of their adult population is obese - a condition mostly associated with increased caloric intake and sedentary life-style. In some

countries over half the adult female population is reported to be obese. It is not surprising that these countries also report a very high mortality and, in some cases one of the highest in the world, due to nutrition-related chronic diseases such as diabetes, hypertension, ischemic heart diseases, stroke and some forms of cancer [2].

Obviously, food and its economic, social and biological ramifications are important to nutritional health of the population, but food in itself may not produce better nutrition and needs to be supplemented by direct nutrition intervention activities. To meet its present and future challenges, in addition to its management and coordination activities, CFNI has subdivided its technical cooperation activities into two broad components:

- a) Food availability and consumption, and
- b) Nutrition promotion and protection

This paper deals with the nutrition promotion and protection programme of CFNI.

2. SITUATIONAL ANALYSIS

2.1. MALNUTRITION IN CHILDREN UNDER FIVE YEARS OF AGE

Based on available data it is clear that protein-energy malnutrition, and vitamin and mineral deficiencies, were major public health problems in the Caribbean before the 1960s [3,4].

Systematic data on malnutrition became available during the 1960s. Several studies were carried out using comparisons of weight-for-age of children in the countries of the Caribbean with the "Harvard Standard" as the major criterion for classifying different levels of malnutrition. From results of some of the surveys it is evident that a very large percentage of children at that time fell below the Harvard 3rd Centile and were considered malnourished [5-10].

Nutritional Status in the 1970s and Early 1980s

Much attention was focussed on malnutrition in children during this period. CFNI was established in 1967 and in cooperation with the governments of the region has carried out several national food and nutrition surveys [11-19]. While the surveys are not strictly comparable, they were all done on randomly selected national samples and threw ample light on the contemporary situation (Table 1). With the exception of a few instances it appears that the highest prevalence of malnutrition based on weight-for-age assessment* occurs around the second and third years of life. However, in general severe malnutrition which requires hospitalization is most common in children in the weaning age group (6-24 months).

*Weight-for-age does not take height into account, therefore this classification can include children with a past history of malnutrition as being currently malnourished and a few rare

**TABLE 1: PREVALENCE OF MALNUTRITION (LESS THAN (80% OF HARVARD STANDARD)
IN CHILDREN AGED 0-59 MONTHS IN NATIONAL SURVEYS, 1970-85**

COUNTRY	YEAR	TOTAL NO. OF CHILDREN WEIGHED	PER CENT OF CHILDREN BELOW 80% OF HARVARD STANDARD OF WEIGHT-FOR-AGE
Barbados	1968	248	16.5
	1975	3,707	10.2
	1985	610	8.8
Jamaica	1970 [A]	490	19.4
	1978	2,920	14.3
	1985	2,886	14.6
Guyana	1971	964	36.7
Saint Lucia	1974	372	17.0
St. Christopher-Nevis	1977	-	27.4
Antigua	1981	426	13.7

A = 0-48 months only.

Source: National Food and Nutrition Surveys carried out by CFNI and the countries since 1970.

• Patterns of Malnutrition in the Mid-1980s and Future Trends

From the data available it is evident that malnutrition in children has been slowly and steadily declining. In some countries of the region, reports indicate that there is almost no malnutrition of a public health magnitude in children under 5 years of age (Table 2) [20].

TABLE 2: PREVALENCE OF MALNUTRITION IN PRE-SCHOOL CHILDREN
(0-4 YEARS) IN SOME CARIBBEAN COUNTRIES

COUNTRY	YEAR	PER CENT OF CHILDREN BELOW 80% OF STANDARD WEIGHT FOR AGE
Antigua & Barbuda [B]	1984	7.7
Bahamas [B]	1986	2.1[C]
Barbados [A]	1981	8.8
British Virgin Islands [B]	1984	5.9
Cayman Islands [B]	1979	2.2
Dominica [B]	1986	4.2
Guyana [B]	1987	24.3
Jamaica [A]	1985	14.6
Montserrat [B]	1984	5.1
Saint Lucia [B]	1985	8.0
St. Christopher-Nevis [B]	1984	13.3
St. Vincent and the Grenadines [B]	1986	9.7
Trinidad & Tobago [B]	1985	9.9

[A] = National Survey data

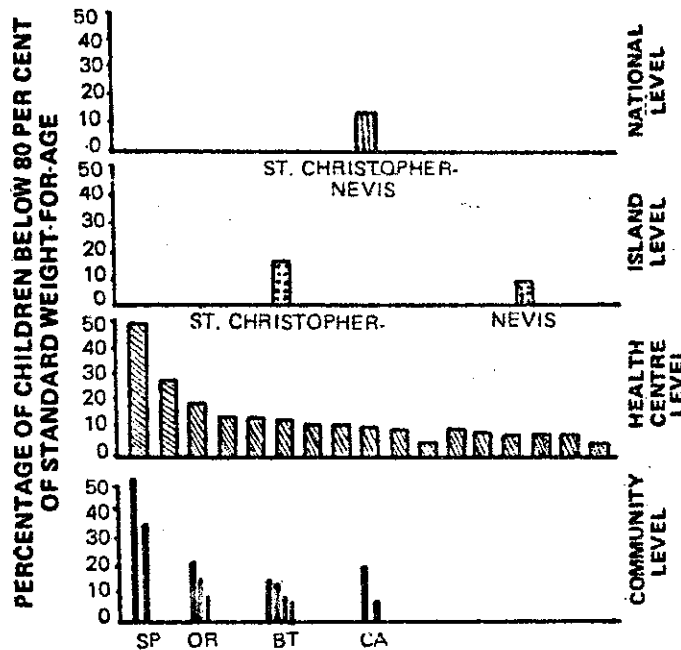
[B] = Clinic data only

[C] = Gomez Classification

The malnutrition that persists is not endemic throughout the countries and appears to be located in geographic pockets in each country [1]. For example, in St. Christopher-Nevis, of the children who attended clinic in 1984, 13.3% were malnourished. The situation in Nevis was a little better than that in St. Christopher. However, from clinic records in St. Christopher, 3 of the 11 health centres reporting about 50% of the children to be malnourished, served two communities. In one of these, more than 50% of the children were found to be malnourished (Fig. 1). Although, in general, the coverage of children who attend clinics in St. Christopher-Nevis is reported to be very high, specific data on the coverage, provided by those three clinics, are not available. Thus, the data should be viewed with caution.

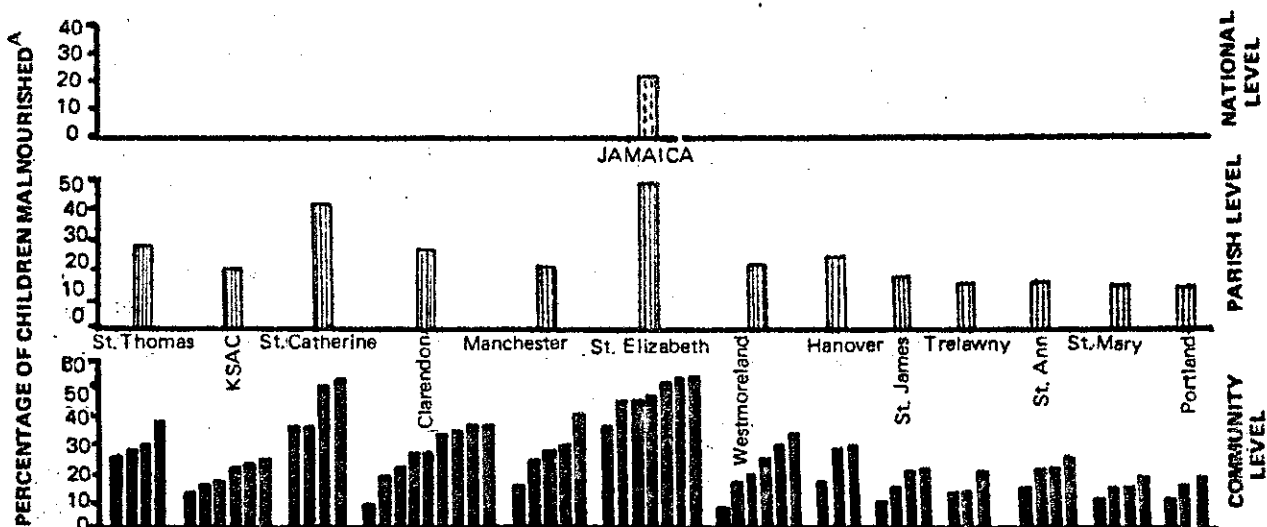
A similar picture can be seen in several other countries of the Caribbean (Figs. 2,3).

FIGURE 1: MALNUTRITION IN ST. CHRISTOPHER-NEVIS, 1984, AGGREGATED AND DISAGGREGATED DATA SHOWING POCKETS OF MALNUTRITION



Source: Sinha, D.P., Patterns of Malnutrition in the Caribbean

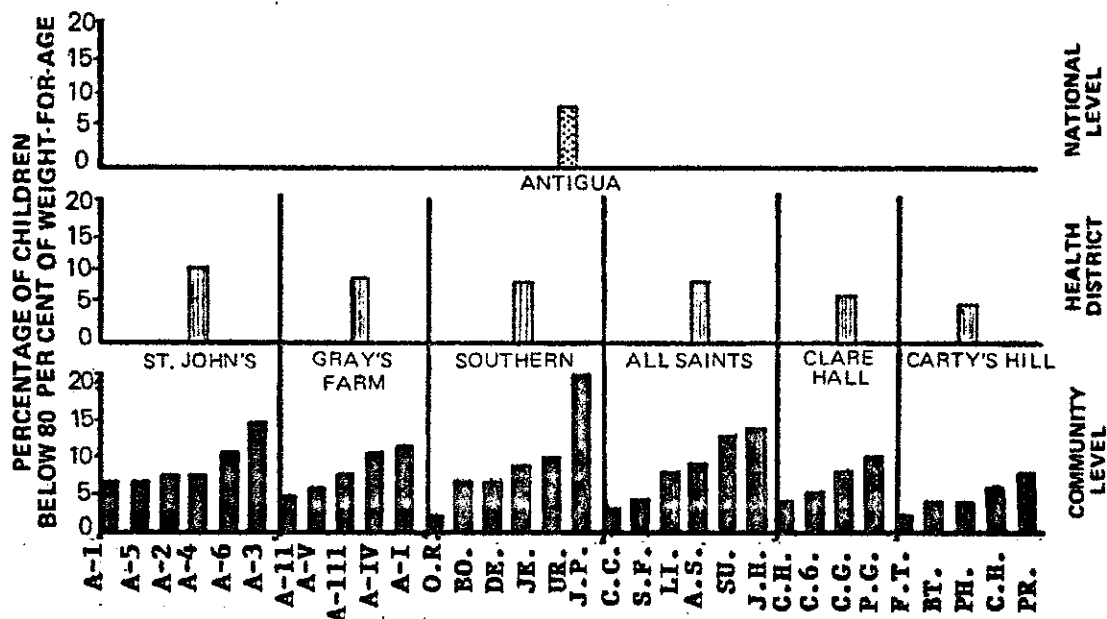
FIGURE 2: MALNUTRITION IN JAMAICA, 1985 NATIONAL SURVEY, AGGREGATED AND DISAGGREGATED DATA SHOWING POCKETS OF MALNUTRITION



A = Malnutrition = per cent Gomez 1+11+111-16%

Source: Fox, K. and Ashley, D. Report of a Survey of Health Status of Children less than 10 Years in Jamaica, 1985

FIGURE 3: MALNUTRITION IN ANTIGUA, 1984*, AGGREGATED AND DISAGGREGATED DATA SHOWING POCKETS OF MALNUTRITION



*Data on children who attended clinic in 1984.

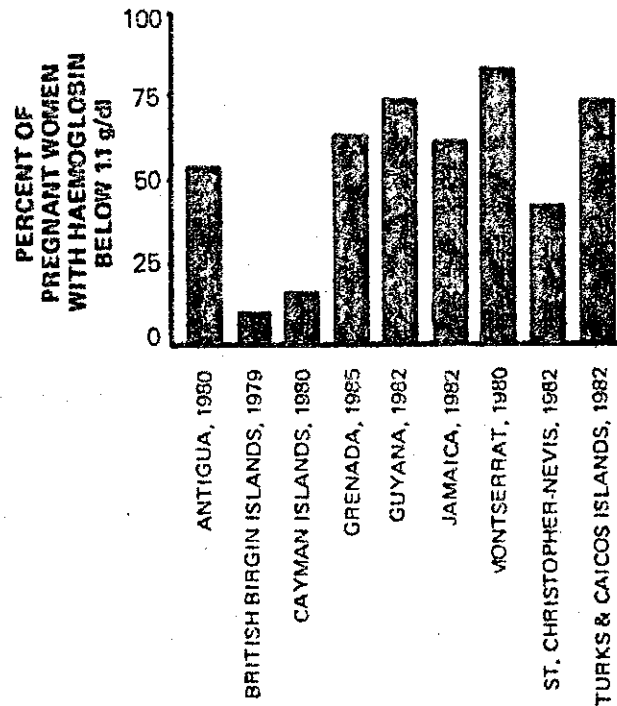
Source: Sinha, D.P. Patterns of Malnutrition in the Caribbean

2.2. ANAEMIA AND OTHER NUTRITIONAL DEFICIENCY DISEASES

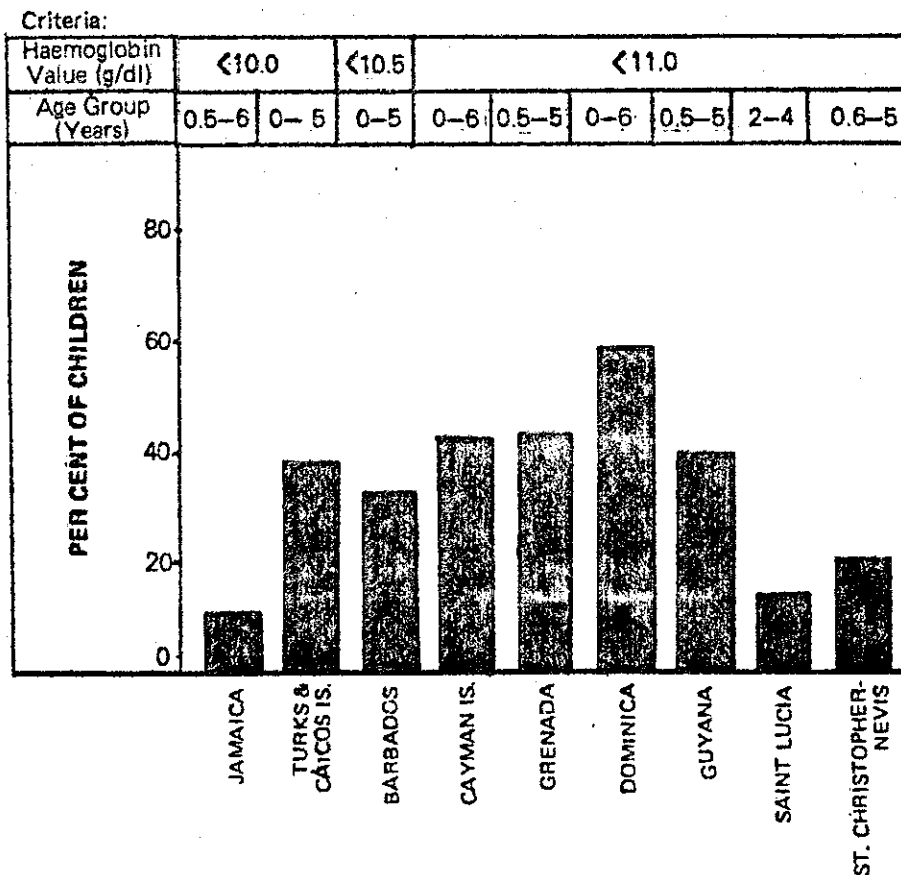
While sequential data on the prevalence of major vitamin and mineral deficiencies are not available over the last thirty years, earlier reports such as the B.S. Platt's Report in 1946 recorded cases of Pellagra (niacin deficiency), Keratomalacia and Bitot's spot (vitamin A deficiency), hypo-riboflavinosis (vitamin B2 deficiency) and extreme anaemia (mostly due to lack of iron). Prevalence of rickets (vitamin D deficiency) and scurvy (vitamin C deficiency) were reported as rare or low [3].

Vitamins A, C, D, and niacin deficiency have not been reported in significant numbers in the recent past and are believed not to exist in the Caribbean. Minor degrees of riboflavin deficiency are suspected but have not been fully substantiated.

On the other hand, severe degrees of anaemia, mostly iron deficiency, still persists in very large population segments in all countries of the region. In fact, the data shows that pregnant and lactating women (Fig. 4) [21], and preschool children (Fig. 5) [22-23], are particularly affected. Additionally, haemoglobin levels of 8 g/dl of blood and below are not infrequent findings, and in one study in Grenada 60% of the children were found to have serum ferritin (storage form of iron) below 12/microgram/litre - a sign of iron deficiency anaemia [23].

FIGURE 4: PREVALENCE OF ANAEMIA DURING PREGNANCY IN NINE COUNTRIES

*Measurement of haemoglobin at first clinic visit, mostly around 12 to 16 weeks of pregnancy.
 Source: Simmons, W.K. Nutrition Anaemia in Ante-Natals in the English-Speaking Caribbean, CFNI, 1985.

FIGURE 5: PREVALENCE OF ANAEMIA IN YOUNG CHILDREN

Source: Simmons, W.K. and Gurney, J.M.G. Am. J. Clin. Nut., 35; 327, 1982.

2.3. OBESITY IN ADULTS AND RELATED CHRONIC DISEASES

Scientists have clearly shown that eating too much, leading a sedentary life-style and becoming fat is as harmful to health as eating too little and becoming undernourished. They have discovered that fat people not only have a shorter life-span than those within normal limits, but they are much more prone to diabetes, high blood pressure, heart attack, chronic lung diseases and many other physical, social and emotional disorders. Many of these conditions have also been reported to be greatly alleviated by merely reducing body fat and other non-drug therapeutic measures. Needless to say that the genetic predisposition to some of these diseases makes them difficult to achieve a complete amelioration.

Since the late 1960s, a very high prevalence of obesity has been shown, particularly among adult women in the Caribbean. The National Food and Nutrition Survey of Barbados shows that 7% males and 33% females above 15 years of age were obese in 1969 [10]. Twelve years later, in 1981, the comparative figures for males and females were 16 and 38 per cent respectively [11]. From the 1981 survey it is also evident that obesity in females started fairly early in life - 20% of girls ranging from 10-14 years of age were obese. Fifty per cent of those between 35 and 64 years of age were obese (above 120% of standard weight-for-height) and within this group 27% were grossly obese (above 140% of standard).

Similarly high figures for obesity, particularly in adult females, have been found in Guyana, 1971 [15]; Saint Lucia, 1974 [16]; Antigua, 1981 [18]; Dominica, 1981 [24] and British Virgin Islands, 1984 [25] (Table 3). Hospitals have consistently reported very high admission rates for diabetes, high blood pressure, ischemic heart disease and stroke. National mortality statistics indicate that diseases of the heart, high blood pressure, cerebrovascular disease (stroke), malignant neoplasm (cancers) and diabetes are among the 5 leading causes of death in almost all English-speaking Caribbean countries over the last 15-20 years [2]. In some cases the rates have been reported to be the highest in the world (Table 4).

**TABLE 3: PREVALENCE OF OBESITY IN ADULTS IN SELECTED
CARIBBEAN COUNTRIES**

COUNTRY/ AGE GROUP	YEARS	PER CENT OF POPULATION ABOVE 120% STANDARD WEIGHT FOR HEIGHT	
		MALE	FEMALE
Guyana (Rural) 35-36 Years	1971	40.0	40.0
Guyana (Urban) 35-64 Years	1971	36.6	55.6
Saint Lucia 35-64 Years	1974	7.6	36.2
Barbados 15 Years & above	1969	7.0	33.0
Barbados 15 Years & above	1981	16.0	38.0
Antigua and Barbuda 25-60 Years	1981	18.5	56.8
Dominica 15 Years & above*	1981	5.8	22.0
British Virgin Islands 15 Years & above	1984	20.4	47.8

*Figures for Eastern and Western Districts only.

Source: Food and nutrition surveys carried out by CFNI
and the countries since 1970.

TABLE 4: FIRST FIVE PRINCIPAL CAUSES OF DEATH IN THE ENGLISH-SPEAKING CARIBBEAN 1975-1979 (RATES PER 100,000 POPULATION) ALL AGES, AND ITS COMPARISON WITH TWO NORTH AMERICAN, AND ONE CENTRAL ONE SOUTH AMERICAN COUNTRY

Antigua 1978	CVD 97.3	DH 86.5	MN 75.7	CPM 37.8	DM 27.1
Bahamas 1979	DH 72.8	MN 70.5	ACC 59.8	I&P 56.7	CPM 46.2
Barbados 1978	DH 173.5	MN 129.7	CVD 112.4	I&P 63.2	DM 42.6
Belize 1975	DH 79.3	EDD 62.1	MN 39.3	CPM 31.4	I&P 27.1
Dominica 1978	DH 121.8	MN 66.4	CVD 39.4	CPM 29.5	EDD 20.9
Grenada 1978	DH 163.6	CVE 63.6	MN 60.0	I&P 43.6	EDD 34.5
Guyana 1977	DH 125.2	CVD 83.5	ACC 61.6	EDD 58.9	CPM 50.5
Montserrat 1979	CVD 181.8	DH 172.7	MN 118.2	DM 81.8	I&P 63.6
St. Kitts/Nevis 1978	DH 190.1	CVD 181.8	MN 80.8	I&P 62.0	AND 47.5
Saint Lucia 1978	DH 111.7	CVD 95.0	I&P 52.5	MN 32.5	CPM 26.7
St. Vincent 1978	DH 148.1	CPM 52.9	MN 45.9	EDD 32.6	DM 30.0
Suriname 1978	DH 108.0	CPM 70.3	MN 43.3	ACC 42.8	I&P 29.7
Trinidad & Tobago 1988	DH 162.3	CVD 82.0	HA 60.2	DM 48.6	ACC 44.2
Canada 1978	DH 247.3	MN 158.3	CVD 64.9	ACC 51.2	I&P 21.8
U.S.A. 1978	DH 330.9	MN 178.7	CVD 79.1	ACC 49.4	I&P 26.3
Ecuador 1978	EDD 87.2	DH 61.8	ACC 58.4	I&P 58.5	BEA 45.3
Guatemala 1978	EDD 165.8	I&P 134.5	CPM 87.6	ACC 62.2	DH 35.2

Diseases of the Heart (390-429)* = DH
 Cerebrovascular Diseases (430-438) = CVD
 Malignant Neoplasms (140-209) = MN
 Diabetes Mellitus (250) = DM
 Accidents (E800-E949, E980-E989) = ACC
 Bronchitis, Emphysema and Asthma
 (490-493) = BEA

Causes of Perinatal Mortality
 (760-779) = CPM
 Influenza and Pneumonia (470-474,
 480-486) = I&P
 Enteritis & Other Diarrhoeal
 Diseases (008-009) = EDD
 Avitaminosis and Other Nutritional
 Deficiencies (260-269) = AND

*Numbers after causes of death are category numbers of the Eighth Revision International Classification of Diseases.

Source: D. Sinha, "Obesity and Related Diseases in the Caribbean, CAJANUS, 17 (2), 1984, p.90.

Seemingly preoccupied with the childhood malnutrition situation, the countries of the Caribbean have been slow to react to the gravity of the problem of obesity and related chronic diseases. In recent years, however, there has been an increase in awareness. As a result, it can now be said that the attention of health and nutrition personnel, institutions and the public at large is focussed on this problem. Indeed, this focus will have to remain for the rest of the century in order to address the problem effectively. Caribbean people need to develop healthier life-styles to cope with the newly emerging nutritional problems.

3. ISSUES IN NUTRITION PROMOTION AND PROTECTION

3.1. MALNUTRITION IN YOUNG CHILDREN

It is evident from the data presented earlier, that the young child malnutrition that persists is not widespread. It appears, instead, to be located in specific geographic 'pockets' and in biologically high risk groups. Several issues are involved in the management of these pockets.

• Decentralization of the Processing of Information at the Local Level

While it has been amply demonstrated that malnutrition in the countries of the Caribbean are in pockets and CFNI has been able to initiate a system of nutrition surveillance at the community level in some of the countries, not all countries have shown commitment to continuously monitor the pockets of malnutrition. Continuous monitoring of the pockets of malnutrition is not possible without decentralization of the processing of information at the local level, establishing a system of utilization of these information for decision-making of that level, adequate training of staff and support to such a system from the national level.

• Analysis of the Contributing Factors

The pockets of malnutrition may exist because of various factors. It is generally presumed that all, or at least the majority of the malnutrition, is due to poverty. Disaggregated data on malnutrition according to economic status is not available, thus, it is difficult to ascertain how much of the malnutrition is due to poverty; how much is due to improper feeding; and how much can be ascribed to child neglect. Examples of all three types are found in the Caribbean. Such analyses are urgently needed to initiate specifically targetted intervention, not only to those who are malnourished, but more so those who are vulnerable to becoming malnourished.

• Targetted Intervention

In order to reduce malnutrition further, and ultimately eliminate it completely, the population groups involved need to be continuously tracked down and their characteristics and attributes precisely defined. Without directing efforts at specific target groups, national programmes aimed at combating malnutrition in the entire population, may not produce desired

results, particularly in those countries where the prevalence is not very high. However, the system at the local level is still geared to providing routine care to all who visit the clinic; often children become malnourished and very little attempt is made to focus the work to those who are most in need and are at risk.

• Reorganization and Reorientation of the System

To initiate such a targetted intervention programme, the present system which is mostly geared to the routine care of all, needs to be reorganized and roles and responsibilities redefined, so that the existing staff could find time and ways to redirect their efforts to those who are in greatest need. Thus the assessment of institutional and administrative capabilities are important to support the system of targetted intervention. Rigid follow-up and assistance for those who are malnourished or are prone to become malnourished, need to be established as a part of the system.

• Intersectoral Action

Management of malnutrition is not solely a health sector problem. Several sectors can make a contribution to its alleviation. However, in practice each sector attempts to solve the problem singly. At the local level the health sector needs to take a leading role in establishing mechanisms for intersectoral action to tackle the problem.

• Public Education

It is the general impression of the practitioners in the field that in the past education of the public has greatly reduced the prevalence of malnutrition in the Caribbean. However, in the absence of formal evaluation, there are those who question the contribution of nutrition education. Such evaluations are difficult, expensive and time consuming. Nevertheless, it is important to build evaluation strategies in all our education programmes.

3.2. IMPROVEMENT IN ANAEMIA SITUATION

In spite of the marked improvement in undernutrition in children, as well as in other age groups, anaemia remains a major public health problem in the Caribbean. Available evidence indicates that iron-deficiency is a causal factor and that pregnant and lactating women and pre-school children are the major at-risk groups. Sources of iron containing foods are abundantly available and the means to control anaemia exists in the region. Four major issues in tackling the problem of anaemia are discussed below.

• Management at the Clinic Level

In the Caribbean most women attend ante-natal clinics and 60-95% of deliveries are done in the hospital. Yet, many women reach the delivery table with very low haemoglobin which is further enhanced by loss of blood during delivery. Children attend child health clinics regularly, yet the surveys

indicate a larger percentage have low haemoglobins. Unlike many developing countries, parasitic load in these children and women in most countries is also very low, except in specific areas of high prevalence in some countries. Thus, it would appear that by better clinic management, the problem can be tackled to a great extent. The issues in clinic management are:

- regular supply and distribution of iron tablets to the clinics;
- non-compliance of adherence to prescribed medication (iron) by pregnant mothers due to side effects and frequency of intake;
- expensiveness of slow-release iron preparations which requires less frequent doses and has less side effects;
- lack of appropriate instruments for use at health centres and system to follow-up those on iron tablets;
- lack of appropriate surveillance system to timely monitor anaemic states in most countries.

● Education of the Public

Given the fact that the diet in general in the Caribbean is relatively good and some of the foods rich in iron are available or inexpensive, education of the public on proper diet to prevent anaemia, including the knowledge of enhancers and inhibitors of iron absorption, would greatly help to alleviate the problem. Such educational programmes to alter the diet pattern of the people are time consuming and expensive.

● Food Fortification

Very favourable results have been shown with the iodine fortification of salt for preventing goitre. In a number of countries worldwide where anaemia is a major health problem, specific food items commonly consumed are being fortified with iron. Iron fortification programmes have existed for over thirty years. It is only recently such programmes are being evaluated for its effectiveness to control anaemia. In addition, issues of deposit of excess iron and its deleterious effect on health, have plagued the subject of iron fortification from time to time. Types of iron particles appropriate to fortify food such as wheat flour to attain the desired results, need to be carefully examined.

● Functional Consequences

The deleterious effects of anaemia are not as dramatic as many other deficiencies, e.g. blindness due to vitamin A deficiency. Some of the consequences known from the literature have not been demonstrated in the Caribbean. For example, "Is the incidence of low birth weight high in anaemic mothers?" "How soon after delivery does a mother recover from the traumas of child birth, if she is anaemic?" "Does the moderate degree of anaemia in a

school child cause poor performance in the class?" Answers to these and other questions may result in greater commitments to tackle the problem. Hence, research is necessary to further elucidate the problem.

3.3. OBESITY AND RELATED CHRONIC DISEASES

The medical management of clinical cases of specific chronic diseases, such as diabetes, hypertension and heart attack, at the hospital and doctor's office level, has been provided in the Caribbean for many years. It is only in the last 5-10 years professionals and technical staff, as well as policy makers have become aware that these problems are also related to the nutritional status of a person, his energy intake (diet), energy output (exercise) and other life-styles (e.g. smoking). Thus, the whole concept of management and prevention of obesity and related chronic diseases has been undergoing changes. Enough knowledge has been accumulated thus far to initiate control and preventive programmes. In fact, the Caribbean Programme Coordination Office, (PAHO/WHO), and CFNI, have initiated a number of programmes in the management and prevention of obesity and related chronic diseases. A number of sub-regional and national workshops on the prevention and management of obesity, diabetes and hypertension have been held in which norms, guidelines and plans of action have been developed. Several teaching and training materials for professionals, educational materials for schools and the public at large have been developed and distributed. A number of nutrition education programmes have also been initiated.

Given the magnitude and severity of the problem, the task is mammoth and the issues are many.

• Management of Cases and Secondary Prevention

Recent knowledge clearly shows that obesity and related chronic diseases are greatly amenable to non-drug management. However, in practice, emphasis on drugs still persists. In the dietary management more emphasis is placed on energy intake (diet) and proportionately less on energy output (exercise). Based on the existing information concerning the effect of weight loss programmes on health status, physiologic processes, and body composition parameters, it is evident that optimal body composition changes occur with a combination of caloric restriction (through a well-balanced diet) and an aerobic exercise programme. The role of exercise is talked about, but very few practitioners are familiar with the who, when, what and how of exercise. Even prescribing proper diet is lacking in the training and practice of many physicians and nurses. Nutritionists/dietitians are well trained in this subject but there are not many of them to provide direct clinical services.

• Primary Prevention and Intersectoral Approach

While it is urgent to develop systematic programmes for the management of cases of obesity and chronic diseases, without primary prevention the services will remain swamped with management of cases. A massive public education campaign is needed to achieve this goal. Everybody, irrespective of

age, sex and social class, needs to develop a positive health life-style and thus needs knowledge and skills. Positive health life-skills need to be developed in school children. School teachers must be trained to help the children to get the necessary knowledge and to develop the skills. Operational research is needed to develop methodology and application of some of the experiences from other countries in the Caribbean. Policy direction and allocation of resources are critical in developing and implementing these programmes.

● Public Education and Self-Care

Unlike malnutrition in children, prevention of obesity and related chronic diseases are more of a matter of personal choice. It requires individuals personally to initiate and perform activities on their own behalf in maintaining life, health and well-being. To do so, more and more information needs to be provided to the public. In addition, assistance is also needed in developing skills and providing motivation to the public to translate knowledge into practice. An all out approach to reach the masses is hampered by lack of resources to achieve this mammoth task. For example, CFNI has been able to produce several prototype audio-visual materials for public education but it requires much more resources, financial and human to produce these and many more such materials in adequate quantities to reach the widest possible audience.

4. STRATEGIC APPROACHES

The situational analysis of the nutritional status of the Caribbean population and the issues in their improvement discussed so far indicate clearly that different levels of progress have been made in the three major nutrition problem areas. Thus, the overall objectives of the nutrition promotion and protection programme are varied in the 'three' areas and are outlined below:

- A more targetted intervention to eliminate young child malnutrition focussed at the high risk group including decentralised processing of information and decision-making at the local level, multisectoral action, assistance to vulnerable groups and public education.
- Regular monitoring and systematic management and prevention of anaemia in the clinic population in each CFNI member country, and a more rigorous implementation of the strategy for primary prevention of anaemia, including nutrition education and food fortification.
- A multifaceted approach to the growing problem of obesity and chronic diseases consisting of systematic management of cases with emphasis on non-drug therapeutic measures and their secondary prevention, but more importantly their primary

prevention.

- Establishment of a multisectoral food and nutrition surveillance system in each CFNI member country.

To achieve these objectives the six strategic approaches to technical cooperation being utilized throughout PAHO's system will be adopted.

4.1. RESOURCE MOBILIZATION

While several types of resources are needed to implement the nutrition promotion and protection component of CFNI's programme, two major resources are highlighted - human resources and financial resources.

The changing patterns of nutritional problems require reorientation and reorganization of the system to address them. Systems need to be designed to address the priority problems and the staff at all levels need to be mobilized not only in implementing the system but also in designing and managing the system. Given the economic constraints, none of CFNI member countries is in a position to undertake any massive expansion of their human resources. Thus, reorganization of the system to address priority problems and improvement in the efficiency and effectiveness of existing staff through training, retraining and motivation, form the major component of resource mobilization. Managing different types of problems need different types of training of the same staff. Thus, in managing malnutrition in children the need is to train the staff in targetted intervention on the community level, better clinic management for the control of anaemia and the extensive training in the non-drug therapeutical measures (such as diet and exercise) in the cases of obesity and related chronic diseases.

In a number of areas intersectoral action is a must. For example, the participation of school teachers in monitoring the nutritional status of school children and physical education teachers for developing skills for physical exercise in school students is imperative. Health centre staff need to work with teachers in their geographic area. Thus, intersectoral training and team building is necessary for such collaborative work.

While an increase of staff is not possible due to financial constraints, financial assistance, (bilateral and multi-sectoral) is needed to support new programmes, training of staff and the carrying out of research to develop appropriate tools, relevant systems and procedures to implement them.

4.2. DISSEMINATION OF INFORMATION

The dissemination of scientific and technical information has been and remains one of the fundamental activities of CFNI in nutrition promotion and protection. It consists of collection, review, translation of scientific information for public education, production and distribution to the appropriate audience for the improvement in nutritional health of the

population. It incorporates nutrition education materials for the public, educational materials for the school students and teachers, training materials for the technical staff, guidelines, norms and standards for professional staff and pertinent information for senior executive and policy level personnel. It utilizes various means of communication - print media, electronic media, exhibits, posters and verbal one-to-one or group talks.

The change in patterns of nutrition conditions in the Caribbean, requires that more and more information be provided to consumers to make conscious decisions to protect and promote their nutritional health. Unlike malnutrition in children, without adequate knowledge, a conscious decision and voluntary behavioural modifications, if needed, obesity in adults cannot be controlled. Thus, it is imperative that CFNI continues to provide available knowledge, assist in developing skills and provide technical support in the development of programmes to facilitate the application of the knowledge and skills.

In this connection, it is therefore necessary to continue production and dissemination of Nyam News - the bi-monthly newsletter to the newspapers and radio, schools and other outlets; Cajanus - the quarterly journal of CFNI to continuously update the food and nutrition scientific and technical knowledge of professional and technical staff throughout the region; CFNI's weekly radio series; production of various audio visual materials; and the printing and distribution of various technical documents on guidelines, norms and standards. Newer areas in support of CFNI's programmes where dissemination of information is lacking will be developed and disseminated. A systematic evaluation of such information dissemination should remain an integral part of the work of CFNI.

4.3. DEVELOPMENT OF STANDARDS, PLANS AND POLICIES

The changing patterns of nutritional health of the Caribbean population requires that from time to time appropriate policies, plans and standards be developed to improve the situation. Based on the existing knowledge, CFNI has always worked with the countries towards these developments. As discussed earlier, the three major nutritional problems require different inputs. In the countries where targetted programmes of reducing malnutrition in children have not been initiated, policy decisions are needed. On the other hand, a programme for the control of anaemia in the clinic exists in all CFNI member countries. The need in this field is to develop standards for the clinic management of anaemia and plans for the implementation of the standards, to provide support to the plans and evaluate them as needed. In obesity and related chronic diseases, enough awareness has been created, policies have been formulated and guidelines and standards have been developed and presented in the past five years. The urgent need in the next five years is to develop country-specific plans to implement the policies and standards, provide support to the plans and evaluate them as needed. In a number of areas a solution to the problem (what to do) is known in principle. However, the methodology for implementation (how to do) is not known. The development of tools, systems, procedures and guidelines, forms a major part of CFNI's work.

4.4. TRAINING

Successful translation of policies, plans and standards into action requires that the staff receive adequate training. In addition, the primary health care staff in remote rural areas do not have the opportunity to immediately consult their superiors for guidance. In such cases it is important to develop detailed step-by-step manuals consisting of the information provided in the training so that in cases of doubt or in order to maintain consistency in work, the staff can consult them whenever necessary. CFNI has used these techniques in the technical cooperation with the countries.

Given the size of CFNI's staff and the number of member countries it serves, it is imperative that in every training programme CFNI systematically trains a core of staff from the national and peripheral levels and prepares a training schedule for the training of the remaining staff by those previously trained. Thus, building national capability to undertake training is the key to success.

In addition to inservice training, CFNI also conducts and participates in formal training courses offered by the University of the West Indies; Barbados Community College; and the College of Arts, Science and Technology, in Jamaica, and other such institutions, towards the nutrition promotion and protection of the Caribbean population. This should continue.

4.5. RESEARCH PROMOTION

CFNI's basic policy has always been to carry out operational research which may be defined as activities, particularly those that are vitally linked to operational problems which facilitate the application of available knowledge to improve the food and nutrition situation.

One of the major functions of this activity, therefore, is to carry out analyses in order to define areas where there are gaps in knowledge or obstacles that make it difficult to effectively apply existing solutions to known problems. In its widest terms, its function may be to promote the generation of knowledge, to review it critically, to collect it, to disseminate it and to collaborate with the countries in the most effective utilization of knowledge.

Research at CFNI may be divided into the following categories:

1. Identification of problems or their causes;
2. Development of methodologies for the application of individual knowledge;
3. Investigation to find solutions to the obstacles in the implementation of the known methodologies;

4. Adaptation of appropriate technologies to improve the food and nutrition situation;
5. Critical evaluation of actions, projects and programmes.

While it is important to carry out or promote research in the process of providing regular technical cooperation, it is also important to deliberately design, seek funding, carry out research along with countries to solve operational bottle-necks.

The following major areas of research are being envisaged in the nutrition promotion and protection programmes:

- Evaluation of educational materials and programmes in the management of obesity and related chronic diseases and the effect on dietary practices of the recipients.
- Development of methodology for monitoring nutrition and instilling positive health life-styles among school children and extension of this methodology to all schools in the countries.
- Development and evaluation of a health education programme in schools (community nutrition education) for the prevention of diabetes and hypertension.
- Field-testing prototype of the new Carib hemoglobinometer.
- Study of dietary and exercise patterns and other life-style practices of selected groups in the community.
- Development of educational materials for food safety at the household level.
- Research into the mechanism for maintaining adequate food and nutrition security in the remote and rural areas in case of natural disaster.
- Study of a low-cost slow-release iron in controlling anaemia in pregnant women in Jamaica and the method of its utilization in other countries.
- Development of a methodology for the management of "pockets" of malnutrition in children, including maternal weight gain and low birth weight infants, particularly in teenage mothers.
- Food consumption patterns in different countries. Further data on nutrient and fibre composition of raw, processed and prepared foods in the Caribbean should be developed in order to facilitate food consumption surveys and educational programmes.

- Manpower needs and manpower utilization in food and nutrition programmes.

4.6. DIRECT ADVISORY SERVICES TO THE COUNTRIES

In addition to the above five mechanisms, CFNI also provides direct advisory services to the countries in response to the requests for collaboration. This is especially so in the areas of food planning, coordination and surveillance. Advisory services are carried out by CFNI staff and at times by short-term consultants contracted by CFNI. Because of the small size of the countries and the limitations of national resources, direct technical services will remain a primary aspect of CFNI's technical cooperation for the countries.

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FIGURE 1: DECLINE IN INFANT MORTALITY IN THE LAST FIFTY YEARS IN THE LARGER TERRITORIES OF THE CARIBBEAN (JAMAICA, BARBADOS, TRINIDAD & TOBAGO, GUYANA, BAHAMAS AND BELIZE)

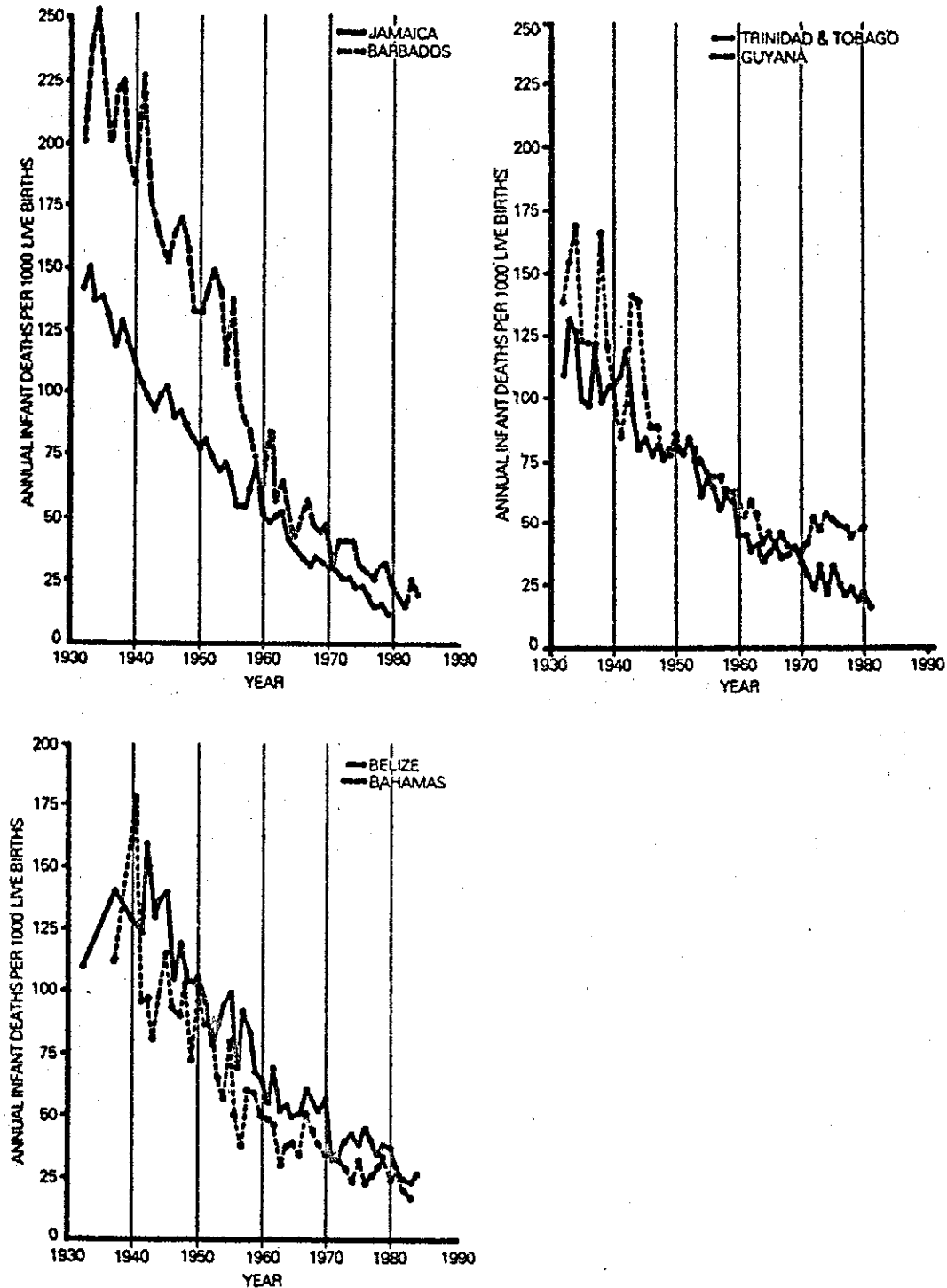


FIGURE 2: DECLINE IN INFANT MORTALITY IN THE LAST FIFTY YEARS IN EIGHT COUNTRIES OF THE EASTERN CARIBBEAN

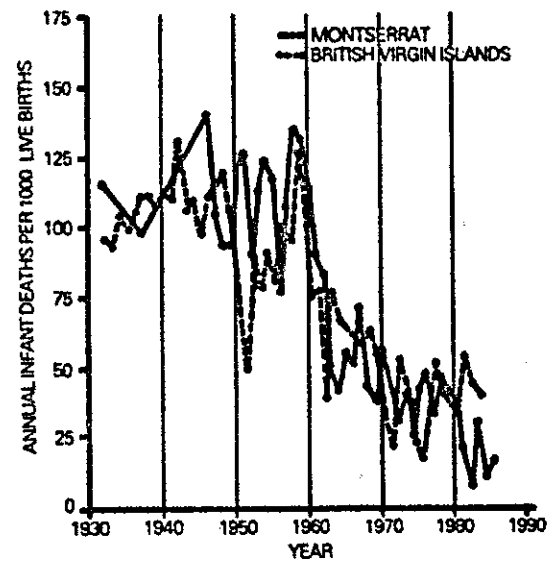
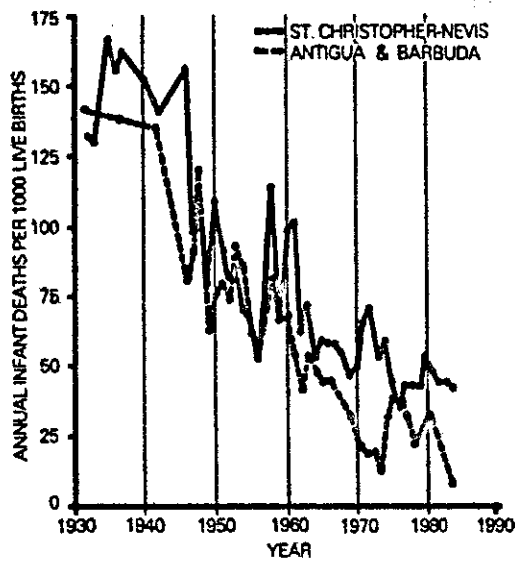
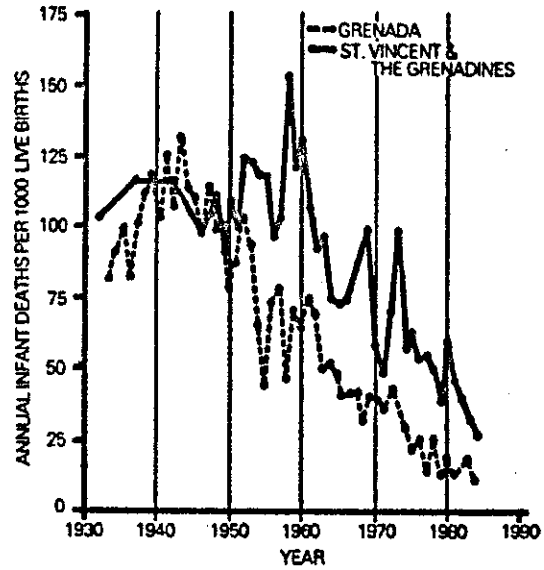
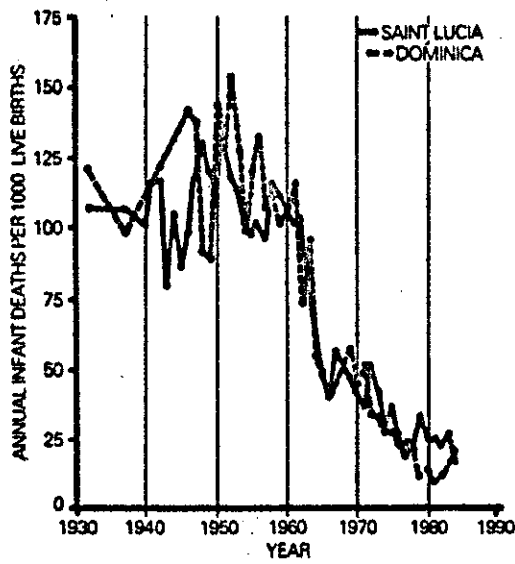
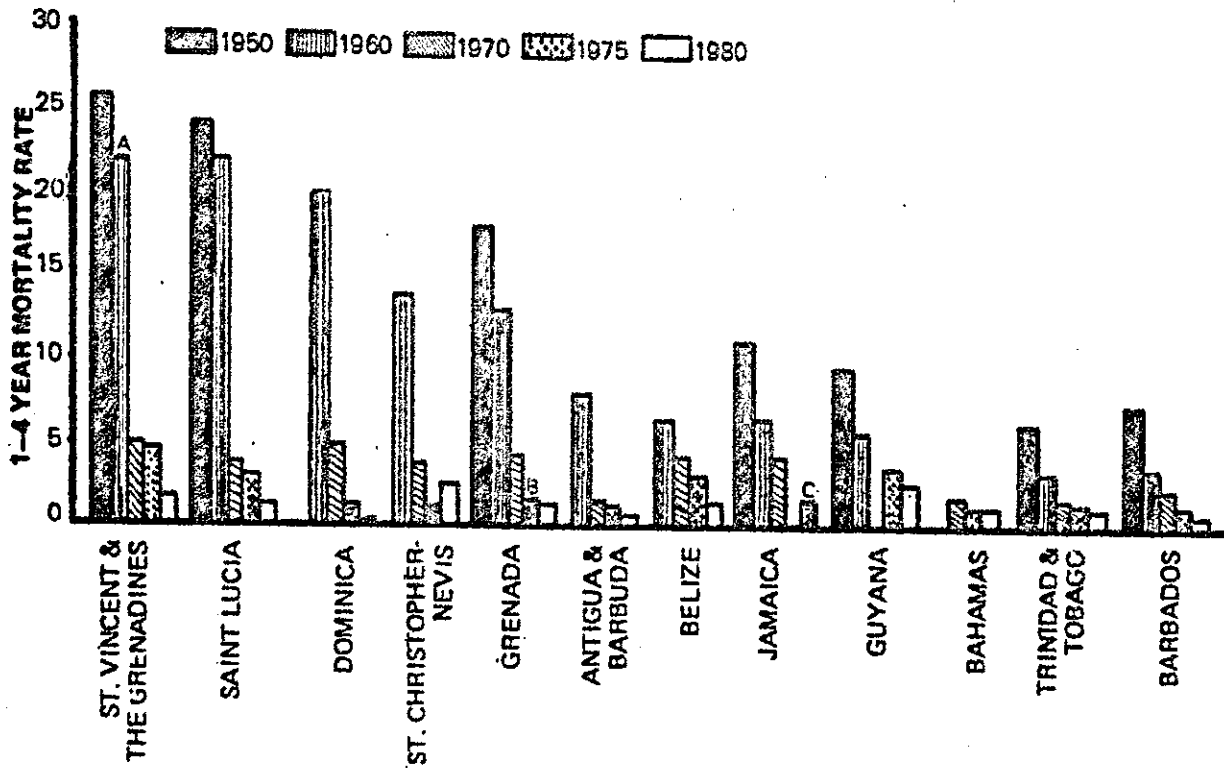


FIGURE 3: DECLINES IN CHILD (1-4 YEAR) MORTALITY, 1950-1980

A = Data for 1955; B = Data for 1972; C = Data for 1982

Sources: Demographic Year Book 1966, United Nations [14]; Health Conditions in the Americas, PAHO Scientific Publications, Nos. 364, 427, 500 [22,23,27]. A few of the latest figures are from individual country annual reports of the Health Departments.