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# *Maternal and Infant Nutrition Reviews*



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**MATERNAL AND INFANT NUTRITION REVIEWS**

**DOMINICAN REPUBLIC**

*A Guide to the Literature*

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## INTRODUCTION

### MATERNAL AND INFANT NUTRITION REVIEWS: A RESOURCE FOR NUTRITION PLANNERS AND EDUCATORS

The MATERNAL AND INFANT NUTRITION REVIEWS (MINR) profile existing data on nutritional status and nutrition-related beliefs and practices of mothers and children in developing countries. MINRs also contain information on current nutrition policies and programs of governments, the United States Agency for International Development, and other bilateral, international agencies and Private Voluntary Organizations (PVO). There are thirty-five MINRs in all, profiling forty-four different countries. (See list on next page.)

Maternal and Infant Nutrition Reviews summarize important information obtained from available literature, government documents, consultant reports, and personal correspondence. The data is presented in bulleted form under six major headings: nutrition and health status, dietary beliefs, dietary practices, nutrition status correlations, nutrition and health policies and programs, and commentaries. A bibliography at the back of each monograph describes the listed documents in terms of type of study, methodology, sample characteristics and location, and a summary. Special thanks are extended to Marcia Griffiths for her assistance in reviewing this report and supplying information.

Nutrition planners and policy makers can use MINRs to help identify a given country's data base. For example, the information contained in each review enables the reader to identify key planning factors such as problem areas of malnutrition, prevailing beliefs about breast feeding, the extent of bottle feeding, types of weaning foods, the government's inter-agency five-year nutrition plan, the amount of donated food being distributed at MCH centers, and major PVOs involved in administering food and nutrition programs.

MINRs can be used as background documents for consultants going into the field and for program developers in-country. They can provide a frame of reference for an in-country workshop aimed at developing a national nutrition strategy. Technical assistance in organizing a workshop of this kind is available through the International Nutrition Communication Service. MINRs can also be used as a resource document in the development of journal articles and textbooks.

MINR data is stored on a computerized word processing system that allows for updates and individualized literature searches on specific topics. Patterns in a particular country or group of countries can be analyzed in accordance with user needs. A nutrition information retrieval service is available free to those working in developing countries and for a small fee to all others. Orders, inquiries, and comments should be addressed to:

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International Nutrition Communication Service  
Education Development Center  
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Jordan  
Morocco  
Tunisia  
Yemen

**ASIA:**

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Burma  
India  
Indonesia  
Nepal  
Pakistan  
Philippines  
South Pacific\*  
Sri Lanka  
Thailand

**LATIN AMERICA AND CARIBBEAN:**

Bolivia  
Costa Rica  
Dominican Republic  
Ecuador  
Guatemala  
Haiti  
Honduras  
Jamaica  
Panama  
Peru

\*South Pacific Region includes the nations of Cook Islands, Fiji, Kiribati, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu, and Western Samoa

# MATERNAL AND INFANT NUTRITION REVIEWS

## CLASSIFICATION SYSTEM

1. Nutrition and Health Status
  - 1.1 General
  - 1.2 Women, Pregnant
  - 1.3 Women, Lactating
  - 1.4 Infants 0-6 Months
  - 1.5 Infants 6-24 Months
  
2. Dietary Beliefs
  - 2.1 General
  - 2.2 About Pregnancy
  - 2.3 About Lactation
  - 2.4 About Breast Milk Substitutes (including bottle feeding)
  - 2.5 About Weaning
  
3. Dietary Practices
  - 3.1 General
  - 3.2 Women
    - 3.2.1 During Pregnancy
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  - 3.3 Infants 0-24 Months
    - 3.3.1 Breast feeding
    - 3.3.2 Weaning
    - 3.3.3 After Weaning
  - 3.4 Health and Medicine
  
4. Nutrition Status Correlations
  
5. Nutrition and Health Policies and Programs
  - 5.1 Policies
  - 5.2 Programs
  
6. Commentaries

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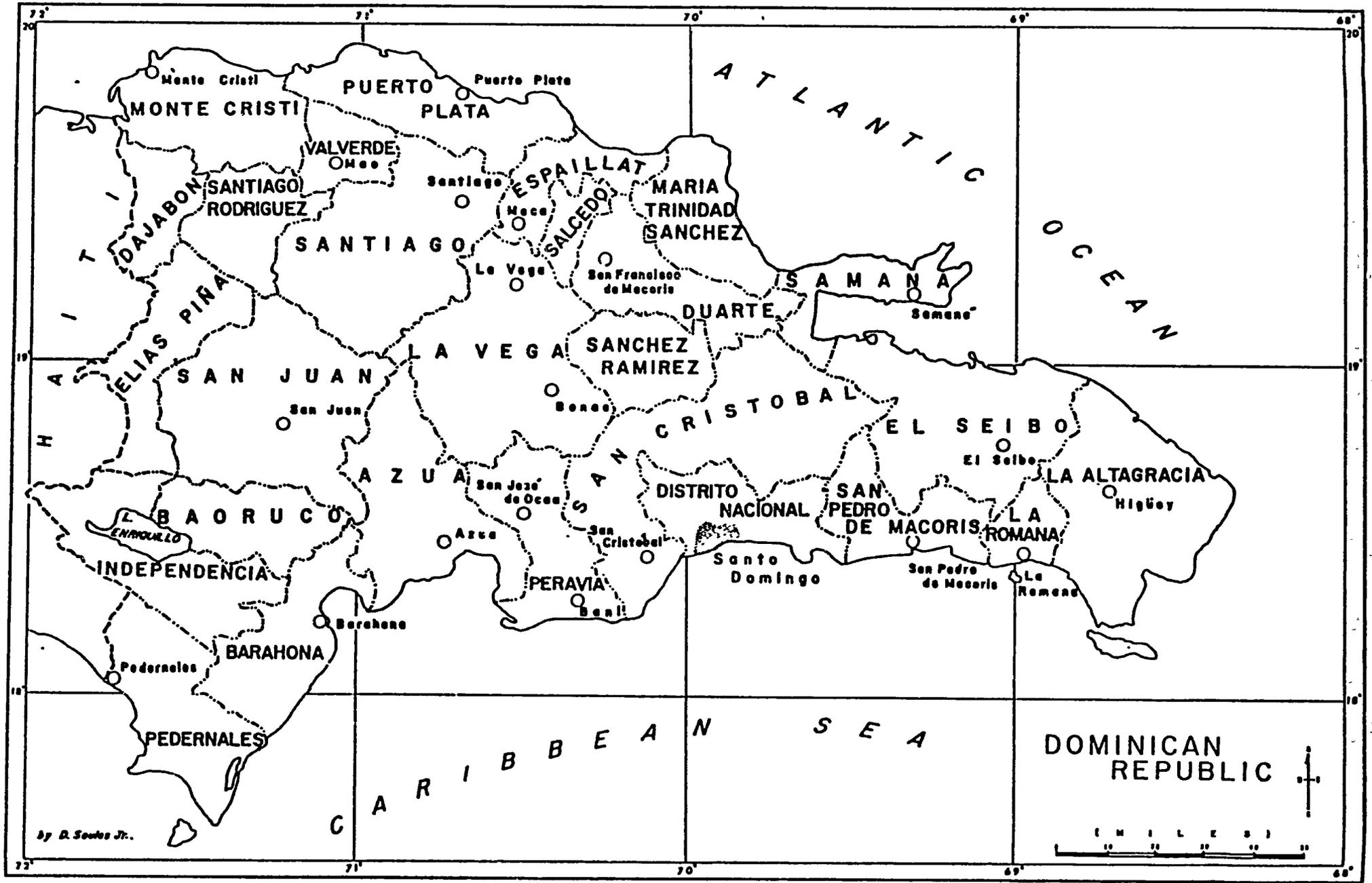


Table I

PERCENTAGE OF NORMAL PRE-SCHOOLERS AND OF CHILDREN WITH FIRST, SECOND AND THIRD-DEGREE  
MALNUTRITION - 1962-1980

SURVEYS	YEAR	SAMPLE SIZE	NORMAL	FIRST-DEGREE MALNUTRITION	SECOND-DEGREE MALNUTRITION	THIRD-DEGREE MALNUTRITION	TOTAL
Santo Cerro and Barranca	1962		60.9	18.5	15.2	5.4	39.1
Los Mina	1967						
	1968	1,167	61.0	28.5	9.3	1.2	39.0
San Cristóbal	1967						
	1968	329	48.0	35.5	12.7	3.8	52.0
San Pedro de Macoris	1967						
	1968	1,246	58.6	26.4	13.5	1.5	42.4
Barahona	1967						
	1968	4,022	69.6	20.8	7.7	1.9	30.4
Puerto Plata	1967						
	1968	3,199	63.4	24.2	7.0	5.4	36.6
National Nutrition Survey	1969	1,100	24.6	48.6	22.8	4.0	75.4
National Nutrition Survey	1974	2,057	41.5	40.0	16.5	2.0	58.7
Jarabacoa	1976	3,181	48.5	30.8	16.5	4.2	51.5
CARITAS	1976	12,335	34.0	42.0	20.0	4.0	66.0
CARE, Food Program Participants	1976	1,198	51.8	37.8	9.2	1.2	48.2
CARE, Non-Participants	1976	820	49.9	39.4	9.1	1.6	50.1
Las Tablas	1977	77	53.0	30.0	17.0	-	47.0
La Romana - SESPAS	1980	16,856	59.7	28.6	9.2	2.5	40.3

SOURCES: Modified table based on data published in "Situación Alimentaria Nutricional." PLANDES 37, ONAPLAN, Dec., 1978.

SESPAS Nutrition Division.

From Monckeberg and Griffiths, 1983, p. 15.

Table II

DIAGNOSIS OF THE RURAL CHILD POPULATION  
RURAL POPULATION INCLUDED IN THE NUTRITION MONITORING  
SYSTEM IN 1982

REGION	PROVINCE	0-TO-5-YEAR-OLD POPULATION*	PERCENTAGE MONITORED	MALNUTRITION RATES**
I	National District			
	San Cristóbal	49,996	14.7	48.6
	Peravia	19,171	-	-
II	Santiago	39,602	10.0	41.9
	La Vega	20,389	32.6	44.7
	Puerto Plata	23,513	17.8	39.0
	Españat	21,268	27.3	37.9
III	Duarte	25,385	33.2	48.4
	Salcedo	13,923	21.3	41.4
	Sánchez Ramírez	16,822	17.6	46.3
	Samaná	8,673	-	-
	María T. Sánchez	13,928	10.8	47.8
IV	Barahona	9,832	10.9	66.5
	Bahoruco	7,455	17.0	51.4
	Pedernales	1,279	-	-
	Independencia	2,967	38.0	63.5
V	San Pedro de Macorís	11,900	26.5	34.6
	La Romana	2,699	31.5	41.0
	El Seybo	17,834	53.4	49.4
	La Altagracia	10,730	31.7	37.1
VI	Azua	13,898	-	-
	San Juan	27,270	-	-
	Elías Piña	8,745	-	-
VII	Monte Cristi	8,805	28.7	36.3
	Dajabón	6,743	47.2	52.8
	Santiago Rodríguez	6,890	5.7	50.3
	Valverde	4,439	-	-

SOURCE: \*Based on 16.9% of the total rural population reported in the 1981 census.

\*\*Nutrition Monitoring System

Nutrition Division, Public Health and Social Security Secretariat (SESPAS).

From Mockeberg and Griffiths, 1983, p. 16.

## HIGHLIGHTS

1. **NUTRITION AND HEALTH STATUS:** Second and third degree malnutrition is most prevalent among children over 36 months, and in the western area of the country. The infant mortality rate is 3 deaths per thousand live births, but not all deaths are reported. The five leading causes of child deaths are diarrheal diseases, 15.1%; influenza-pneumonia, 9.4%; nutritional deficiencies, 9.1%; accidents, 4.9%; and meningitis, 3.0%. Complications arising from pregnancy, childbirth, and puerperium are the leading causes of death for women age 15 to 19. 18% of hospital newborns weigh less than 2.5 kg. The Dominican Republic had the highest rate of high risk births in the Americas in 1975.

The 1974 National Nutrition Survey found that 58.7% of preschoolers suffered from some level of malnutrition. 12.9% of children between 1 and 2 years of age fell below the 75th percentile in weight for age; 22% fell below the 90th percentile in height for age. Iron deficiency affects nearly 80% of preschool children.

2. **DIETARY BELIEFS:** Local fruits are considered harmful to young girls, pregnant women, and lactating mothers. Rural mothers do not believe that food intake should be increased during pregnancy or lactation. 68.6% of mothers in the rural Sierra Region believe that mother's milk is the best food for children under six months.

3. **DIETARY PRACTICES:** The major foods consumed, and the percentage of calories accounted for by each, include: rice, 19.6%; sugar and honey, 15.7%; fruit, 15.3%; and oil and fat, 11.2%. The lower classes subsist on a diet which consists largely of rice and plantains and tuber crops such as yucca and sweet potato. These foods are usually boiled with oil, garlic, and onions to prepare the traditional sancocho. Red beans, prepared in a diluted sauce, also supplement the diet. Food consumption patterns vary more widely with income distribution than between urban and rural areas of the country. It is estimated that 58% of the population has a calorie intake below the 1973 WHO/FAO recommendation.

Infants are often fed carbohydrates prior to breast feeding, resulting in decreased appetite and possibly shortening the duration of lactation. The average length of breast feeding for all maternal ages is 8.7 months. Plantain is often used as a main weaning food. Its low protein value explains the high incidence of nutritional problems among weaning age children. It is estimated that the 1982 annual sales volume for breast milk formula substitutes was RD\$13,000,000. In the Sierra Region 68.5% of infants were receiving bottle supplements in addition to, or instead of, the breast. Of those who were bottle feeding, 45.8% were using fresh cow's milk, while 40% reported using powdered milk.

4. **NUTRITION STATUS CORRELATES:** Household characteristics correlated to malnutrition include low occupational status (day laborers, small farmers, etc.), little or no access to (and lack of) potable water and latrine use, and female-headed households. Mothers of malnourished children are of a higher parity and have more live children than mothers of well-nourished children.

5. **NUTRITION AND HEALTH POLICIES AND PROGRAMS:** Health expenditures in 1975 represented 5% of government expenditures. There are 40 hospitals, 314 rural clinics, and 53 subcenters or polyclinics, in addition to 8 specialized

hospitals. There are 1.3 hospital beds per 100 population, and 6 doctors per 10,000. There are 5,182 health promoters, but some have no training. The U.S.A.I.D. Mission committed itself to a reorientation of the PL-480 Title II Program from one of feeding to one of development, headed toward self-sufficiency.

CARITAS and SSID operate rehabilitation programs for malnourished children that reach 1,200 out of a total of 50,000-80,000 children with third degree malnutrition. 264,000 persons were estimated to benefit from PL-480 foods distributed by voluntary agencies during 1982. CARE and CRS/CARITAS are major private voluntary organizations who distribute PL-480 food. CRS also operates an Applied Nutrition Education Program (ANEP) which conducts nutrition activities, including surveillance, through community groups, organized through community initiative and stimulated by ANEP community promoters. SESPAS (the Public Health and Social Security Secretariat) and CONAPOFA (Consejo Nacional de Poblacion y la Familia) collaborate on a national breast feeding promotion program. The Nutrition Division of the Public Health Secretary's Office has interrupted the former practice of selling breast milk substitutes at public hospitals and has introduced breast feeding promotion as the norm in maternal and child health care institutions.

## 1. NUTRITION AND HEALTH STATUS

### 1.1 NUTRITION AND HEALTH STATUS, GENERAL

#### NATIONAL

**CHILD MALNUTRITION:** Community promoters' data indicated that second and third degree malnutrition (Gomez Classifications) was most prevalent among children over 35 months old, and in the Western area of the country. (Teller, 1983a)

**NUTRITIONAL STATUS:** The National Nutrition Survey carried out in 1969 found that only 15% of the sample studied enjoyed a satisfactory food intake level and that even among this group there were significant deficits of retinol, riboflavin, pyridoxine, vitamin B<sub>12</sub>, alpha-tocopherol, copper, zinc, and magnesium. (Lashman and Daly, 1974)

**GEOGRAPHIC VARIATIONS OF NUTRITIONAL STATUS:** Second and third degree malnutrition were more prevalent to the national, northern, and southwestern districts than in the Cibao and eastern districts, according to the 1969 Nutrition Survey. (Lashman and Daly, 1974)

**VITAMIN A DEFICIENCY:** 9% of the general population had vitamin A serum levels below 20 micrograms per 100 ml. in 1969. (Daza and Eisler, 1979)

**ENDEMIC GOITER:** The prevalence of endemic goiter in 1969 was estimated to be between 10% and 19%. Up to 1978 there was no legislation regarding salt iodization. (Daza and Eisler, 1979)

**POPULATION GROWTH:** The Dominican Republic's total population increased by 28.5% during the 1970-80 decade, reaching 5,423,000 inhabitants. (U.S.D.A., 1981)

**LIFE EXPECTANCY:** Life expectancy at birth in 1975 was 57.8 years. The projected life expectancy for 1980-1985 is 62.6 years. (PAHO, 1978)

**LEADING CAUSES OF CHILD DEATH:** The five leading causes of child death and the percent of child deaths accounted for by each disease category in 1978 were: diarrhea diseases, 15.1%; influenza-pneumonia, 9.4%; nutritional deficiencies, 9.1%; accidents, 4.9%; and meningitis, 3.0%. (PAHO, 1981)

**LEADING CAUSES OF DEATH:** The five leading causes of death in 1978 and the percent of total deaths accounted for by each category were: diseases of the heart, 9.2%; perinatal mortality causes, 7.3%; diarrheal diseases, 6.5%; accidents, 5.8%; and malignant neoplasms, 4.1%. (PAHO, 1981)

**DEATHS REGISTRATION:** 68% of all deaths were registered. The percent of infant deaths that was registered was 40%. (PAHO, 1981)

**UNKNOWN CAUSES OF DEATH:** 32% of all deaths in 1977 were due to poorly defined or unknown causes. This figure, second only to Salvador's for

## 1.1 NUTRITION AND HEALTH STATUS, GENERAL (Cont.)

the same year in all of the PAHO territory, represents a relative improvement over the 47% rate in 1968. (Suarez and Cusminsky, 1979)

**MORTALITY AND UNDERREGISTRATION:** It was estimated that 40 to 60% of all deaths were not properly registered during 1980. (Documentos, 1983)

**MORTALITY—TETANUS:** In 1979 there were 3 tetanus-caused deaths per 100,000 inhabitants. (Suarez and Cusminsky, 1979)

**MORTALITY AND TUBERCULOSIS:** During the 1970-75 period there was a 112% increase in mortality due to tuberculosis. (PAHO, 1978)

**DIPHTHERIA DEATH RATE:** The mortality rates associated with diphtheria were reported at 8.2 and 3.3 per 100,000 inhabitants for 1970 and 1979 respectively. (PAHO, 1981)

**PRINCIPAL CAUSES OF DEATH:** The five principal causes of death and the percent of deaths accounted for by each cause in 1975 were the following: diseases of the heart (8.4%), diarrheal diseases (8.4%), perinatal mortality causes (5.8%), accidents (4.7%), and neoplasms (3.9%). (PAHO, 1978)

## 1.2 NUTRITION AND HEALTH STATUS, WOMEN, PREGNANT

### NATIONAL

**LIVE BIRTHS AND FERTILITY RATES:** The number of live births and the fertility rate per 1000 women of reproductive age were reported at 186,896 and 159.9, respectively, for 1979. (PAHO, 1981)

**PREGNANCY AND CHILDBIRTH COMPLICATIONS:** Complications arising from pregnancy, childbirth, and puerperium were the leading cause of death for women 15 to 19 years of age during 1975, accounting for 13% of deaths in this age group. (Cusminsky and Suarez, 1979)

**MATERNAL MORTALITY--1980:** In 1980 the maternal mortality rate was 0.8 deaths per 1000 births. (Documentos, 1983)

**MATERNAL MORTALITY--1971:** Maternal mortality in 1971 was 0.99 deaths per 1000 live births. (Daza and Eisler, 1979)

**NUTRITIONAL ANEMIA:** 46% of the pregnant and lactating women surveyed in 1969 had a hemoglobin concentration below the WHO norm. (WHO, 1979)

## 1.3 NUTRITION AND HEALTH STATUS, WOMEN, LACTATING

## 1.4 NUTRITION AND HEALTH STATUS, INFANTS 0-6 MONTHS

### NATIONAL

**BIRTH WEIGHTS:** SESPAS figures from selected hospitals indicate that 18% of newborns weigh less than 2.5 kg; the overall figure is probably higher. 25% of the children treated for malnutrition at SESPAS Nutrition

Rehabilitation Centers had low birth weight, indicating that malnutrition begins before birth. (Monckeberg and Griffiths, 1983)

**LOW BIRTH WEIGHT:** It was estimated that 30,000 infants of low birth weight would be born in 1979. This would represent 15.4% of all births. (WHO, 1980)

**MORTALITY:** In 1980, the infant mortality rate was 31 deaths per 1000, but only 40 to 60% of deaths were registered. (Documentos, 1983)

**INFANT MORTALITY:** The mortality rate at 28 days of age was 23.8 per 1000 live births in 1971. (Daza and Eisler, 1979)

**HIGH RISK BIRTHS:** The Dominican Republic had the highest percent of high risk births in the Americas in 1975, corresponding to 68%. (PAHO, 1978)

**CAUSES OF INFANT MORTALITY:** 0.1% of all deaths of infants under one year of age were associated with diphtheria, 1.9% were associated with tetanus, 0.1% were attributed to whooping cough, and 5% were caused by chicken pox. (Suarez and Cusminsky, 1979)

**TETANUS MORTALITY TREND:** The tetanus infant mortality rate was reported at 24.35 and 30.3 deaths per 1000 live births in 1970 and 1979 respectively. (PAHO, 1981)

**DIARRHEAL DISEASE MORTALITY TREND:** The infant mortality rate associated with diarrheal disease increased from 17.79 deaths per 1000 live births in 1970 to 53.88 deaths per live births in 1979. (PAHO, 1981)

**DIPHTHERIA MORTALITY RATE:** In 1979 the mortality rate associated with diphtheria was 5.9 per 1000 live births. (PAHO, 1981)

## 1.5 NUTRITION AND HEALTH STATUS, INFANTS 6-24 MONTHS

### NATIONAL

**MALNUTRITION RATES:** The prevalence of protein-calorie malnutrition varies greatly between regions (see Table 2, p. vi), between provinces within regions (see Table 3, p. vii), and between surveys of different areas and groups at various times (see Table 4, page viii). (Monckeberg and Griffiths, 1983)

**MALNUTRITION:** The 1974 National Nutrition Survey found that 58.7% of preschoolers suffered from some level of malnutrition: 2.0% had third degree malnutrition; 16.5%, second degree; and 40.0%, first degree. (Monckeberg and Griffiths, 1983)

**MALNUTRITION PREVALENCE:** The prevalence of malnutrition of grades II and III was 12.2% in 1981, according to the Nutritional Surveillance System of the Ministry of health nutrition promoters. (Teller, 1983b)

**MALNUTRITION PREVALENCE:** 12.9% of children between 1 and 2 years of age were found to fall below the 75th percentile in weight for age (e.g.,

## 1.5 NUTRITION AND HEALTH STATUS, INFANTS 6-24 MONTHS (Cont.)

second and third degree malnutrition). For the group aged 1 to 5 years of age the comparable figure was 10.6%. (Anderson, 1979)

**MALNUTRITION PREVALENCE:** 22% of children between 1 and 2 years of age fell below the 90th percentile in height for age, and 19.2% fell below the 90th percentile in weight for height. (Anderson, 1979)

**MALNUTRITION PREVALENCE:** 18.8% of all surveyed children between 1 and 2 years of age fell below the 90th percentile in height for age, and 18.6% fell below the 90th percentile in weight for height. (Anderson, 1979)

**MALNUTRITION PREVALENCE:** 2.8% of all surveyed children between 1 and 2 years of age fell below the 80th percentile in weight for height. 1.6% of those between 1 and 5 years of age fell below the same percentile. (Anderson, 1979)

**MALNUTRITION PREVALENCE:** The rate of malnutrition, based on arm circumference and height measurements of preschool children, was determined to be 2.4%. (Anderson, 1979)

**ANEMIA:** Iron deficiency affects nearly 80% of preschool children, according to SESPAS. (Monckeberg and Griffiths, 1983)

**CHILD MORTALITY RATE:** The death rate for children from 1 to 4 years of age was 4.0 per 1000 inhabitants in 1976, down from 11.8 per 1000 in 1960. (Suarez and Cusminsky, 1979)

**INFANT MORTALITY—INFLUENZA—PNEUMONIA:** The mortality rates associated with influenza-pneumonia for infants under 1 year of age and for children aged 1 to 4 years were 172.9 and 30.2 per 100,000 live births respectively, in 1975. (Suarez and Cusminsky, 1979)

**DIARRHEAL MORTALITY TREND:** The child mortality rate associated with diarrheal disease decreased from 111.1 deaths per 100,000 inhabitants in 1970 to 46.1 deaths per 100,000 inhabitants in 1979. (PAHO, 1981)

**INFLUENZA—PNEUMONIA MORTALITY TREND:** The child mortality rate associated with influenza-pneumonia decreased from 30.8 deaths per 100,000 inhabitants in 1970 to 28.6 in 1979. (PAHO, 1981)

**TETANUS DEATH RATE:** The child mortality associated with tetanus was reported at 3.3 and 0.3 deaths per 100,000 inhabitants for 1970 and 1979 respectively. (PAHO, 1981)

**DIARRHEAL DISEASES AND WATER SUPPLY:** The mortality rate due to diarrheal diseases in 1975 was 89.5 per 100,000 inhabitants. Only 57% of the general population was covered by some form of water service. (Flores et al., 1979)

**DPT IMMUNIZATIONS:** In 1976 34.8% of children below five years of age had been immunized with the DPT vaccine. (Vanoni et al., 1979)

**PRINCIPAL CAUSES OF DEATH;** The five principal causes of death for children aged 1 to 4 and the percent of deaths accounted for by each

cause in 1975 were the following: diarrheal diseases (18.6%), avitaminosis and other nutritional diseases (8.8%), influenza-pneumonia (6.3%), measles (3.8%), and accidents (3.7%). (PAHO, 1978)

## RURAL

**DISTRIBUTION OF MALNUTRITION:** Among 33 communities in which nutrition promoters collected data on the prevalence of second and third degree malnutrition (Gomez classification), the rates varied widely. The prevalence was over 20% in 6 communities (18.2% of the 33 communities), 15.0-19.9% in 1 (3%), 10.0-14.9% in 7 (21.2%), 5.0 to 9.9 in 13 (39.4%), and under 5% in 6 communities (18.2%). (Teller, 1983a)

**WEIGHT FOR AGE:** Community promoters' data indicated that the prevalence of second and third degree malnutrition (Gomez Classifications) in their communities was 10.7% among preschoolers; in nearly one of every five communities, the rate was high, 10% or more. (Teller, 1983a)

**MALNUTRITION—SIERRA REGION:** 65.8% of children under five years of age fell below the NCHS height/age 95th percentile, and 15.4% fell below the 85th percentile. (Smith et al., 1982)

**MALNUTRITION--SIERRA REGION:** 36.8%, 10.1%, and 2.2% of children under five years of age who participated in a survey conducted in the southwest Sierra were found to suffer first, second, and third degree malnutrition (Gomez), respectively. (Smith et al., 1982)

**ANEMIA--SIERRA REGION:** 7.4% of children under five years of age were found to have "low" hemoglobin values, and 12.3% of the same sample had "low" hematocrit. Reference values were not specified in the report. (Smith et al., 1982)

**VITAMIN A DEFICIENCY—SIERRA REGION:** No clinical signs of vitamin A deficiency were detected in a survey in which 448 children under five years of age were studied. (Smith et al., 1982)

**DIARRHEA--SIERRA REGION:** 12.5% of all children under five years of age surveyed were suffering diarrhea at the time of the study. 37% of the sample had had an episode of diarrhea during the week preceding the survey. (Smith et al., 1982)

## URBAN

**PARASITIC INFESTATION:** 83% of children aged 1 to 7 in a sample of poor urban subjects were found to be actively infected with parasites. *Ascaris* was the organism identified in over half the cases. (Hernandez, 1966)

## 2. DIETARY BELIEFS

### 2.1 DIETARY BELIEFS, GENERAL

### 2.2 DIETARY BELIEFS, ABOUT PREGNANCY

#### NATIONAL

FRUIT CONSUMPTION: Local fruits are considered harmful to young girls, pregnant women, and lactating mothers. (Lashman and Daly, 1974)

#### RURAL

EGGS—SOUTHWEST: 56% of women believed it is bad to eat eggs when pregnant. (Ortega and Mota, 1977)

PREGNANCY AND FOOD INTAKE—SIERRA REGION: None of the interviewed mothers indicated a belief that food intake should be increased during pregnancy. (Smith et al., 1982)

HARMFUL FOODS—SIERRA REGION: Soursop was identified frequently as a food harmful to pregnant women. Although 33% to 40% of surveyed mothers reported beliefs regarding foods harmful during pregnancy, there was significant variation and disagreement across and between communities. (Smith et al., 1982)

### 2.3 DIETARY BELIEFS, ABOUT LACTATION

#### NATIONAL

FRUIT CONSUMPTION: Local fruits are considered harmful to young girls, pregnant women, and lactating mothers. (Lashman and Daly, 1974)

#### RURAL

LACTATION AND FOOD INTAKE—SIERRA REGION: None of the interviewed mothers indicated a belief that food intake should be increased during lactation. (Smith et al., 1982)

BREAST MILK VALUE—SIERRA REGION: 68.6% of surveyed mothers reported believing that maternal milk was the best food for children under six months of age. 15.9% reported the same preference regarding the age interval 6 months to 1 year. (Smith et al., 1982)

HARMFUL FOODS—SIERRA REGION: Although 33 to 4-% of the surveyed women reported believing that certain foods are harmful to women while breast feeding, there was no food identified by 2% or more of the sample. Avocado, pork, tripe, pigeon peas, fish, and herring were mentioned, but there was no clear-cut agreement across communities or in a given community. (Smith et al., 1982)

## **2.4 DIETARY BELIEFS, ABOUT BREAST MILK SUBSTITUTES (INCLUDING BOTTLE FEEDING)**

### **RURAL**

**BELIEF VS. PRACTICE—SOUTHWEST:** Although 97% of mothers thought breast feeding appropriate, 42% terminated before 1 year, mostly because of loss of breast milk. (Ortega and Mota, 1977)

## **2.5 DIETARY BELIEFS, ABOUT WEANING**

## **2.6 DIETARY BELIEFS, ABOUT ILLNESS AND CURE**

### **RURAL**

**DIARRHEA AND DIET—SIERRA REGION:** 85.4% of mothers reported considering milk an undesirable food for an infant with diarrhea. Further, 24.7% of mothers considered it best to withhold all foods. (Smith et al., 1982)

**AWARENESS OF ILLNESSES--SOUTHWEST:** Mothers asked to name prevalent childhood illnesses most often mentioned diarrhea, vomiting, and respiratory infections. Only 1% recognised malnutrition as a problem. (Ortega and Mota, 1977)

### 3. DIETARY PRACTICES

#### 3.1 DIETARY PRACTICES, GENERAL

##### NATIONAL

**TYPICAL DIET:** The lower classes subsist on a diet which consists largely of rice and plantains and tuber crops such as yucca and sweet potato. These foods are usually boiled with oil, garlic, and onions to prepare the traditional sancocho. Red beans, prepared in a diluted sauce, also supplement the diet. The noon meal usually consists of moro, a dish of boiled rice and beans with some oil added. Beef is preferred regardless of its quality and represents a high fraction of the food expenditures. Green vegetables are generally not frequently eaten, although okra is popular throughout the nation. Pastas are preferred over bread in the rural communities. (Lashman and Daly, 1974)

**MAJOR FOODS CONSUMED:** In terms of their contribution in calories the major foods consumed and the percent of calories accounted for by each food in 1977 were: rice (19.6%), sugar and honey (15.7%), fruit (15.3%), and oil and fat (11.2%). (U.S.A.I.D., 1982)

**VARIABILITY OF CONSUMPTION PATTERNS;** Food consumption patterns vary more widely with income distribution than between urban and rural areas of the country. (Lashman and Daly, 1974)

**CONSUMPTION:** Individuals from families with total expenditures around the poverty level (RD\$100) were estimated to consume 5.5 kg of rice, 0.9 kg of dried red beans, 2.37 kg of plantains, 2.4 kg of yuca, 1.1 kg of raw sugar, 2.4 kg of eggs, 0.68 kg of commercially produced chicken, 0.59 kg of stewing pork, 0.47 kg of stewing beef, and 0.25 kg of raw milk per month. (Musgrove, 1983)

**DIETARY PREFERENCES:** The primary concern of the average family of low socioeconomic status, with less than one peso to spend on food each day, is that of satisfying hunger. Thus, a campesino might prefer a coca-cola, which he feels satisfies his energy needs, to a glass of milk. (Lashman and Daly, 1974)

**FOOD PRODUCTION:** Total food production increased by 32% during the 1970-80 decade; however, per capita food production increased only 3% during the same period. (U.S.D.A., 1981)

**STAPLE PRODUCTS:** Total rice, corn, and bean production reached 354,000, 40,000, and 40,000 metric tons, respectively, in 1980. (U.S.D.A., 1981)

**CEREAL CONSUMPTION:** The average per capita yearly consumption of cereals is 127 kg., of which 41% is imported cereals. (U.S.A.I.D., 1982)

**CALORIE INTAKE:** It is estimated that 58% of the population has a calorie intake below the 1973 WHO/FAO recommendation. (U.S.A.I.D., 1982)

### 3.1 DIETARY PRACTICES, GENERAL (Cont.)

**CALORIE AVAILABILITY AND INTAKE:** The daily per capita calorie availability and intake were 2143 and 1634 calories respectively. (Daza and Eisler, 1979)

**CALORIE SUPPLY:** The daily per capita calorie supply during 1975-1977 was estimated at 2107 calories. (U.S.A.I.D., 1982)

**PROTEIN AVAILABILITY AND INTAKE:** The daily per capita total protein availability and intake were 48.5 gr. and 44.6 gr. respectively. The availability of animal protein was 19.6 gr. per capita per day. (Daza and Eisler, 1979)

**PROTEIN SUPPLY:** The daily per capita protein supply during 1975-1977 was estimated to be 42.8 gr. (U.S.A.I.D., 1982)

**ANIMAL PROTEIN:** Total meat and milk production reached 107,000 and 380,000 metric tons, respectively, in 1980. (U.S.D.A., 1981)

**ANIMAL PROTEIN SUPPLY:** The daily per capita animal protein supply was estimated at 14.7 gr. for the 1975-77 period. (U.S.A.I.D., 1982)

#### RURAL

**STAPLES—SEIRRA REGION:** Rice and beans were eaten together by 92% of the sample studied in the Sierra. (Smith et al., 1982)

**MEAL PATTERN—SIERRA REGION:** Nearly all participants in a nutrition survey reported eating 3 meals per day. The morning meal usually consisted of a cereal or grain product plus a staple such as plantain, yuca, or sweet potato. 29.5% of respondents ate eggs and 36.6% reported consuming milk. (Smith et al., 1982)

#### URBAN

**INCOME AND FOOD EXPENDITURES:** Families with monthly incomes between 50 and 100 pesos spent 23% and 25% of their food budget in cereals and food from animal sources respectively. Families with incomes above 1000 pesos spent 9% and 32% in cereals and food from animal sources respectively. (FAO, 1979)

### 3.2 DIETARY PRACTICES, WOMEN

#### 3.2.1 DIETARY PRACTICES, WOMEN DURING PREGNANCY

##### NATIONAL

**DIET:** Most pregnant women supplement their diets if their socioeconomic status will support it, although no particular foods are favored. (Documentos, 1983)

#### 3.2.2 DIETARY PRACTICES, WOMEN DURING LACTATION

### 3.3 DIETARY PRACTICES, INFANTS 0-24 MONTHS

### 3.3.1 DIETARY PRACTICES, INFANTS 0-24 MONTHS, BREASTFEEDING

#### NATIONAL

**PATTERNS OF BREAST FEEDING:** Although infants in rural areas are nearly universally breast fed until 12 or 18 months of age, families migrating to urban areas frequently adopt "artificial" feeding, as have urban middle-class mothers. (Documentos, 1983)

**SUPPLEMENTAL FOOD:** Infants are often fed carbohydrates prior to breast feeding, resulting in decreased appetite and possibly shortening the duration of lactation. (Lashman and Daly, 1974)

**MATERNAL AGE AND BREAST FEEDING:** The average length of breast feeding, for all maternal ages, was 8.7 months. Mothers younger than 25 years of age breast fed for an average of 8.0 months while those of 35 to 44 years of age breast fed for an average of 9.3 months. (ISI, 1977)

**MATERNAL PARITY AND BREAST FEEDING:** Lactating mothers with 4 or more successful pregnancies breast fed their last child an average of 9.7 months while mothers with fewer than 4 successful pregnancies breast fed for an average of 6.7 months. (ISI, 1977)

**BREAST FEEDING AND RURAL RESIDENCE:** Mothers in rural environments breast fed their last infant for an average of 10.8 months while their urban counterparts did so for an average of 7.0 months. (ISI, 1977)

#### RURAL

**DURATION OF BREAST FEEDING:** 19.4% of infants and children under five sampled in a survey carried out in the mountain region to the southwest of Santiago were being breast fed. The average age of the sample studied was 31.5 months. (Smith et al., 1982)

**AGE AT WEANING—SIERRA REGION:** The average age at weaning was 10.3 months. (Smith et al., 1982)

#### URBAN

**INITIATION:** Among wealthy urban mothers, only 37% initiated breast feeding and only 4% were still breast feeding at 3 months. (Documentos, 1983)

**PREVALENCE:** In 1981, only 63.5% of middle-class urban women breast fed. (Documentos, 1983)

### 3.3.2 DIETARY PRACTICES, INFANTS 0-24 MONTHS, WEANING

#### NATIONAL

**PLANTAIN:** Plantain is preferentially used during weaning. Its low protein value explains the high incidence of nutritional problems in this age group. (Lashman and Daly, 1974)

### 3.3.2 DIETARY PRACTICES, INFANTS 0-24 MONTHS, WEANING (Cont.)

**BREAST MILK SUBSTITUTES SALES:** It was estimated that the 1982 annual sales volume for formula breast milk substitutes was RD\$3,000,000. (Documentos, 1983)

#### RURAL

**MATERNAL MILK SUBSTITUTES—SIERRA REGION:** 45.8% of those mothers who used bottles fed their infants fresh cow's milk, while 40% reported using powdered milk. (Smith et al., 1982)

**SUPPLEMENTAL FOODS—SIERRA REGION:** Aside from milk, other supplemental foods were reported to be introduced around the fifth month (5.2 months  $\pm$  2.8 months). (Smith et al., 1982)

**SUPPLEMENTAL FOODS—SIERRA REGION:** The most popular supplemental food was "crema de habichuelas," a sweetened puree of kidney beans with milk. Potato puree was reported as used by over half of the surveyed population. (Smith et al., 1982)

**REPORTED BELIEFS VS. PRACTICES—SIERRA REGION:** Although 68.8% of surveyed mothers reported believing that breast milk is the best food for infants under six months of age, by the age of two months, 68.5% of infants received the bottle in addition to, or instead of, the breast. By the third month, 79.3% of children were receiving the bottle. (Smith et al., 1982)

**FIRST FOODS—SOUTHWEST:** 55% of mothers thought it good to give teas to infants under 1 year. Solids and juices were given to 53% of infants before 6 months, and "other" milk to 70%. (Ortega and Mota, 1977)

**WEANING FOODS—SOUTHWEST:** Before one year of age, infants had received the following foods: porridges or cereals (given to 77%), beans (75%), rice (66%), potatoes (60%), green bananas (57%), eggs (53%), meat (44%), and other foods (36%), including juice, fruit, and bread. (Ortega and Mota, 1977)

**BEANS—SOUTHWEST:** 55% of mothers gave children only the water from beans and not any strained or mashed beans. The water contains no protein. (Ortega and Mota, 1977)

#### URBAN

**FOODS AVOIDED:** Mothers studied in a longitudinal infant growth survey were reluctant to use eggs, meat, bananas, and oranges during the weaning process. This group of foods was considered potentially harmful. (Hernandez, 1966)

### 3.3.3 DIETARY PRACTICES, INFANTS 0-24 MONTHS, AFTER WEANING

#### RURAL

**INTRODUCTION TO FAMILY DIET—SIERRA REGION:** By the age of one year, most infants were reported to consume essentially family diets, with no significant contribution from milk or weaning foods. (Smith et al., 1982)

### 3.4 DIETARY PRACTICES, HEALTH AND MEDICINE

#### NATIONAL

**FEVER AND DIET—SIERRA REGION:** 40% of mothers interviewed reported withholding regular meals from a child with fever. 25% of mothers reported withholding milk, rice, and beans during a fever episode. (Smith et al., 1982)

**DIARRHEA REMEDIES—SOUTHWEST:** Treatment for children with diarrhea included inappropriate or inadequate home remedies, 32% (including teas, Alka Seltzer, and withholding food); "appropriate" home remedies, 40% (lemon teas, coca-cola); pharmaceuticals, 28% (dramamine, antibiotics); taking child to the doctor on the day of onset, 8%; to doctor on second or third day, 32%; on fourth day or later, 11%; medicine from local health promoter, 7%; "suero casero" (homemade oral rehydration fluid), 2%; and visits to doctor, clinic, or dispensary, interval not specified, 19%. For treating diarrhea with vomiting, 43% of mothers said that their children had not been affected; the remainder gave responses similar to those above. (Ortega and Mota, 1977)

**BOILING WATER—SOUTHWEST:** Although 96% of mothers agreed that water should be boiled, only 43% did boil water for children under 2 years old. (Ortega and Mota, 1977)

**HYGIENE—SOUTHWEST:** Only 38% of mothers used hot water and soap in washing children's eating utensils; 57% used cold water with soap. (Ortega and Mota, 1977)

**BOTTLE HYGIENE—SOUTHWEST:** Only 69% of the mothers using baby bottles and nipples boiled them (Ortega and Mota, 1977)

#### 4. NUTRITION STATUS CORRELATIONS

##### NATIONAL

**MATERNAL PARITY AND BREAST FEEDING:** Lactating mothers with 4 or more successful pregnancies breast fed their last child an average of 9.7 months while mothers with fewer than 4 successful pregnancies breast fed for an average of 6.7 months. (ISI, 1977)

**BREAST FEEDING AND RURAL RESIDENCE:** Mothers in rural environments breast fed their last infant for an average of 10.8 months while their urban counterparts did so for an average of 7.0 months. (ISI, 1977)

##### RURAL

**MALNUTRITION CORRELATES:** Readily identifiable household characteristics related to malnutrition included low occupational status (day laborers, small farmers, etc.) little or no access to land, lack of potable water and latrine use, and female-headed households. (Teller, 1983b)

**CHILD SURVIVORSHIP AND MATERNAL EDUCATION:** 91.7% of children born to mothers with 7 to 9 years of education reach age 2, while only 84.1% born to mothers with no education survive to age 2. (Solimano and Chapin, 1981)

**DIET AND GROWTH PARAMETERS—SIERRA REGION:** Consumption of milk or sausages was associated with greater height and weight. Similarly, bread and yuca consumption were associated with greater stature and weight. (Smith et al., 1982)

##### URBAN

**CHILD NUTRITION AND FAMILY SIZE:** Mothers of malnourished children were of a higher parity and had more live children than mothers of well-nourished children. (MacCorquodale and Rondon de Nova, 1977)

**CHILD SURVIVORSHIP AND MATERNAL EDUCATION;** 91.8% of children born to mothers with 7 to 9 years of education reach age 2, while only 82.9% born to mothers with no education survive to age 2. (Solimano and Chapin, 1981)

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## 5. NUTRITION AND HEALTH POLICIES AND PROGRAMS

### 5.1 NUTRITION AND HEALTH POLICIES AND PROGRAMS, POLICIES

#### NATIONAL

**NUTRITION AUTHORITY:** National nutrition programs are run by SESPAS (Secretaria de Estado de Salud Publica y Asistencia Social) through its Nutrition Division. (Documentos, 1983)

**SESPAS:** SESPAS (Public Health and Social Security Secretariat) was established in 1978. The main health objective is preventive medicine; emphasis was given to improving and extending primary health care in the rural areas. The health structure established to accomplish this has three levels of increasing specialization and staff training. (Monckeberg and Griffiths, 1983)

**SOCIAL SECURITY SYSTEM:** Less than 5% of the population was covered by social security system in 1975. (Solimano and Chapin, 1981)

**USE OF CULTIVABLE LAND:** While almost half of the total area of the republic is unsuitable for agricultural activity, 56% of the total crop land is used for sugar cane, coffee, and cocoa plantations. (Lashman and Daly, 1974)

### 5.2 NUTRITION AND HEALTH POLICIES AND PROGRAMS, PROGRAMS

#### NATIONAL

**BREAST FEEDING CAMPAIGN:** SESPAS and CONAPOFA (Consejo Nacional de Poblacion y la Familia) collaborate on a breast feeding promotion program. SESPAS is planning an expanded, nationwide campaign. (Monckeberg and Griffiths, 1983)

**BREAST FEEDING PROMOTION:** The Nutrition Division of the Public Health Secretary's Office has interrupted the former practice of selling breast milk substitutes at public hospitals and has introduced breast feeding promotion into the norms for maternal and child health care. In addition, it has drafted a law project which would prohibit the sale of breast milk substitutes in all establishments. (Documentos, 1983)

**BREAST FEEDING PROMOTION—HEALTH SECTOR:** The Health Sector has proposed the following activities for promoting breast feeding: formation of a national committee with sufficient political and economic means; a national mass media campaign, including radio, television, periodicals, schools, and legislation; and promotion of awareness among professionals through involving institutions of higher education. (Documentos, 1983)

**BREAST FEEDING PROMOTION—AGENCIES:** Among the non-government agencies participating in the national effort to promote breast feeding are: Caritas, FUDECO, Food for the Hungry Dominican, AACION Evangelica, PROFAMILIA, Mujeres en Desarrollo (MUDE), and CIF. Each of these agencies has coordinated its activities with those of the official sector to some degree. (Documentos, 1983)

## 5.2 NUTRITION AND HEALTH POLICIES AND PROGRAMS, PROGRAMS (Cont.)

**NUTRITION PROMOTION PROGRAMS:** Nutrition education activities conducted by SESPAS, CARE, CRS, Caritas, Church World Service (CWS), and SSID are profiled fully in Table IV, p. viii. (Monckeberg and Griffiths, 1983)

**BREAST FEEDING PROMOTION IN PUBLIC HOSPITALS:** In public hospitals, mothers and their newborns are roomed together unless there is a health problem which counterindicates this practice. But most mothers stay only 24 hours after giving birth, so there is not time to orient them adequately to proper breast feeding practices. (Documentos, 1983)

**BREAST FEEDING PROMOTION:** In 1982, one health clinic helped promote initiation of breast feeding by prohibiting the use of "artificial" milks for infants born there, and began a volunteer service to provide support and instruction for new breast feeding mothers. (Documentos, 1983)

**ROOMING IN—PRIVATE CLINICS:** In some private clinics, newborns are kept with their mothers during the day and placed in a nursery at night. (Documentos, 1983)

**BREAST FEEDING EDUCATION:** Schools of medicine, nutrition, and nursing provide at least 3 to 5 hours of instruction regarding breast feeding, including its nutritional, emotional, and technical aspects and its economic advantages. In primary and secondary schools, there is no mention of breast feeding, but the national pediatric society and various private groups do speak to some classes, especially at the secondary level. (Documentos, 1983)

**REHABILITATION:** Although both CARITAS and SSID operate rehabilitation programs for malnourished children, they reach only 1,200 beneficiaries, and there are 50,000 to 80,000 children with third-degree malnutrition. The centers operate as outpatient centers, so they can reach only nearly families. Facilities are inadequate, weight control is disorderly and insufficient, and there is no evaluation of the centers or followup of the children treated. SESPAS Centers have better physical facilities, but operational guidelines are not followed. (Monckeberg and Griffiths, 1983)

**PL-480 PROGRAMS:** The U.S.A.I.D. Mission has committed itself to a reorientation of the PL-480 Title II Program from one of feeding to one of development, headed toward self-sufficiency. The major components are rural development and nutrition; the major nutrition improvement projects with nutrition objectives include mother-child health projects, nutrition recuperation centers, non-formal education, and growth monitoring. (Monckeberg and Griffiths, 1983)

**PL 480 TITLE II RECIPIENTS:** 264,000 persons were estimated to benefit from PL-480 food distributed by voluntary agencies during 1982. (U.S.A.I.D., 1982)

**PL 480:** PL-480 proposed sales and donations for 1983 are 91,000 and 8,600 metric tons respectively. (U.S.A.I.D., 1982)

**PL 480 TITLE II:** During 1981 a total of 10,142 tons of PL-480 food worth 4.35 million dollars were received as donations by the Dominican

government, and 57,500 metric tons of PL-480 food worth 15.0 million dollars were purchased. (U.S.A.I.D., 1982)

**HEALTH EXPENDITURES:** Health expenditures in 1975 represented 5% of government expenses. (PAHO, 1978)

**CARE AND PL-480:** CARE delivers food through several agencies: the IAD (Dominican Agrarian Institute), the Secretariat of Agriculture, the CEA (State Sugar Council), and SESPAS. The IAD distributes the food in communities which have sugar mills operated by the government. IAD distributes food to lands awarded by the Agrarian Reform Program, and SESPAS distributes the food through nationwide Rural Clinics. (Monckeberg and Griffiths, 1983)

**CARE AND PL-480:** CARE distributes food through the Secretaria de Educacion (SEEBAC) to 13,500 preschool children. (Monckeberg and Griffiths, 1983)

## **RURAL**

**CRS/CARITAS—ANEP:** CRS, through Caritas Dominicana, will expand and improve the operation of their Applied Nutrition Education Program (ANEP). The program is unique in that it conducts its nutrition activities through community groups, organized through community initiatives, and stimulated by ANEP community promoters. Promoters conduct community needs assessments and develop educational messages. (Teller, 1983a)

**ANEP:** ANEP, run by Caritas and Catholic Relief Services through a grant from USAID, focuses on promoting home gardens and changing household level food habits through education. (Shack, 1983)

**ANEP PROMOTERS:** There are currently 40 promoters, each assigned to a specific community. Their responses to a survey showed that they know little about nutrition, believed income and the economy were the main concerns of their communities, were concerned about lack of health clinics, and identified parasites and respiratory difficulties as the main health problems. (Shack, 1983)

**ANEP SURVEILLANCE AND EDUCATION:** ANEP has initiated the use of a data-gathering form which provides information for community workers to use both in planning services and to use in conducting community nutrition education. The data reveal low participation of the families of high-risk children in the ANEP community nutrition organizations, and the inclusion of communities where the prevalence of malnutrition is significantly lower than the national average. (Teller, 1983b)

**FAMILY SUPPORT:** Only 29.2% of the families of malnourished children participated in ANEP support groups, and only 22.1% participated actively in nutrition projects. (Teller, 1983a)

**GOALS OF THE RURAL BASIC HEALTH SERVICE (RBHS):** In 1975, during the development of the Rural Basic Health Service programs, the following goals were identified: 1) to reduce infant mortality by 25% within the

## 5.2 NUTRITION AND HEALTH POLICIES AND PROGRAMS, PROGRAMS (Cont.)

first 3 years of the program, 2) to reduce child mortality in the 1-4 year age group by 15% within the first three years of the program, and 3) to reduce the crude birth rate by 15% within the first five years of the program. (Strachen et al., 1981)

**INTERMEDIATE TARGETS OF THE RBHS:** The Rural Basic Health Service initiated in 1975 a program aimed at reducing infant and child mortality and crude birth weight. Towards these goals, the following intermediate targets were contemplated: 1) tetanus immunization of 70% of women of reproductive age, 2) immunization of 60% of children between two and six months of age against measles, and 60% of children below six years of age against diphtheria, tetanus, and whooping cough, 3) coverage with six prenatal visits to 60% of all pregnant women during the first 3 years of the program. (Strachen et al., 1981)

**EVALUATION OF RBHS'S PROGRAM IMPLEMENTATION--FAMILY PLANNING:** 13.5% of women of reproductive age were estimated to be involved in family planning according to an evaluation carried out during August 1977. (Strachen et al., 1981)

**EVALUATION OF RBHS'S PROGRAM IMPLEMENTATION--DPT VACCINE:** Data from 19 randomly selected communities revealed that by August 1977 57.2% of children under five had received two doses of DPT. (Strachen et al., 1981)

**EVALUATION OF RBHS'S PROGRAM IMPLEMENTATION--MEASLES VACCINE:** 23.7% of children under ten years of age had received one dose of the measles vaccine by August 1977. (Strachen et al., 1981)

**EVALUATION OF RBHS'S PROGRAM IMPLEMENTATION--TETANUS VACCINE:** 47.1% of women of reproductive age had received the tetanus vaccine according to an evaluation carried out during August 1977. (Strachen et al., 1981)

**HEALTH SERVICES:** There are 40 hospitals, 314 rural clinics, and 53 subcenters or polyclinics, in addition to 8 specialized hospitals. There are 1.3 hospital beds per 100 population, and 6 doctors per 10,000. There are 5,182 health promoters, but some have no training. (Monckeberg and Griffiths, 1983)

**HEALTH PROMOTERS:** The 5,200 health promoters work with the 300 rural health clinics in a variety of areas; their responsibilities in nutrition include providing nutrition education and participating in the nutrition monitoring system, making home visits, weighing and measuring children under 6 years old, and referring malnourished children to clinics to receive medical follow-up and food provided through PL-480. Cases of advanced malnutrition are referred to SESPAS Nutrition Rehabilitation Centers, which provide outpatient services including education for mothers. (Monckeberg and Griffiths, 1983)

**NUTRITION EDUCATION PROGRAMS--1974:** The State Sugar Council and the Agrarian Reform Institute (IAD) implement nutrition education programs in their areas of operation. CARE operates a national campaign targeted to 100,000 primary students making use of a comic book distribution freely. CRS/CARITAS also operate a program of nutrition education which employs a

small number of para-nutritionists and Peace Corps volunteers. (Lashman and Daly, 1974)

**VACCINATION PROGRAM COVERAGE—SIERRA REGION:** The coverage of the vaccination program among the population under five years of age was as follows: 75% for one or more DPT and polio vaccine dose, 22% for measles, and 41.4% for BCG. (Smith et al., 1982)

**SEWERAGE SYSTEMS:** 18% of the rural population had access to a sewerage system in 1979. (PAHO, 1981)

**SEWAGE SYSTEM:** 17% of the rural population in 1976 was covered by some form of sewage collection system. (Flores et al., 1979)

**WATER SOURCE—REGION IV:** The sources of water used by 500 women who were pregnant or had children under 2 was: tap water, 62%; stream, canal, or lake, 39%; wells, 23%; and delivered by truck to community, 13%. (Ortega and Mota, 1977)

**WATER SUPPLY EXPANSION:** The percentage of the rural population served by water supply increased from 10% to 30% during the 1969-1979 period. (PAHO, 1981)

**WATER SERVICES:** 29% of the rural population in 1976 was considered covered by some type of water service. (Flores et al., 1979)

## URBAN

**VACCINATION PROGRAM COVERAGE:** The coverage of vaccination programs in the metropolitan areas was determined in 1980 by means of a sampling of children aged 12-23 months. The coverage of the BCG vaccination program was 21%. Coverage of the immunization with the DPT vaccine was 75%, 46%, and 25% for the first, second, and third doses, respectively. Polio vaccination with the first, second, and third dose was 87%, 60%, and 37%, respectively. Coverage for the measles vaccination program was reported at 31%. (PAHO, 1981)

**SEWERAGE SYSTEMS:** The percentage of the urban population served by a sewerage system increased from 12% to 29% during the 1969-1979 period. (PAHO, 1981)

**SEWAGE SYSTEM:** 27% of the urban population in 1976 was served by a sewage collection system. (Flores et al., 1979)

**WATER SUPPLY EXPANSION:** The percentage of urban population served by water supply systems increased from 57% to 77% during the 1969-1979 period. (PAHO, 1981)

**WATER SERVICES:** 88% of the urban population had access to water services in 1976. 66% inhabited homes with a direct connection to the water service system. (Flores et al., 1979)

## 6. COMMENTARIES

### NATIONAL

**OBSTACLES TO BREAST FEEDING PROMOTION:** Obstacles to success of the national effort to promote breast feeding include: apathy of health personnel, lack of political support, and lack of financing for organizing professionals in an organization which can promote this concern. (Documentos, 1983)

**ROLE OF INTERNATIONAL AGENCIES:** A 1974 study concluded that while in theory the various secretariats were responsible for the design and implementation of a food policy, in reality, various international public and private agencies carried the bulk of the load. (Lashman and Daly, 1974)

**MULTISECTORAL COORDINATION:** In 1974, a study of the interaction between the health sector and other development forces considered that the coordination of the activities of the Health, Agriculture, Education, and Commerce was negligible. (Lashman and Daly, 1974)

### RURAL

**ANEP EVALUATION:** Although effective and well-conceived, ANEP would benefit from the following actions: Caritas should reorient ANEP's monitoring and evaluation procedures according to the project objective of self-reliance, should increase the nutritional impact of the program by focusing on communities and families with demonstrated higher needs, strengthen the human resources of ANEP at the central and supervisory levels through training, and AID should give a higher priority to this program, as it can serve as a model for future nutrition support to the government from the private sector. (Teller, 1983a)

**ANEP AS MODEL:** ANEP is the only major non-food supplementation program in the Dominican Republic. It is well-conceived and effective, and should serve as a model and example for other projects in this and other countries. (Teller, 1983a)

### URBAN

**EFFECTS OF MILK SUBSIDY:** In 1966 it was suggested that the distribution of subsidized milk was having a negative impact on the length of breast feeding of urban infants of low socioeconomic status. (Hernandez, 1966)

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Klipstein, F. A., Rubio, C., Montas, S., Tomasini, J. T., and Castillo, R. G.

- 1973 Nutritional status and intestinal function among rural populations of the West Indies. III. Barrio Cabreto, Dominican Republic. American Journal of Clinical Nutrition 26(1):87-94, January.

Original data

Method: Dietary survey and serologic determinations.

Sample: 42 adults selected to be representative of the total of 129 adult inhabitants in a rural community.

Location: Barrio Cabreto, 26 miles northeast of Santo Domingo.

This study explores the role of intestinal malabsorption on the effects of marginal dietary intake in adults.

Lashman, K. E. and Daly, J. A.

- 1974 Syncrisis. The Dynamics of Health. IX: Dominican Republic. Rockville, MD: Public Health Service.

MacCorquodale, D. W. and Rondon de Novoa, H.

- 1977 Family size and malnutrition in Santo Domingo. Public Health Reports 92(5), October.

Original data

Method: Case-control study of urban Dominican women with either a malnourished child (case group) or a well nourished child (control group).

Sample: 82 case mothers were identified among the patients referred to the nutrition clinic of an urban hospital. The 82 mothers of the control group were recruited from the same neighborhood as their matched counterparts.

Location: Various slum areas in the city of Santo Domingo.

This study confirms the association between high number of live births and child malnutrition. Although the case and control groups were considered of equal socioeconomic status, no definite statement is made regarding the potential role of income differences as confounding factors.

Monckeberg, F. and Griffiths, M.

- 1983 Plan for the Improvement of the Nutrition Component of the Title II PL-480 Program in the Dominican Republic (1984-1986). Washington, D.C.: TransCentury Corporation and Manoff International, Inc. through the International Nutrition Communication Service, Education Development Center, Newton, Massachusetts, for U.S. Agency for International Development.

This report contains detailed observations of activities in nutrition programs, focusing on nutrition education components of programs offering PL-480 foods, growth monitoring, and nutrition rehabilitation. The consultants document and analyze the current situation and present detailed recommendations for introducing nutrition education into these programs.

Musgrove, P.

- 1983 Household Food Consumption in the Dominican Republic, 1976-77. An Analysis of the Effects of Income, Price, and Family Size. Washington, D.C.: Nutrition Economics Group, Office of International Cooperation and Development, U.S. Department of Agriculture.

This report includes the computation of consumption functions and elasticity factors for the main foods identified in the 1977 Central Bank survey of household income and expenditure, the first ever taken in the Dominican Republic. Estimates of food consumption by product are presented in relation to total expenditures and family size.

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Ortega, M. M. and Mota, V. M.

- 1977 Encuesta de Informacion de Base para la Evaluacion del Programa de Comunicacion de Masas de la Oficina de Coordinacion Nutricional en la Region Sanitaria IV. Santo Domingo: Oficina de Coordinacion Nutricional de la Secretaria de Estado de Salud Publica y Asistencia Social.

Original data

Method: 46-item questionnaire.

Sample: 500 pregnant women and mothers of children under 2 years old.

Location: Health Region IV (Southwest), which generally has the poorest health status.

The questionnaire was designed to elicit: (1) a basic profile with information on health, electricity, water, and education; (2) information on the number of functioning radios and radio listenership; and (3) information on nutritional knowledge and practices. The study, Study on Baseline Information for the Evaluation of Mass Media Nutrition Education Messages, was conducted by INTECH (Instituto Tecnologico de Santo Domingo) in July 1977.

PAHO (Pan American Health Organization)

- 1981 Health Conditions in the Americas 1977-1980. Washington D.C.: Pan American Health Organization. Scientific Publication No. 427.

Data compiled in this report is a selection from the annual questionnaires sent by WHO and PAHO to their member countries. The seven chapters deal with population, vital statistics, communicable diseases, health services, environmental health, and human resources.

PAHO

- 1978 Health Conditions in the Americas. Washington D.C.: Pan American Health Organization. Scientific Publication No. 364.

This document presents a comprehensive review of the data corresponding to 1973-1976. Population, vital statistics, communicable diseases, health services, environmental health, and human resources are reviewed.

Shack, K.

- 1983 Dominican Republic, August 12-20, 1983--Development of needs assessment/problem identification instrument and a baseline survey for the Applied Nutrition Education Program, Caritas and Catholic Relief Services. Newton, MA: International Nutrition Communication Service, through Manoff International.

This consultant spent a week helping plan assessment and improvement of the ANEP project, focusing on a survey for problem identification and development of educational messages.

Smith, M. F., Santos, B., and Fernandez, M.

- 1982 Nutrition and Public Health in the Dominican Republic. Archivos Latinoamericanos de Nutricion 33(4):867-881.

Original data

Method: Dietary survey including 24-hour recall, food inventory, and interview; anthropometric measurements; and laboratory and clinical observations.

Sample: 295 mothers and their 448 children under 5 years of age.

Location: Rural communities in the mountainous region southwest of Santiago.

A stratified sampling including 10 mothers of children younger than 5 years of age in each of the 10 administrative communities in the Janica, San Jose, and Moncion zones of the Sierra region was employed for this study. Data on nutritional status, dietary beliefs and practices, socioeconomic status, and housing quality were collected. Results are presented for the complete sample. Some information on coverage of vaccination programs is included.

Solimano, G. R. and Chapin, G.

- 1981 The Impact of Socioeconomic Development and Ecological Change on Health and Nutrition in Latin America. Cornell International Nutrition Monograph Series. Number 9.

This monograph explores mechanisms by which environmental, development, and health and nutrition factors interact. The authors consider that general policy in the health sector has actually contributed to the inequalities in health among population groups.

Strachen, D., Gonzalez, L., and Austin, J. E.

- 1981 Dominican Republic: Rural Basic Health Services. In J. E. Austin, ed., Nutrition Programs in the Third World. Cambridge, MA.: Oelgeschlager, Gunn, and Hain.

This description of the design and implementation of the Rural Basic Health Service Programs in the Dominican Republic includes data, observations, and interviews pertaining to the first three years of implementation. The material was prepared as a case study for use at the Harvard School of Business Administration.

Suarez, E. N. and Cusminsky, M.

- 1979 Caracteristicas de mortalidad y la morbilidad en menores de diez años. In: Condiciones de la Salud del Niño en las Americas, pp. 1-35. Washington, D.C.: PAHO, Publicacion Cientifica No. 381.

This is a comprehensive review of the morbidity and mortality data on children below 10 years of age. Statistics included cover the period up to 1978.

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Teller, C. H.

- 1983a Community Nutrition Baseline Instruments: Stimulating Initiatives Through Organized Groups; Applied Nutrition Education Project (CRS/CARITAS), The Dominican Republic, Trip Report - August 11-22, 1983. Rockville, Maryland: U.S. Department of Health and Human Services, Public Health Service, Office of International Health.

This report presents the consultant's experience and recommendations, including observations of the training of community workers, accounts of field visits and the annual ANEP (Applied Nutrition Education Project) Seminar, a discussion of issues in improving the project's effectiveness, and annexes presenting data collection instruments for community workers to use in conducting needs assessments.

Teller, C. H.

- 1983b Community Nutrition Baseline Instruments: Stimulating Initiatives Through Organized Groups; Applied Nutrition Education Project (CRS/CARITAS), The Dominican Republic, Trip Report - October 18-28, 1983. Rockville, Maryland: U.S. Department of Health and Human Services, Public Health Service, Office of International Health.

This report presents the activities of the consultant in the systematization of ANEP's nutrition monitoring activities. Included are training plans and recommendations, schedules, and activities.

U.S.A.I.D.

United States Agency for International Development, Economic and Social Data Services Division

- 1982 Indicators of Nutrition in A.I.D. Assisted Countries. Washington D.C.: Bureau of Science and Technology, A.I.D., April.

This document presents food availability, nutrition status, vital statistics, environmental sanitation, and food program data for the 74 AID assisted countries.

U.S.D.A.

United States Department of Agriculture

- 1981 World Indices of Agricultural and Food Production. Statistical Bulletin No. 669. Washington D.C.: United States Department of Agriculture, July.

This document presents longitudinal indices of agricultural and food production by country. Data are presented by commodity, in aggregate and in per capita form.

Vanoni, M., Leon de Coto, E. M., Queirolo, C., Barragan, I., Cavalie, P., and De Quadros, C.

- 1979 El programa ampliado de inmunizacion. In: Condiciones de la salud del niño en las Americas, pp. 203-210. Washington, D.C.: PAHO, Publicacion Cientifica No. 381.

WHO

World Health Organization

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This paper presents data on the prevalence and magnitude of low birth weight by country. It gives an estimate of the number of low weight births by country for 1979.

WHO

- 1979 The Prevalence of Nutritional Anemia in Women in Developing Countries. Geneva: World Health Organization, Division of Family Health.

This document reviews the available data on the prevalence of the various types of nutritional anemias. It provides an estimate of the size of the at-risk population.