Maternal and Infant Nutrition Reviews

BOLIVIA

an International Nutrition Communication Service publication
Developed and produced with funds provided by the United States Agency for International Development

MATERNAL AND INFANT NUTRITION REVIEWS

BOLIVIA

A Guide to the Literature

Compiled by

Ron Israel - Senior Editor
Joanne Nestor Tighe - Editor and Reviewer
Ellen Blumenstiel Taylor - Principal Reviewer
Steve Wirtz - Reviewer

May, 1983

An International Nutrition Communication Service (INCS) Publication

Education Development Center, Inc.
55 Chapel Street, Newton, MA 02160 USA

This project has been conducted under Contract A.I.D./DSAN-C-0209, Project No. 931-1010. Project Officer: Dr. Tina Sanghvi, Office of Nutrition--Science and Technology Bureau, Agency for International Development, Washington, D. C.

edc

CONTENTS

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.) Special thanks are due to Marcia Griffiths of Manoff International, Inc., for her assistance in acquiring many of the documents abstracted here.

Special thanks are due to Marian Zeitlin for providing many of the materials reviewed for the Burma report, and to David Sahn for providing materials and reviewing an earlier draft of this document.

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.

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:

Ron Israel, Director
International Nutrition Communication Service
Education Development Center
55 Chapel Street
Newton, Massachusetts 02160, USA

MINR Country Reports:

AFRICA:	NEAR EAST:	ASIA:	LATIN AMERICA AND CARIBBEAN:
Cameroon	Egypt	Bangladesh	Bolivia
Gambia and Senegal	Jordan	Burma	Costa Rica
Ghana	Morocco	India	Dominican Republic
Kenya	Tunisia	Indonesia	Ecuador
Lesotho	Yemen	Nepal	Guatemala
Liberia		Pakistan	Haiti
Mali		Philippines	Honduras
Sudan		South Pacific*	Jamaica
Tanzania		Sri Lanka	Panama
Zaire		Thailand	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
      3.2.2 During Lactation
   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

Bibliography

Map of

BOLIVIA

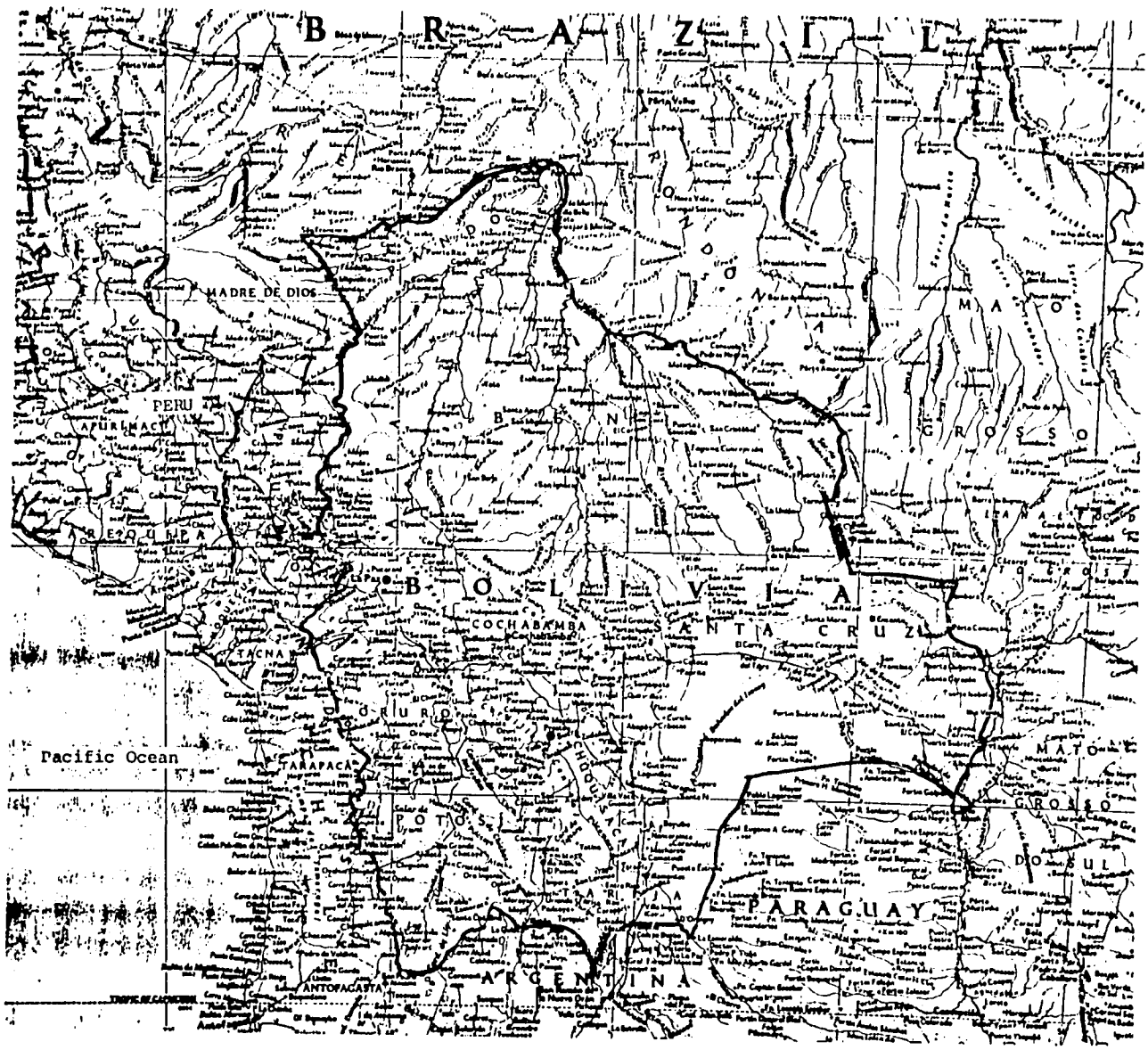

Table I

Locations Studied

Region Department Province	Anderson 1981	CARE/Bolivia 1978	Czaplicki et al 1981	Daza and Reynoso 1980	DeMuynck and de Lagrava 1977	Edozien 1978	Frericks et al 1981	Frericks et al 1980	Griffiths 1982	Haas et al 1980	Haas 1980	Ruth et al 1931	Soybean Utilization Project 1981	Stinson 1980	Weil 1979
ALTIPLANO									X			X			
LA PAZ				X						X	X				
Omasuyos															
Pocajes															
Manco Kapac															
Larecaja															
Nor-Yungas															
Ancoraimes														X	
ORURO															
Atahualpa															
Cercado															
Dalence															
POTOSI															
Nor-Lipez															
LOS VALLES									X			X			
CHUQUISACA	X	X													
Oropeza															
COCHABAMBA				X											X
Carrasco															
Yamparaez															
Esteban Arce						X							X		
Jordan						X							X		
Punata						X							X		
TARIJA	X	X													
Cercado															
Gran Chaco															
LOS LLANOS									X			X			
BENI															
Trinidad															
San Borja															
Riberalta															
SANTA CRUZ				X						X	X				
Montero							X	X							
Camino Portachuelo															
Carretera Santa Cruz-Cochabamba															
Vallegrande															
YAPACANI					X										

HIGHLIGHTS

1. NUTRITION AND HEALTH STATUS: 70% of the total population suffer some kind of nutritional deficiency; 30% to 40% of the population has goiter. Goiter is particularly prevalent in Cochabamba, where it affects from 70% to 80% of the population. Women born and raised at high altitudes are shorter than women born and raised at low altitudes. The maternal mortality rate is 48 deaths per 10,000 live births. Up to 70% of pregnant and nursing mothers have some form of iron deficiency anemia.

The infant mortality rate was 147 deaths per 1000 live births in 1979. The infant mortality rate is higher than average (174 per 1000) in the Altiplano and lower in the valleys. The child mortality rate in the 1 to 4 years old group is 14.6 per 1000. 10% of preschoolers suffer second or third degree malnutrition, and another 20% at the lower end of the first degree group are seriously nutritionally vulnerable. 56% of rural Altiplano children under 5 years old suffer from chronic malnutrition (stunting), as do 46% in Valle and 35% in Llanos. Child nutrition problems are most serious in Cochabamba, where nearly three quarters of children one to four years old are moderately or severely stunted. In rural areas generally, there is more malnutrition, as measured by low weight for height, in the 1 to 2 year olds than in the other age groups. In La Paz, PEM is a principal or related cause of death for 36% of the children under 5 years old who die. Diarrhea is common and closely related to infant deaths.

2. DIETARY BELIEFS: Foods are divided into two large categories--hot and cold. Foods also change in value according to the time of day eaten and according to the age or physiological status of the consumer. Certain foods, such as eggs and fatty meat, are believed to be bad to eat during pregnancy. Other foods are believed bad to eat during lactation, such as pork, oranges, ice cream, cold water, and many drugs. A belief which influences the timing of the introduction of foods is the idea that a child cannot eat without teeth. Food often is withheld during illness in the belief that it stirs up fever. Many mothers believe children will become sicker if given liquid during diarrhea.

3. DIETARY PRACTICES: Bolivia is self-sufficient in most foods except milk, oil, lamb, and wheat. Staple foods include quinua, barley, cassava, plantains, bananas, and potatoes. 44% of the total population lives on small farms which feed themselves. Losses of 15 to 20% of the total food production are caused by poor storage and handling facilities. Food distribution is inhibited by poor roads and high transport costs. The lack of potable water, especially in the rural areas, is a great handicap in the preparation of foods which are healthy and hygienic. Calorie intake averages 26% below FAO recommendations and is 15% below the level consumed in a sample of Latin American countries. Calorie deficiencies are most severe in the Altiplano and least severe in the lowlands. The average working class family in LaPaz devotes half or more of its expendable income to food purchases.

In general women consume no extra foods during lactation. Mother's milk is the principal food of the newborn in all regions of the country. In most cases breast feeding lasts more than a year and in some cases lasts as long as three to four years. In rural areas 91% of infants 6 to 11 months old and 55% of those 12 to 23 months old were still breast fed. Supplements such as coffee, tea, soups, and potatoes are generally introduced at about six months.

Early weaning, prior to six months, can be seen in 20% of urban infants, but the majority of their mothers are in the upper income class. When breast milk is not available, bottle feeding is practiced using oats, corn, coffee, or tea. No special weaning foods are prepared for the child less than one year of age. The child eats the foods which are prepared for the family. 12 to 13% of children in the Altiplano are reported to be fed infrequently (less than twice a day). In rural Tarija and Chuquisaca, 58% of mothers introduce solids after their children are six months of age. The most common treatment for diarrhea is herbal teas, including cinnamon, anise, and camomile.

4. NUTRITION STATUS CORRELATIONS: The highest infant mortality rates are found among children of women with no schooling. Children of illiterate parents are more likely to be malnourished; the association is more strongly related to the mother's literacy than to the father's. The lower the income level, the lower the average calorie intake. The prevalence of malnutrition is greater in the Altiplano than in the Valles. Diets of children living in the high altitude villages are significantly poorer than diets of children living at low altitudes; however, children living at low altitudes are more frequently affected by diarrhea and serious illness. Birth weights of high altitude children are from 174 to 342 grams less than children born at low altitudes. Non-initiation of breast feeding is twice as high in upper income women than in low income women.

5. NUTRITION AND HEALTH POLICIES AND PROGRAMS: The Government of Bolivia administrative units which have responsibility for nutrition sector activities are the National Council for Economic and Political Planning (CONE PLAN),

1. NUTRITION AND HEALTH STATUS

1.1 NUTRITION AND HEALTH STATUS, GENERAL

NATIONAL

NUTRITIONAL DEFICIENCIES: About 70% of the total population suffered some kind of nutritional deficiency. (Roush and Merrill, 1980)

NUTRITIONALLY VULNERABLE WOMEN: About 180,000 women were anemic and at risk of malnutrition. (King, 1979)

GOITER: 15 to 20% of the population were affected by goiter caused by lack of the trace nutrient iodine in the diet. Clinical evidence of goiter was highest in the Beni (52 to 57%), and high concentrations were also found in Santa Cruz, Chuquisaca, La Paz, and Cochabamba. (U.S.A.I.D., 1976)

GOITER: Between 30 and 40% of the population suffered from goiter. (PIA/PNAN, 1976)

GOITER: Goiter was widespread, particularly in the Oriente. 15.4% of the population under age 15 years and 10.5% of those over 15 years had suffered goiter. (Weil et al., 1974)

GOITER AMONG CHILDREN: 10.5% of people under 15 years of age had grade I goiter, 5.5% had grade II, and 0.4% had grade III (total, 16.4%). (U.S.A.I.D., 1976)

GOITER AMONG ADULTS: 5% of people over 15 years of age had grade I goiter, 4.2% had grade II goiter, and 1.3% had grade III goiter (total, 10.5%). (U.S.A.I.D., 1976)

DENTAL CARIES: Dental caries was the most common and widespread illness. Caries began in the preschool years, and the prevalence in school age children reached very high levels. (PIA/PNAN, 1976)

CAUSES OF MORTALITY: Acute diseases of the respiratory tract were recognized as the principal causes of death. In 1967 respiratory ailments were followed in order of incidence as causes of mortality by diseases of early infancy; senility and poorly defined causes; diseases of the digestive and intestinal tract; tuberculosis; rheumatic fever; accidents and violence; arteriosclerosis; and cancer. (Weil et al., 1974)

CAUSES OF COMMUNICABLE DISEASE: Unsanitary and crowded housing combined with poor ventilation result in increased transmission of communicable diseases, particularly during sleeping hours. (Weil et al., 1974)

REGIONAL

OVERWEIGHT--CHAPARE: A high proportion of children aged five to seventeen had a weight substantially higher than expected for their height in a research community in Chapare, indicating that persons in this age group had an adequate diet. (Weil, 1979)

1.1 NUTRITION AND HEALTH STATUS, GENERAL (Cont.)

GOITER--COCHABAMBA: Prevalence of goiter in Cochabamba ranged from 70 to 80%. (PIA/PNAN, 1976)

GOITER--COCHABAMBA: Goiter was observed in 26% of the population. (Edozien, 1978)

VITAMIN A--COCHABAMBA: No clinical evidence of vitamin A deficiency was found, despite low intake of vitamin A in all segments of the population. (Edozien, 1978)

ANEMIA--COCHABAMBA: 6.8% of non-pregnant women 18 to 44 years of age were anemic. (Soybean Utilization Project, 1981)

ANEMIA--COCHABAMBA: 6% of non-pregnant women aged 13 to 17 years were anemic; 0.8% of women 18 to 44 years and 8.3% of women 45 years and older were anemic. (Edozien, 1978)

ANEMIA--COCHABAMBA: 9% of adults over 45 years of age had anemia in spite of high average iron intake. (Edozien, 1978)

AGE AT MENARCHE--COCHABAMBA: Average age at menarche in Cochabamba was 14.2 years. (Soybean Utilization Project, 1981)

RECENT ILLNESS--MONTARO: 58% of those interviewed reported having no episode of illness during the previous two weeks; 35% reported having one; 6%, having two; and 1% had three episodes of illness. Nearly half of the reported episodes involved respiratory or gastrointestinal problems. (Frerichs et al., 1980)

DISEASES OF THE LOWLAND: Malaria and jungle fever have been controlled by recent eradication compaigns in the lowlands. (Weil et al., 1974)

ANEMIA AND PARASITES--TROPICAL AREAS: Parasitism contributed heavily to the problem of anemia, and the highest rates of parasitic infections were found in the tropical areas. (U.S.A.I.D., 1976)

DISEASE PATTERNS--TROPICAL AREAS: Important diseases in the tropic areas included gastrointestinal illnesses, malnutrition, respiratory diseases, parasitic diseases (especially hookworm and amoebiasis), malaria, yellow fever, Bolivian hemorrhagic fever, leprosy, and Chagas' disease. (U.S.A.I.D., 1976)

DISEASE PATTERNS--THE VALLEYS: Important diseases in the Valley areas included gastroenteritis and respiratory diseases, leprosy, Chagas' disease, tuberculosis, typhus, and scabies. (U.S.A.I.D., 1976)

CAUSES OF DEATH--REGIONAL VARIATION: There was some regional variation in the causes of death. Acute respiratory ailments ranked first or second in incidence in all of the country's nine departments. In La Paz, Chuquisaca, and Oruro accidents and violence constituted the other principal cause. Digestive and intestinal tract ailments were most important in Sucre, Tarija, Cochabamba, and Pando; intestinal parasites in El Beni; and bacterial infections in Santa Cruz. (Weil et al., 1974)

RURAL

GOITER--AWARENESS: Mothers from the Altiplano region are nearly equally divided between those who are aware (i.e., have heard of) or are not aware of goiter as a health problem. 66% and 72% of mothers in the Valles and Llanos regions, respectively, are aware of the existence of the problem. (Departamento de Alimentacion y Nutricion, 1981)

GOITER: 61.5% of mothers are not aware of the existence of iodized salt. (Departamento de Alimentacion y Nutricion, 1981)

GOITER--CHUQUISACA: In Chuquisaca the prevalence of goiter in rural areas ranged from 41% to 50%. Prevalence of cretinism in Chuqisaca was as high as 12% in some areas. (PIA/PNAN, 1976)

ENVIRONMENTAL SANITATION: Inadequate environmental sanitation was an obstacle to good health. 4.3% of the rural population had access to a protected water supply. Sewage disposal was a problem representing a hazard to drinking water as it runs off. (U.S.A.I.D., 1976)

PARASITES: Protozoa or helminth infections were found in 96.1% of school children in Yapacani. Soil-transmitted helminths were the most common, with an average rate of 78% for A. lumbricoides, 77.1% for Ancylostoma sp., and 48.1% for T. trichiura. (De Muynck and de Lagrava, 1977)

DISEASES--THE ALTIPLANO: In the Altiplanc, respiratory diseases and gastroenteritis were most significant. Other diseases of importance were tuberculosis, typhus, and scabies, as well as silicosis among miners. (U.S.A.I.D., 1976)

URBAN

GOITER IN LA PAZ: 28% of the population in La Paz had goiter. (PIA/PNAN, 1976)

WOMEN'S HEIGHT: Women born and raised at high altitudes were shorter than women born and raised at low altitude. Indian women were shorter than non-Indian women. Other measures of past growth, such as head circumference, were not significantly different between groups. (Haas, 1980)

WEIGHT AT 18 YEARS OF AGE: The average weight of Bolivian men at 18 years of age was 60.25 kg. (the average weight of North American men was 68.88 kg.). The average weight of Bolivian women was 51.64 kg. (the average weight of North American women was 56.62 kg.). (Daza and Reynoso, 1980)

HEIGHT AT 18 YEARS OF AGE: The average height of Bolivian men at 18 years of age was 169.9 cm. (the average height of North American men was 176.8 cm.). The average height of Bolivian women was 156.8 cm. (the average height of North American women was 163.7 cm.). (Daza and Reynoso, 1980)

1.1 NUTRITION AND HEALTH STATUS, GENERAL (Cont.)

CAUSES OF ILLNESS--POOR SANITATION: Inadequate environmental sanitation was one of the biggest obstacles to good health for Bolivians. 55.6% of people in urban areas had some form of protected water supply. But this water was not potable; most was contaminated. (U.S.A.I.D., 1976)

CAUSES OF ILLNESS--SEWERAGE: 23.3% of the urban population were served by sewerage facilities. Only one urban sewerage facility provided treatment before discharge; thus, the majority of discharge represented a hazard to drinking water as it ran off. (U.S.A.I.D., 1976)

1.2 NUTRITION AND HEALTH STATUS, WOMEN, PREGNANT

NATIONAL

MATERNAL MORTALITY: The maternal mortality rate was 48 deaths per 10,000 live births. (Republica de Bolivia, 1977)

ANEMIA: Up to 70% of pregnant and lactating women had some degree of iron deficiency anemia. (Brown, 1979)

ANEMIA: 70% of pregnant and nursing mothers had some degree of anemia, due to intakes of poorly absorbable iron sources and a wide prevalence of parasitism. (U.S.A.I.D., 1976)

REGIONAL

ANEMIA--COCHABAMBA: 7% of pregnant women in Cochabamba were anemic (defined as a hematocrit below 33%). When the level of normal hematocrit was corrected for altitude to 39%, 40% of pregnant women in the sample in Cochabamba were anemic. (Ortega, 1980)

ANEMIA--COCHABAMBA: 15.8% of pregnant women were anemic. (Soybean Utilization Project, 1981)

ANEMIA--COCHABAMBA: Among thirteen pregnant women included in a sample of households in Cochabamba, none were found to be anemic. (Edozien, 1978)

SMOKING AND DRINKING: 2% of pregnant or lactating women said they smoked; none of the women smoked more than five cigarettes per day. 83% of women said they drank alcoholic beverages; 74.3% of the women drank an average of 210 ml. of chicha on the day before the interview; 14.8% drank an average of 183 ml. of licor and 29.5% drank an average of 600 ml. of beer. 6% of pregnant/lactating women reported they chewed coca. (Soybean Utilization Project, 1981)

URBAN

GOITER: 55% of pregnant women in La Paz had goiter. (PIA/PNAN, 1976)

ANEMIA: Among pregnant women living in La Paz who had adequate hemoglobin (>12.0 g/dl), from 19.2% to 89.3% were judged to be anemic by other measures of iron nutriture, such as transferrin saturation and ferritin. (Haas, 1980)

1.3 NUTRITION AND HEALTH STATUS, WOMEN, LACTATING

NATIONAL

ANEMIA: Up to 70% of lactating and pregnant women had some degree of iron deficiency anemia. (Brown, 1979)

ANEMIA: 70% of pregnant and nursing mothers had some degree of anemia, due to use of foods which were poor sources of iron and a wide prevalence of parasitism. (U.S.A.I.D., 1976)

REGIONAL

ANEMIA--COCHABAMBA: 2.2% of lactating women were anemic. (Soybean Utilization Project, 1981)

SMOKING AND DRINKING: 2% of pregnant or lactating women said they smoked; none of the women smoked more than five cigarettes per day. 83% of women said they drank alcoholic beverages; 74.3% of the women drank an average of 210 ml. of chicha on the day before the interview; 14.8% drank an average of 183 ml. of licor and 29.5% drank an average of 600 ml. of beer. 6% of pregnant/lactating women reported they chewed coca. (Soybean Utilization Project, 1981)

1.4 NUTRITION AND HEALTH STATUS, INFANTS 0-6 MONTHS

NATIONAL

INFANT MORTALITY RATE: The infant mortality rate was 154 per 1000 live births. (U.S.A.I.D., 1976)

INFANT MORTALITY: One fourth or more of all infants die during the first year of life. (Weil et al., 1974)

INFANT MORTLAITY RATE: The infant mortality rate was 147 deaths per 1000 live births. (PIA/PNAN, 1976)

INFANT MORTALITY RATE: In 1970 the infant mortality rate was estimated at 250 per 1000 by the Ministry of Health. In 1975 a demographic study conducted by the Latin American Center for Demography indicated an overall infant mortality rate of 161 per 1000. (Trowbridge and Haverberg, 1977)

CAUSES OF DEATH: Causes of death among children under one year of age in 1969 were determined by the Ministry of Social Welfare and Public Health. 44.2% of deaths were due to perinatal illnesses; 21.2% due to respiratory infection; 8.9% to gastrointestinal illnesses; 7.5% due to whooping cough; 6.8% due to poorly defined causes; 3.4% due to other infectious diseases and parasites; 1.8% due to scarlet fever; 1.5% due to metabolic illnesses, nutritional problems, allergies, and anemia; 1.3% due to measles; 0.9% to tetanus; and 2.5% due to other causes. (PIA/PNAN, 1976)

1.4 NUTRITION AND HEALTH STATUS, INFANTS 0-6 MONTHS (Cont.)

REGIONAL

INFANT MORTALITY RATES--REGIONAL DIFFERENCES: The infant mortality rate was 174 per 1000 in the Altiplano, 156 per 1000 in the valleys, and 117 per 1000 in the tropics according to a study conducted by the Latin American Center for Demography in 1975. (Trowbridge and Haverberg, 1977)

NEONATAL MORTALITY AND INFANT MORTALITY RATES--COCHABAMBA: The neonatal and infant mortality rates were estimated at 118 and 236 deaths per 1000 live births respectively. About 35% of the 297 babies born to women in the sample households died before the age of five years. (Soybean Utilization Project, 1981)

INFANT MORTALITY--COCHABAMBA: Infant mortality in Cachabamba was 250 per 1000 live births according to the Soybean Utilization study. (King, 1979)

INFANT MORTALITY RATE--MONTERO: The infant mortality rate in the Montero region was 113.5 deaths per 1000 live births. (Frerichs et al., 1980)

NEONATAL MORTALITY RATE--MONTERO: The mortality rate among children less than 8 days old in the Montero region was 59.5 deaths per 1000 live births. (Frerichs et al., 1980)

LOW BIRTH WEIGHT--COCHABAMBA: 8.1% of children born in Viedma Hospital Cochabamba City were low birth weight (below 2500 grams) in 1978. 9% of babies born at the Main MAternaity Hospital in each of the three provinces in the Cochabamba test area (during six months of 1980) had low birth weights. (Soybean Utilization Project, 1981)

STUNTING--COCHABAMBA: No children under the age of one year in a tropical lowland village in Chapere exhibited stunting, low height for age. (Weil, 1979)

ANEMIA--COCHABAMBA: 11.1% of children 1 to 5 months of age were anemic. (Edozien, 1978)

RURAL

INFANT MORTALITY RATE: The infant mortality rate was about 250 per 1000 live births in rural areas. (U.S.A.I.D., 1976)

INFANT MORTALITY RATE: The infant mortality rate in rural areas was 178 per 1000, according to a demographic study conducted by the Latin American Center for Demography in 1975. (Trowbridge and Haverberg, 1977)

INFANT MORTALITY RATE: The infant mortality rate was 107 per 1000 in rural villages of Chuquisaca and Tarija. (CARE, 1978)

URBAN

INFANT MORTALITY RATE: The infant mortality rate in urban areas was 133 per 1000 according to a study conducted by the Latin American Center for Demography in 1975. (Trowbridge and Haverberg, 1977)

BIRTH WEIGHT AND ALTITUDE OF CITY: Birth weights in La Paz were 9.7% less than in Santa Cruz and Cochabamba, cities of much lower altitude. (Daza and Reynoso, 1980)

BIRTH WEIGHT, ANTHROPOMETRY, AND ALTITUDE: When samples of similar ethnic and socioeconomic compositions were compared, the birth weights of children of high altitude mothers were from 174 to 342 grams less than children born at low altitudes. Measures of crown-heel length, crown-rump length, and head circumference also differed significantly between high and low altitude Indians. Non-Indian infants at low altitude were significantly smaller in comparison to their highland counterparts on thigh circumference and triceps skinfold. (Haas, 1980)

BIRTH WEIGHT: Larger babies continued to be delivered to Indian women at low altitude where such high altitude stresses as hypobaric hypoxia were removed. (Haas, 1980)

BIRTH WEIGHT AND ETHNICITY OF MOTHER: Infants born to indigenous mothers were 184 grams heavier in Santa Cruz and 155 grams heavier in La Paz than infants born to non-Indian women from the same city. Even though they had poorer socioeconomic status, birth weights were higher among Indians. (Haas, 1980)

1.5 NUTRITION AND HEALTH STATUS, INFANTS 6-24 MONTHS

NATIONAL

MORTALITY: 84.3% of Bolivian children survive to age one and 76.9% to age five, according to a national demographic survey conducted in 1976. (Weil, 1979)

CHILD MORTALITY RATE: The child mortality rate was 14.6 per 1000 among children one to four years of age. (PIA/PNAN, 1976)

CHILD MORTALITY: Mortality in the 1 to 4 year old group was 14.6 per 1000. (King, 1979)

CHILD DEATH: Almost half of all deaths reported in 1968 involved children under the age of five years. (Weil et al., 1974)

ACUTE MALNUTRITION PREVALENCE: By Waterlow criteria, the prevalence of acute malnutrition is very low in all regions, either urban or rural. Deficits greater than 2 standard deviations from the weight or height mean were observed in 1.2% of measured infants in the fufal Los Llanos region, the area of highest prevalence. (Ruth et al., 1981)

MALNUTRITION: 10% of preschoolers suffered second or third degree malnutrition, and another 20% at the lower end of the first degree group were seriously nutritionally vulnerable. This 30% of the under five population means that there are 234,600 children seriously at risk of malnutrition. (King, 1979)

NIGHT BLINDNESS: night blindness has been reported in 1-8% of male and 2.4% of female subjects under 5 years of age. (Ruth et al., 1981)

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

PEM--GOMEZ CLASSIFICATION: 40% of children suffered from first degree (Gomez) malnutrition, 15 to 20% from second degree, and 5% from third degree. (U.S.A.I.D., 1976)

PEM--GOMEZ: Among children participating in mothers' clubs sponsored by CARE and the National Social Action Council, 0.3% had grade III malnutrition, 1.8% had grade II, and 18.7% had grade I malnutrition. 59.1% of the children had a normal weight for age; 12.9% were overweight, and 7.2% were obese. (Robert R. Nathan Associates, Inc., 1978)

PEM--GOMEZ: A review of nine studies conducted from 1965 to 1974 found that 28 to 52% of children were malnourished. 22.5 to 42% were found to suffer grade I malnutrition, 2.8 to 16.3% were grade II, and 0.4 to 5.5% were grade III. (U.S.A.I.D., 1976)

DIARRHEA AND MORTALITY: Among 177 women who had suffered the death of a child, 44% reported that the child had had diarrhea. (Czaplicki et al., 1981)

MALNUTRITION, INFECTION, AND MORTALITY: Malnutrition, as a basic or associated cause, was responsible for at least one third of deaths in children birth to 4 years of age. Among children less than one year of age, about 70% of deaths were related to infectious diseases which interacted with nutrition deficiency producing death. (PIA/PNAN, 1976)

CAUSES OF DEATH: Causes of death among children one to four years of age in 1969 were determined by the Ministry of Social Welfare and Public Health. 29.4% were due to poorly defined causes; 22.3% due to respiratory diseases; 14.5% due to gastroenteritis; 7.7% to whooping cough; 7.7% due to other infectious illnesses and parasites; 5.5% due to scarlet fever; 4% due to measles; 3.2% to metabolic illnesses, nutritional diseases, allergies, and anemias; 1.1% to tuberculosis; 0.7% to nervous system diseases; and 3.9% to other causes. (PIA/PNAN, 1976)

REGIONAL

MORTALITY--COCHABAMBA: 89.2% of children survived to age one and 83.3% to age six, according to a survey carried out by the Ministry of Public Health in 1975. In rural Cochabamba, 86.4% of children survived to age one and 78.65 to age six. (Weil, 1979)

MORTALITY--COCHABAMBA: 81.2% of children survived to age one and 60.4% to age five in a community in the tropical Chapere lowlands. (Weil, 1979)

MORTALITY--COCHABAMBA: Of 202 children born alive in a tropical Chapere lowland village, 18.8% died before age one and other 20.8% between the ages of one and four years. Thus, nearly two-fifths died before the age of five. (Weil, 1979)

MALNUTRITION--COCHABAMBA: Anemia, severe protein-energy deficiency with stunting and low weight for age and low weight for height values were prevalent among children under two years of age in Cochabamba. (Edozien, 1978)

GROWTH--COCHABAMBA: Growth retardation was most severe in children 6 to 23 months of age and in adolescents. Children under two years of age had noraml weight for height while the average weight for height of older children tended to be higher than the norm. This pattern of malnutrition suggested chronic protein energy malnutrition due to poor quality diet, e.g. protein deficiency, specific amino acid deficiencies or vitamin deficiencies rather than starvation or lack of food. (Soybean Utilization Project, 1981)

GROWTH AMONG ADVANTAGED CHILDREN--COCHABAMBA: A group of children whose fathers were doctors, lawyers, engineers, or professors in Cochabamba grew at rates much like the American reference group so that their body measurements at various ages were approximately 100% of the American standard. (Soybean Utilization Project, 1981)

WEIGHT FOR AGE--COCHABAMBA: Among 21 children in Cochabamba 6 to 11 months of age, 42.9% were between 60 and 79% of standard weight for age, 42.9% were between 80 and 89% of standard, and 14.2% were between 90 and 109% of standard. Among 17 children 12 to 17 months of age, 53.9%, 29.1%, 23.1% feel in each respective group, and the remainder, 3.8%, were between 110 and 119% of standard. Among 18 children 18 to 23 months of age there were 33.3%, 33.3%, 33.3%, and 0% in each respective category. (Soybean Utilization Project, 1981)

STUNTING--COCHABAMBA: Nearly three quarters (14 out of 20) of children one to four years of age were moderately or severely stunted (below expected height for age). (Weil, 1979)

ANEMIA--COCHABAMBA: 81% of children 6 to 11 months old, 52% of children 12 to 17 months old, and 47% of children 18 to 23 months old were anemic. (Soybean Utilization Project, 1981)

ANEMIA--COCHABAMBA: 11.1% of children 1 to 5 months of age were anemic; 30.8% of children 6 to 11 months; 16.7% of children 12 to 17 months; and 18.25 of children 18 to 23 months were anemic in Cochabamba. (Edozien, 1978)

ILLNESS-COCHABAMBA: 33% of infants and preschool children had been ill during the months before the interview: 12% had had diarrhea; 50%, a cold; and 38%, other illnesses. (Soybean Utilization Project, 1981)

MAJOR CHILDHOOD INFECTIOUS DISEASES--COCHABAMBA: 20% of children had had measles, 2.2% had had diphtheria, and 15.6% had had whooping cough in a sample of rural households in Cochabamba. (Soybean Utilization Project, 1981)

MALNUTRITION--LLANO: A study of 496 children living in the Mineros area of the Department of Santa Cruz in the years 1973 and 1974 found that 1% had grade III malnutrition, 7% grade II, and 23% grade I. In 1974, 374 children were studied, and the rates of malnutrition were 0.6%, 2.8%, and 24.6% in each respective category. (PIA/PNAN, 1976)

CHILD MORTALITY RATE--MONTERO: The mortality rate among children 1 to 4 years of age in the Montero region was 18.2 per 1000. (Frerichs et al., 1980)

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

LOW WEIGHT--MONTERO: 12.5% of the boys and 20.4% of the girls birth to 4 years of age had low weights for their ages (below the third percentile of reference U.S. children). (Frerichs et al., 1980)

ANEMIA--MONTERO: Nearly half of the chidren below six years of age in the Montero region were anemic (hemocrit level below 34%). (Frerichs et al., 1980)

INTESTINAL PARASITES--MONTERO: Only 39% of children birth to 6 years of age were free of intestinal parasites. 22% of stool samples were found to contain two or more species. 60% had roundworm eggs, 26% hookworm, 8% had whipworm, and 3% had strongyloides larvae. (Frerichs et al., 1980)

MALNUTRITION--VALLE REGION: A study of 1338 children living in the San Benito area in 1967 found that 2% suffered grade III malnutrition, 10% grade II, and 33% grade I. A similar study of 154 children in Tarija in 1968 found that 1% were grade III, 6% were grade II, and 41% were grade I. A study of children in the Department of Chuquisaca in 1968 found 3%, 4%, and 32% of the children in each respective category. (PIA/PNAN, 1976)

PEM AND MORTALITY--VIACHA: PEM was the principal or related cause of death in 30.4% of the under five year olds who died in La Paz and 30.4% of mortality in Viacha, according to a study by the Pan American Health Organization. (King, 1979)

RURAL

CHILD MORTALITY: 17.8% of all live births die before age 3, when all regions are analyzed together. In the rural Altiplano (La Paz) 24% of all live births die before 3 years of age. (Ruth et al., 1981)

MORTALITY: Completed households, defined as those in which the mother's age was 50 years or greater, had a mean of 6.94 liveborn children and a mean of 5.35 surviving children per household. (Stinson, 1980)

CHILD MORTALITY RATE: The mortality rate among children 1 to 5 years of age was 30 deaths per thousand in rural villages of Chuquisaca and Tarija, about 30 times the rate in developed countries. The large difference in rates was due to the effects of infections, parasitism, and malnutrition during the vulnerable preschool age period, which is characterized by rapid growth and high nutritional need. (CARE, 1978)

CHRONIC MALNUTRITION PREVALENCE: 56.3% of Altiplano children below 5 years of age suffer from chronic malnutrition by Waterlow criteria. The prevalence of chronic malnutrition in the regions of Valle and Llanos is 46.1% and 35.1% respectively. (Ruth et al., 1981)

NUTRITIONAL STATUS: The average child's weight for height was at the 50th percentile of the NCHS/CDC standards, but the average height was well below the 3rd percentile. Mean weight for age was at the 5th to 10th percentile of the NCHS/CDC standards. (Anderson, 1981)

WEIGHT FOR AGE: 1% of rural children were below 60% of standard weight for age; 10% were between 60 and 74%; and 89% were greater than 75% of

standard weight for age in 10 rural villages in Chuquisaca and Tarija. (CARE, 1978)

WEIGHT FOR HEIGHT: 1% of children were below 80% of standard weight for height; 6% were between 80 and 90% of standard weight for height; and 7% were between 90 and 94% of standard weight for height. 67% were normal. 19% were overweight, greater than 115 of standard weight for height, in a sample of children from rural villages in Chuquisaca and Tarija. (CARE, 1978)

WEIGHT FOR HEIGHT: There was little current malnutrition; only 8% of preschool children were below 90% of reference weight for height. The highest incidence of current malnutrition (12%) was found among children 1 to 2 years of age. 11% of children 3 to 4 years of age were currently malnourished. (Anderson, 1981)

OVERWEIGHT FOR HEIGHT: 14% of children were found to be overweight (more than 110% of the reference weight for height). (Anderson, 1981)

ST TING--HEIGHT FOR AGE: 2% of rural children were below 80% of standard height for age, 23% were between 80 and 89% of standard, and 75% were normal (90% or greater than standard height for age) in 10 rural villages in Chuquisaca and Tarija. (CARE, 1978)

STUNTING--HEIGHT FOR AGE: 32% of children were stunted (80 to 89% of reference height for age), and 4% were less than 80% of reference height for age. This indicated past or chronic malnutrition. (Anderson, 1981)

CAUSES OF STUNTING: The rural preschool child was stunted but had achieved an adequate weight for actual height. Although genetic factors may explain some of the shortness, unfavorable environmental factors, such as diet, diarrhea, and altitude, play a more significant role than ethnic background in causing growth retardation. (Anderson, 1981)

MALNUTRITION AND CHILD'S AGE: Current malnutrition, as measured by low weight for height, was significantly higher in 1 to 2 year olds than in other age groups. There was a significant drop in the incidence of low weight for height and an increase in overweight in 2 to 3 year olds compared to 1 to 2 year olds. (CARE, 1978)

GEOGRAPHIC PATTERN OF DIARRHEA: The Altiplano region had the highest prevalence of diarrhea: 24% for subjects under 59 months of age. In the Valle and Llano regions the prevalence of diarrhea was reported at 8% and 12% respectively, for the same age group. (Ruth et al., 1981)

DIARRHEA: 18% of mothers interviewed in Tarija and Chuquisaca reported that their preschooler had diarrhea on the day of the interview, and 35% reported diarrhea in the past week. The average episode lasted three days. (CARE, 1978)

AGE DISTRIBUTION OF DIARRHEA: 29% of subjects 12-23 months old were afflicted by diarrhea. This age group was the hardest hit, followed by those age 6 to 11 months (20%). The group age 48-59 months had the lowest prevalence of diarrhea (8%). (Ruth et al., 1981)

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

DIARRHEA AND MORTALITY: 44% of all mothers who had lost an infant reported that death was associated with episodes of diarrhea. (Departamento de Alimentacion y Nutricion, 1981)

SERIOUS ILLNESS: Mothers in Tarija and Chuquisaca were asked if their child had had a serious illness (an ailment which affected the child's normal activities and eating patterns for more than two weeks) during the past six months. 31% in Tarija and 12% in Chuquisaca had had a serious illness. The most commonly mentioned illness was gastroenteritis. (CARE, 1978)

ILLNESS AND AGE OF CHILD: Children 1 to 2 years of age were most likely to be affected by diarrhea and serious illness. (CARE, 1978)

URBAN

CHILD MORTALITY: 19% of all live births in the La Paz urban area die before age 3. (Ruth et al., 1981)

PEM AND MORTALITY: PEM was the principal or related cause of death for 36% of the children under five years old who died in La Paz, according to a study conducted by PAHO. (King, 1979)

CHRONIC MALNUTRITION PREVALENCE: 45% of children between 0 and 5 years in the urban Altiplano suffer from chronic malnutrition by Waterlow criteria. The prevalence of chronic malnutrition in the urban Valles and Llanos regions is 28% and 26.5% respectively. (Ruth et al., 1981)

MALNUTRITION--GOMEZ: A 1972 study of 2778 children in a marginal zone of the city of La Paz found that 5.5% suffered grade III malnutrition, 10.5% grade II, and 26% grade I. A study in 1973 in a similar area of 4800 children of La Paz found 5.3% had grade III malnutrition, 16.3% had grade II, and 30.4% had grade I. (PIA/PNAN, 1976)

WEIGHT FOR AGE STANDARDS: Bolivian standards for weight for age based on weights of advantaged children were very high, similar to standards based on North American children through 11 years of age for boys and 9 years of age for girls. (Daza and Reynoso, 1980)

WEIGHT GAIN: Among advantaged urban children average weight gain in the first year of life was 6.4 kg. for boys and 6 kg. for girls. From 12 to 24 months of age the increase was about 2.6 kg. in both sexes. Between 24 and 60 months gains averaged about 2 kg. per year for boys and 2.1 kg. per year for girls. (Daza and Reynoso, 1980)

HEIGHT FOR AGE: Advantaged urban children were generally slightly below U.S. (NCHS) standards for height for age. At birth, boys were .6% greater than the North American standard but at 18 months they were 2.3% below the standard; at 36 months, 2.6% below; and at 60 months, 2.1% below the North American standard for height for age. Differences for girls were 0.6%, 2.8%, 3.2%, and 3% at birth, 24, 30, and 36 months respectively. (Daza and Reynoso, 1980)

ANEMIA: Among children 19 to 72 months af age living in La Paz who had acceptable hemoglobin status ($\geq$12.3 g/dl) 48.8% were anemic as measured by transferrin saturation and ferritin. The authors note that cut off points that are adequate at low altitude may not be appropriate indicators at high altitude. (Haas, 1981)

GEOGRAPHIC PATTERNS OF DIARRHEA: The La Paz region had the highest prevalence of diarrhea: 24% for subjects under 59 months of age. In the Valle (Cochabamba) and Llano (Santa Cruz) regions the prevalence of diarrhea was reported at 11% and 14%, respectively. (Ruth et al., 1981)

2. DIETARY BELIEFS

2.1 DIETARY BELIEFS, GENERAL

NATIONAL

FOOD CLASSIFICATION SYSTEMS: Foods were divided into two large categories, hot and cold. Another system of classification sorted foods by time--foods changed in value with the time of day eaten. Finally, some foods were harmful to particular categories of people on the basis of age or physiological status. Foods which were harmless to an adult male might be considered a great risk to a pregnant woman or a child who had no teeth. (PIA/PNAN, 1976)

ORANGES AND TIME OF DAY: An orange eaten in the morning was believed to have great nutritional value. In the afternoon the value was moderate, and oranges eaten in the evening were believed to have no value. (PIA/PNAN, 1976)

SOURCES OF NUTRITION ADVICE: Among mothers not participating in the "Buena Madre" project, the main source of nutrition advice was from doctors or nurses. Some received information from mothers or grandmothers. Many had received no advice on nutrition. Among mothers participating in the "Buena Madre" project, the overwhelming source of advice was information provided by the Mothers' Clubs. (Griffiths, 1982)

REGIONAL

BEANS--COCHABAMBA: 47% of respondents classified soybeans as a heavy food and 53% as a light food. Ordinary beans were classified as heavy by 39% and light by 61%. (Soybean Utilization Project, 1981)

RURAL

PREPARING FOOD FOR MEN: Corn, quinua, barley, chuno, and beef soups should be boiled intensely for the working man to give him more strength. (U.S.A.I.D., 1976)

LEMON: Lemon thins the blood. (U.S.A.I.D., 1976)

2.2 DIETARY BELIEFS, ABOUT PREGNANCY

NATIONAL

FOODS AVOIDED IN PREGNANCY: Eggs were avoided because they were believed to produce acidity; fatty meat was avoided as it was believed to cause inflammation. "Strong foods" were believed to cause difficult labors. (PIA/PNAN, 1976)

2.3 DIETARY BELIEFS, ABOUT LACTATION

NATIONAL

FACTORS FOR BREAST FEEDING: Tradition and beliefs regarding the goodness of breast feeding appeared to be the key driving forces for maintaining

2.3 DIETARY BELIEFS, ABOUT LACTATION (Cont.)

prolonged breast feeding. (Departamento de Alimentacion y Nutricion, 1981)

PROLONGED LACTATION AS CONTRACEPTIVE: Prolonged lactation was generally due to the belief that while the mother breast fed she would not become pregnant again. (Murillo and de Yale, 1979)

DIET FOR LACTATING WOMEN: It appeared that it is the quantity and not the type of food which is regarded as important for the lactating woman. (Departamento de Alimentacion y Nutricion, 1981)

FOODS FOR LACTATION: 20.5% said that foods good for lactating women were soups made with vegetables and cereals; 23.1%, soups made of meat; 22.4% specified meat, fish, cheese, milk, and eggs; 12.6%, carbohydrates in solid preparation; 5.9%, vegetables; 9.8% hot foods; 2%, fruits; 2.5%, liquids; and 1.2% did not know. (Czaplicki et al., 1981)

FOODS AVOIDED DURING LACTATION: Pork, oranges, ice cream, and cold water were believed to "poison" the milk and cause the child to have diarrhea. Peanut soup, eggs, and fat were thought to harm the liver of the lactating woman. It was believed that garlic would cause the milk to dry up. (PIA/PNAN, 1976)

AVOID POTATOES: Potatoes were believed to be harmful during the post-partum period. During the first and second weeks postpartum women were given chicken soup made without potatoes. (Czaplicki et al., 1981)

COLOSTRUM DISCARDED: Breast milk was often discarded during the first three days postpartum as mothers believed that this milk caused colic. (Czaplicki et al., 1981)

REASONS FOR THE DURATION OF BREAST FEEDING: When respondents were asked about their reasons for the duration of breast feeding, the most frequent responses were: 1) habit and 2) it makes the child stronger. (Griffiths, 1982)

PROLONGED BREAST FEEDING FOR BOYS: Breast feeding was believed to be conducive to strong muscles and virility, so boys frequently were not weaned until they were old enough to attend school. (Weil et al., 1974)

CAUSES WHEN MILK DRIES UP: Mothers were asked what caused milk to dry up. 19.4% said it was due to eating garlic, onions, or chili sauce; 6.9%, due to herbal tea; 1.6%, due to coffee, tea, cocoa, or chocolate; 7.3% said it was due to bathing in cold water; 5%, due to eating hot foods; 3.8%, due to lack of food or food without meat; 7.2% gave other beliefs; 10.6% said it was due to taking drugs; 31.5% did not know; and the remainder did not reply. (Czaplicki et al., 1981)

REGIONAL

DIET FOR LACTATING WOMEN--ALTIPLANO: Vegetable soup, cereal soup, "lagua," meat broth, and "zenka" (cow nose) were believed to benefit the lactating mother in the Altiplano region. (Departamento de Alimentacion y Nutricion, 1981)

FOODS WHICH LOWER MILK SECRETION--ALTIPLANO: In the Altiplano region, more than 50% of mothers reported not knowing why breast milk production stopped. Garlic, onion, and chili were considered capable of lowering milk secretion. (Departamento de Alimentacion y Nutricion, 1981)

BEST FOR BABY--COCHABAMBA: When asked what milk they thought was best for their baby, the responses of pregnant/lactating women were: mother's milk (58%), cow's milk (25.7%), and powdered cow's milk (6.1%). (Soybean Utilization Project, 1981)

DRUGS: Mothers of the Los Llanos region believed that drugs have a tendency to diminish breast milk secretion. (Departamento de Alimentacion y Nutricion, 1981)

RURAL

BREAST FEEDING AS A BIRTH SPACING PRACTICE: Only 3% of lactating mothers declared that birth spacing was a factor in their decision to prolong breast feeding beyond one year of age. (Departamento de Alimentacion y Nutricion, 1981)

DIET FOR LACTATING WOMEN: Relatively few mothers reported not knowing what foods would be more appropriate during lactation. In the Altiplano region 2.4% of mothers fitted this category. (Departamento de Alimentacion y Nutricion, 1981)

DIET FOR LACTATING WOMEN: In the Llanos region, soups and broths were not as well regarded as they were in the Altiplano. Meat, fish, milk, and cheese were the preferred foods for the lactating woman. (Departamento de Alimentacion y Nutricion, 1981)

2.4 DIETARY BELIEFS, ABOUT BREAST MILK SUBSTITUTES

REGIONAL

BEST FOR BABY--COCHABAMBA: When asked what milk they thought was best for their baby, the responses of pregnant/lactating women were: mother's milk (58%), cow's milk (25.7%), and powdered cow's milk (6.1%). (Soybean Utilization Project, 1981)

2.5 DIETARY BELIEFS, ABOUT WEANING

NATIONAL

INITIATING SUPPLEMENTS: A belief which influenced the timing of introduction of foods was the idea that a child could not eat without teeth. 77 to 87% of women in the Altiplano, 87 to 89% in the Valle, and 80 to 89% in the Llano believed that a child without teeth could eat. (Griffiths, 1982)

EGGS: Eggs were not given to young children because it was believed eggs would cause children's teeth to turn yellow. (PIA/PNAN, 1976)

2.5 DIETARY BELIEFS, ABOUT WEANING (Cont.)

BEEF: Beef was not given to young children as it was believed to cause inflammation of the gums in children whose molars had not yet erupted. (PIA/PNAN, 1976)

PORK, MILK, AND DIARRHEA: Roast pork and powdered milk were not given to children because it was believed they produced diarrhea. (PIA/PNAN, 1976)

COW'S MILK: Cow's milk was believed to cause infection in young children. (PIA/PNAN, 1976)

CHEESE: Cheese was not given to young children as it was believed that eating cheese would cause them to stutter. (PIA/PNAN, 1976)

LEMONS AND ORANGES: It was believed that the nursing child should not eat acid foods such as oranges and lemons. (Czaplicki et al., 1981)

REGIONAL

REASONS FOR WEANING--LLANOS: In the region of Los Llanos, the most frequent reasons for weaning a child were: disease of the mother or child (36%), pregnancy (16%), drying up of milk (15%), and medical advice (10%). (Departamento de Alimentacion y Nutricion, 1981)

BEANS--COCHABAMBA: 19% of households which had cooked broad beans said they would not give the food to infants; a similar percentage who had cooked ordinary dried beans also said they would not give them to infants. 10 to 17% of households would not give beans to children because they were a heavy food, 6 to 13% felt beans would give the child diarrhea, 7% avoided them because they caused gas, and 7% because they did not like beans. The remainder of reasons were not given. (Soybean Utilization Project, 1981)

RURAL

FOODS HARMFUL TO TEETH: Bananas and oranges are harmful to children's teeth. (U.S.A.I.D., 1976)

CHEESE AND SPEECH: Cheese retards language development of children. (U.S.A.I.D., 1976)

2.6 DIETARY BELIEFS, ABOUT ILLNESS AND CURE

NATIONAL

FOOD AND ILLNESS: Food played an important role in the treatment of illness. Often all food was forbidden. In cases of febrile illness it was believed that food "stirred up" the fever. Often purges were administered in order to "clean the stomach" or "thin the blood." After febrile illness, during the convalescent phase, "strong" foods were not given to avoid relapse. (PIA/PNAN, 1976)

FASTING AND PURGING: Fasting and purging, used in the treatment of febrile illness, were very devastating to young children who often had

these illnesses and lacked the strength to withstand the frequent purging and fasting. (PIA/PNAN, 1976)

ATTITUDE TOWARDS DIARRHEA TREATMENT: 55% of mothers reported that when their infants suffered from diarrhea they corrected the situation by their own means, while 27% felt they needed to take their child to a doctor. (Departamento de Alimentacion y Nutricion, 1981)

LIQUIDS AND DIARRHEA: 22% of mothers believed children would become sicker if given liquids during diarrhea, 27% felt the child would get better, and 8% believed the child would be cured if given liquids. 18% felt the child would remain the same, the the remainder did not know or did not reply. (Czaplicki et al., 1981)

FOODS DURING DIARRHEA: Mothers were asked what foods could be given to a child suffering diarrhea. 18.3% of mothers said to give soups; 12.7%, broth; 4.1%, fish, meat, eggs, and cheese; 1.1%, cooked vegetables; 0.8%, fruit; 27.7%, solid foods; 7.8%, porridge of corn or starch; 5.3%, paps; 1.7%, bread; 2.7%, all foods; 8.2%, no foods; and 9.6% did not reply. (Czaplicki et al., 1981)

EFFICACY OF HOME DIARRHEA REMEDIES: In the case of diarrhea, most mothers believed that home remedies were effective within 3 days of the institution of therapy. (Departamento de Alimentacion y Nutricion, 1981)

EFFECT OF LIQUIDS ON DIARRHEA: Mothers were about equally split regarding the impact (good, bad, or none) of administering liquids to an infant with diarrhea. (Departamento de Alimentacion y Nutricion, 1981)

SUPERNATURAL CAUSES OF DISEASE: Severe diseases were believed to result from supernatural causes. Detachment or disappearance of the soul was a condition believed to cause death if not treated promptly. The loss of the soul can occur as a consequence of sudden fright (susto), a cause to which many infant deaths were attributed. (Weil et al., 1974)

REGIONAL

NO FOOD DURING DIARRHEA--ALTIPLANO: 3.5% of mothers in the Altiplano region withheld all foods when their children had diarrhea. (Czaplicki et al., 1981)

NO FOOD DURING DIARRHEA--LLANOS: 16% of mothers in the Llanos area withheld all food when their children had diarrhea. (Czaplicki et al., 1981)

RURAL

CAUSES OF DIARRHEA: Rural mothers in Chuquisaca thought that diarrhea was caused by cold weather or by having a cold. Mothers appeared to have no concept of an unsanitary environment as a cause of diarrhea. Terija mothers listed dirty food or water was the main cause of diarrhea and often mentioned that diarrhea was caused by eating fruit or unripe fruit. (CARE, 1978)

2.6 DIETARY BELIEFS, ABOUT ILLNESS AND CURE (Cont.)

CUTTING THE UMBILICAL CORD: The umbilical cord was commonly cut with a piece of broken pottery due to the belief that use of a metallic instrument would cause the child to develop a belligerent character. (Weil et al., 1974)

3. DIETARY PRACTICES

3.1 DIETARY PRACTICES, GENERAL

NATIONAL

AVERAGE FOOD CONSUMPTION: Average daily per capita food consumption in 1970 included 71 grams of corn, 139 grams of wheat, 1 gram of barley, 24 grams of rice, 5 grams of quinua, 286 grams of potatoes, 85 grams of yuca and sweet potatoes, 141 grams of other vegetables, 96 grams of plantains and bananas, 74 grams of other fruits, 29 grams of beef and veal, 11 grams of sheep, goat, llama, and alpaca, 11 grams of pork, 3 grams of poultry and rabbit, 34 grams of milk and milk products, 12 grams of fats and oils, and 59 grams of sugar. (U.S.A.I.D., 1976)

FOOD SELF-SUFFICIENCY: Bolivia was self-sufficient in most foods. The exceptions were milk, oil, lard, and wheat. The Government of Bolivia was trying to increase domestic wheat production. (Robert R. Nathan Associates, Inc., 1978)

FOOD CROPS: The most important crops, measured in terms of farm gate value, were potatoes, vegetables (sweet corn, onions, tomatoes, and green peas), corn (grain), and sugar cane. Quinua, barley, and tubers were produced and eaten on the farm. Potatoes, dried beans, bananas, and plantains were also used as cash crops. (U.S.A.I.D., 1976)

DIETARY SHIFT: In general, diets were shifting away from meat, milk, and fish, and some grains like barley, quinua, and corn, and towards plantains, wheat, rice, and sugar. This was attributed to increasing prices of foods. (U.S.A.I.D., 1976)

FOOD DISTRIBUTION AND TRANSPORTATION: Food distribution is inhibited by poor roads and high transport costs. 80% of roads are difficult to use or impassable for part of the year. Local access roads are poorly maintained. Tariffs charged by truckers and road taxes also inhibit the movement of food from farm to city markets. A variety of weights and measures are used throughout the country, further confusing the marketing picture. (U.S.A.I.D., 1976)

INSTANT CORN SOY MILK: Local women were unfamiliar with instant corn soy milk. They used it as a flour, mixed with wheat, to prepare a hard unleavened bread. It was also used in soups and stews which required long cooking time. The long cooking times resulted in changes of flavor and nutritive value of instant corn soy milk. (Murillo and de Yale, 1979)

GRAINS: Cereals accounted for over 39% of calories and nearly 60% of protein consumed. In the early 1970s, wheat alone accounted for over 19% of calories and 28% of protein. Corn was second in importance; its direct consumption accounted for nearly 14% of calories and over 12% of protein. A substantial amount of corn was fed to livestock and thus consumed indirectly. Direct corn consumption data tended to understate the true nutritional importance of corn. Rice and quinoa were the third and fourth most important grains consumed in Bolivia. (Roush and Merrill, 1980)

3.1 DIETARY PRACTICES, GENERAL (Cont.)

CORN: About 45% of corn production was used for human consumption. The remainder was used for animal feed and various corn products. (Roush and Merrill, 1980)

WHEAT: Most of the wheat grown in country was stored and consumed on the farm. Less than 20% of national production was marketed. About 90% of wheat products sold commercially were imported. (Roush and Merrill, 1980)

BARLEY: Barley was grown to provide forage for livestock and grain for human consumption as well as for sale to breweries. Substantial amounts of barley were imported by the brewing industry. (Roush and Merrill, 1980)

SOYBEANS: Soybean production rose rapidly between 1974 and 1979. Most of the beans were pressed for vegetable oil. There has been considerable interest in substituting soy flour for wheat flour in bread. Preliminary tests indicated that up to 5 or 6% soy flour can be mixed with wheat without changing the baking characteristics of the flour. (Roush and Merrill, 1980)

LUPIN: Lupin is indigenous to the cold uplands. Its seed is collected as a protein and oil rich supplement to the family diet. The local variety was bitter to the taste and had to be soaked in water to two to three days to remove the bitterness. (Roush and Merrill, 1980)

CHEESE: Cheese was a common diet supplement, but milk and eggs were seldom eaten. (Weil et al., 1974)

CHUNO AND TUNTA: Potatoes were preserved by conversion into chumo, a processed form of the vegetable known since Inca times. It has an almost religious significance. Produced by dehydration and a primitive kind of freeze-drying, chuno results in a hard lump about the size of a walnut. It keeps indefinitely and has a distinctive flavor. Tunta is similar but more costly as it requires longer preparation. (Weil et al., 1974)

MEAL PATTERN: Breakfast was a lightly sweetened cup of strong black coffee or a cup of tea or herb infusion. The midday meal was made up of thick soup of tubers, greens, and an occasional piece of meat. A second dish of beans, cereal, or potatoes was sometimes served. The evening meal was leftovers from lunch or limited to coffee and bread. (Weil et al., 1974)

INTRA FAMILY FOOD DISTRIBUTION: Mothers in Santa Cruz and Trinidad reported that children were served first and were given the largest portion of food. In the Altiplano the father received the largest amounts of food. The mother was always the last and many times received a small amount of food even if she were pregnant or nursing. (Murillo and de Yale, 1979)

FUEL AND FOOD PREPARATION: The fuel used for cooking in the high plains was usually animal manure; firewood was usually used in the rural areas of the valleys and plains. The kind of fuel used influenced the time required for preparation of food. (Murillo and de Yale, 1979)

FOOD SELF-SUFFICIENCY: Apart from wheat, milk, and edible oils Bolivia was practically self-sufficient in food production at current levels of effective demand. (U.S.A.I.D., 1976)

FOOD PRICES: Food prices have risen faster than all prices. In 1973 and 1974 the general price index rose by 31.5% and 62.8%. The food price index increased by 35% and 81.2% for the same years. (U.S.A.I.D., 1976)

AGRICULTURAL PRODUCTION: For many years agricultural production was stagnant. Bolivia had relied on tin mining, oil, and natural gas as the basis of economic growth. This led to low levels of investment in agricultural research, extension and education as well as neglect of rural infrastructure such as roads, irrigation, and drainage. Organized laborers had pushed the government to maintain low food prices, resulting in redistribution of income from rural to urban areas. (Roush and Merrill, 1980)

CONSTRAINT TO INCREASED FOOD PRODUCTION: The traditional sector in which family labor is the key element provided 70 to 77% of the food supply. Technology was rudimentary and capital minimal. (U.S.A.I.D., 1976)

FARMING METHODS: Manure is gathered for use as fuel or fertilizer. Seeds are gathered and saved for the next crop. Weeds are not controlled. Livestock pull a primitive plow. In the Oriente slash and burn methods are used. Modern agricultural methods are restricted to the cotton, sugar, and rice crops. (U.S.A.I.D., 1976)

FOOD SUPPLY: The small farmer supplies 77% of the population with food. About 44% of the total population lives on small farms which fed themselves plus about 1/3 of the urban population. (U.S.A.I.D., 1976)

POST HARVEST LOSS: Losses of 15 to 20% of the total food production were caused by poor storage and handling facilities. These losses were aggravated by high transport costs. (U.S.A.I.D., 1976)

COCA: A major cash crop is coca. The tea-like plant is chewed, reducing sensitivity to cold and hunger pains. It is the raw material for the production of cocaine. The government discourages use of coca, and the terraces where it grows may also be used to grow coffee and tea. (Weil et al., 1974)

BEEF HANDLING: Beef storage and handling were very inefficient. Almost all by-products were wasted due to lack of processing facilities. Little use was made of refrigeration. (U.S.A.I.D., 1976)

PROBLEMS IN MARKETING AND DISTRIBUTING: Facilities for storage, packaging, and handling of foods were inadequate. It was estimated that 15% of bananas sold to wholesalers were wasted and another 20% sold at discount at the retail level due to deterioration. There was tremendous loss of foodstuffs. (U.S.A.I.D., 1976)

FOOD MARKETING: 89% of food marketing was done by country assemblers, a role usually filled by women. The remainder was marketed by male truckers. (U.S.A.I.D., 1976)

3.1 DIETARY PRACTICES, GENERAL (Cont.)

RICE MARKETING: Marketing of rice was controlled oy the Rice Marketing Corporation (ENA). Bolivia had exported some rice, but production declined and rice was imported. (Roush and Merrill, 1980)

WATER: The lack of potable water, especially in rural areas, was a great problem in the preparation of foods which were healthy and hygienic. (Murillo and de Yale, 1979)

DRINKING WATER: Water service is customarily described as service with aqua potable (potable water), which can be defined as water of any quality delivered through a system of conduits. (Weil et al., 1974)

BOILING WATER: Boiling water was uncommon. (Weil et al., 1974)

WOMEN'S NUTRIENT DEFICITS: The average diet of women of child-bearing age was found to have a 4.8% deficit in calories; 5.4% in protein; 2.7% in calcium; 4.9% in vitamin A; and 10% in vitamin C. (Robert R. Nathan Associates, Inc., 1978)

INADEQUATE CONSUMPTION OF VITAMINS AND MINERALS: Studies indicated that there was inadequate consumption of calcium, vitamin A, thiamin, riboflavin, and niacin. The most significant gaps occurred in calcium, vitamin A, and riboflavin. (U.S.A.I.D., 1976)

VITAMIN AND MINERAL INTAKES: Iron, thiamin, and ascorbic acid were present in adequate amounts. Vitamin A was 40% below FAO standards, riboflavin was less than half, and calcium one fourth of standard. (Weil et al., 1974)

INADEQUATE CALORIE INTAKE: Calorie intake averaged 26% below FAO recommendations and was 15% below the amount of calories consumed in a sample of latin American countries. Calorie deficits were similar for all three zones, the high plains (Altiplano), valleys, and subtropics. (U.S.A.I.D., 1976)

CALORIE AND PROTEIN DEFICITS: Intake of calories averaged 14.6% below the recommended amount, and intake of animal protein averaged 33.4% below the recommended amounts. (PIA/PNAN, 1976)

CALORIE AND PROTEIN DEFICITS: On a national basis calorie intake averaged 26% below FAO recommendations for calories and 28% for animal protein. Average calorie intake was 1890, and intake of animal protein was 18 grams. FAO recommendations were 2550 calories and 25 grams of animal protein. (U.S.A.I.D., 1976)

INTAKE OF CALORIES AND ANIMAL PROTEIN: Average intake was 1980 calories and 18 grams of animal protein. (U.S.A.I.D., 1976)

CALORIES AND PROTEIN: In 1972 through 1974 it was estimated that 1855 calories and 42.5 grams of protein were available per person per day. In 1979 availability was estimated at 1942 calories and 41 grams of protein; actual consumption in 1979 was 1890 calories and 16 grams of animal protein. These foods were not evenly distributed. In 1970 the Food and Agriculture Organization estimated that 50% of the lower

economic strata obtained only 1356 calories per person per day, although requirements for the average person were 1980 calories and 46 grams of protein. (King, 1979)

CALORIES AND PROTEIN: A typical rural family consumed only 77% of its minimum daily requirements for protein. 35% to 55% of the family income was spent on food. (Roush and Merrill, 1980)

CALORIES AND PROTEIN: 1797 calories and 43.8 grams of protein were available per person per day, according to 1975 food balance sheets. This was below the minimum standard of 2200 calories and 57 grams of protein set for Bolivia. (U.S.A.I.D., 1976)

CONSUMPTION OF ANIMAL PROTEIN: Consumption of animal protein averaged 28% below FAO recommendations and was 17% below the amount of animal protein consumed in a sample of Latin American countries. Animal protein intake deficits were much greater in the Altiplano and the tropics than in other areas. (U.S.A.I.D., 1976)

REGIONAL

AGRICULTURAL PRODUCTION VARIES BY REGION: Agricultural production in the Llano region was three times greater than needed in the region while in the Altiplano the production could not cover one third of the need. Production in the Valleys was insufficient to meet energy needs. (PIA/PNAN, 1976)

ADEQUACY OF WOMEN'S DIETs: Diets of women participating in the "Buena Madre" project were evaluated by 24 hour recalls. Each diet was judged very good, good, fair, poor, or very poor by a nutritionist. 82% of mothers in the Altiplano, 90% in the Valles, and 54% in the Llanos were judged either good or very good. Among control mothers not participating, 84%, 69%, and 41% in each respective region had diets judged good ro very good. (Griffiths, 1982)

INADEQUATE ANIMAL PROTEIN--BY REGION: Estimates of animal protein intake deficits ranged from 48% in the Altiplano to 22% in the Valleys to 43% in the Tropics. (U.S.A.I.D., 1976)

INADEQUATE CALORIE INTAKE--BY REGION: Deficits in calorie intake ranged from 17% in the Altiplano to 15% in the Valleys and 11% in the Tropics. (U.S.A.I.D., 1976)

CALORIE AND PROTEIN DEFICIENCIES AND REGION: Calorie deficiencies were most severe in the Altiplano and least severe in the lowlands. Protein deficiencies were most severe in the valleys and least severe, on average, in the Altiplano. (Roush and Merrill, 1980)

DIET IN THE ALTIPLANO: In some areas of the Altiplano over half the intake by weight is in the form of potatoes, and most of the remainder is in the form of grains, such as barley and quinoa. Green vegetables were eaten in small amounts. Meat intake was also very low and consisted largely of old llamas, domesticated guinea pigs, and fish. A large proportion of protein was derived from beans. (Weil et al., 1974)

3.1 DIETARY PRACTICES, GENERAL (Cont.)

BLAND DIET--ALTIPLANO: The diet of the rural Altiplano was often bland. It was occasionally enlivened with a hot sauce of peppers, tomatoes, and the herb quilquina. (Weil et al., 1974)

AVAILABLE FOODS--ALTIPLANO: The Altiplano had available potatoes, quinoa, barley, fresh and dried beans, onions, radishes, and some herbs. Meats available included beef, lamb, poultry, pork, and llama. Eggs, milk, and cheese were also available. Foods of animal origin were generally used for sale rather than for family consumption. (Murillo and de Yale, 1979)

AVAILABLE FOODS--ALTIPLANO: Foods available in the plains region included tomatoes, carrots, lettuce, beets, plantain, papaya, mangoes, oranges, yucca, rice, corn, and tropical fruits. Animal foods included beef, fish, pork, poultry, eggs, and cheese. Protein foods of animal origin were often used for sale rather than for family consumption. (Murillo and de Yale, 1979)

DAILY FOOD INTAKE--ALTIPLANO: Daily food intake in the Altiplano region averaged 207 grams of wheat, 26 grams of corn, 27 grams of rice, 2 grams of quinoa, 248 grams of roots and tubers, 59 grams of sugar, 92 grams of vegetables, 27 grams of fruit, 88 grams of meat and fish, 32 grams of milk, 2 grams of eggs, 5 grams of fats, 5 grams of coffee, and 1 gram of tea. (PIA/PNAN, 1976)

FAMILY NUTRIENT CONSUMPTION--ALTIPLANO: Average consumption of calories in Altiplano families met 78.7% of requirements, 88.2% of protein requirements, 32.1% of animal protein needs, 77% of calcium, 240% of iron, 5.8% of vitamin A, 133.3% of vitamin B1, 157.6% of riboflavin, 77.3% of niacin, and 35.4% of vitamin C needs. (PIA/PNAN, 1976)

NUTRIENT INTAKE DEFICIENCIES--ALTIPLANO: Diets of families in the Altiplano region were deficient in calcium (35%), vitamin A (94.2%), niacin (22.7%), and vitamin C (64.6%). This agrees with the results of the 1962 National Nutrition Survey. (U.S.A.I.D., 1976)

CALORIE AND PROTEIN INTAKE--ALTIPLANO: Average intake in 1970 was 1883 calories (17.2% below recommended levels) and 15 grams of animal protein (48.3% below recommended levels). (U.S.A.I.D., 1976)

CALORIES AND PROTEIN--ALTIPLANO: The average family in Santiago de Llallagu (the high plains) consumed 1739 calories per person per day (78.7% of the recommended 2208 calories), 49.5 grams of toatl protein (88.2% of the recommended 56.1 grams), and 5.4 grams of animal protein (32.2% of the recommended 16.8 grams). (U.S.A.I.D., 1976)

FOOD EATEN AT HOME--COCHABAMBA: 98% of households reported that no member of the household regularly bought and ate a meal which was not prepared in the household. (Soybean Utilization Project, 1981)

INTRO HOUSEHOLD FOOD DISTRIBUTION--COCHABAMBA: 75% of households reported that when the entire household ate together, the father was served first. In most households (51%) the mother was served last, but

in 13.3% preschool children were served last, and in 13.8% older children were served last. (Soybean Utilization Project, 1981)

SUFFICIENT FOOD--COCHABAMBA: In 90% of rural households there was food leftover after everybody had eaten. When asked why all the food was not eaten, 95% of households replied that everybody was satisfied. It appeared that the relatively low food consumption of rural children, especially those 12 to 23 months old, may not be due to lack of food. (Soybean Utilization Project, 1981)

MEAL PATTERN--COCHABAMBA: Almost all households reported that they regularly served breakfast, lunch, and dinner. The average time at which meals were served were breakfast, 8:30 am; lunch, 11:30 am; and dinner, 5:30 pm. 48% of households reported they served a mid-morning snack; 65.6% a mid-afternoon snack, and 7.6% a late evening snack. Most members of the household usually ate their meals together. Even snacks were eaten together by household members. (Soybean Utilization Project, 1981)

BREAKFAST--COCHABAMBA: Breakfast usually consisted of bread or toast and cinnamon water, tea or coffee with sugar. About 70% of all bread eaten was served at breakfast. (Soybean Utilization Project, 1981)

LUNCH--COCHABAMBA: Lunch was considered the most important meal of the day. A mixed dish was the main component of lunch; soups were popular lunch dishes. The most popular soups were noodle soup, rice soup, and corn soup, Each soup usually included potatoes, a cereal, a small amount of legume, and seasoning. (Soybean Utilization Project, 1981)

DINNER--COCHABAMBA: The most popular dinner-time mixed dishes included meat mixed with potatoes and vegetables; fried rice; chopped meat in gravy; and chuno (dried potatoes) with eggs. Tomato sauce with hot pepper or chili was also very popular at dinner. (Soybean Utilization Project, 1981)

SNACKS--COCHABAMBA: Snacks eaten during the day included mote (boiled corn); fresh cheese, chopped onions, tomatoes and peppers; salad of lettuce, radish, carrots, and oil; cottage cheese with tomato and chili; mashed cottage cheese with inion, tomato, and chili; noodle soup with broth; chopped peppers with tomatoes; and boiled corn with cheese. Salad was eaten mainly as a mid-morning snack, and cottage cheese with tomato and chili and chopped onions, tomatoes, and peppers were served as afternoon snacks. The other snacks were eaten at any time of the day. (Soybean Utilization Project, 1981)

TARHUI--COCHABAMBA: About 70 metric tons of tarhui were produced in Cochabamba in 1975. Its cultivation is simple. Once it has been washed and cooked to extract its alkaloid content, it is consumed exclusively by humans. It has a protein content that varies from 39 to 42%, and the cost of one gram of protein is 16 times cheaper than one gram from potatoes, 10 times cheaper than one from rice, and 1.5 times cheaper than the same quantity from soy beans. (Brown, 1979)

TARHUI: The major drawback to use of tarhui was the presence of toxic alkaloids in this food. These alkaloids could be removed by extensive

soaking procedures which require an ample source of water. A technique developed by the Germans commercially reduced the alkaloids, but there was no inexpensive method available for removal of the toxic substances from tarhui. (Soybean Utilization Project, 1981)

CHICHA--COCHABAMBA: Average daily per capita adult consumption of 666 ml. of chicha provided 20% of energy intake and 5.5% of protein intake. This indicated that a serious prolem of alcoholism existed among adults. (Edozien, 1978)

TIME ALLOCATION OF MOTHERS EMPLOYED IN MARKET PRODUCTION: Mothers in Cochabamba employed in market production spent 13.2 hours a week on child care, 32.5 hours on non-child care of the home, 57.2 hours on economic production, and had 65.1 hours left for leisure time. (Soybean Utilization Project, 1981)

FOOD PURCHASING--COCHABAMBA: The mother normally bought the food in 83.5% of households. (Soybean Utilization Project, 1981)

SOURCES OF FOOD--COCHABAMBA: 22.5% of calories and 31.5% of protein consumed by residents of a lowland village were puchased, indicating a high degree of involvement in the market economy. 58.4% of calories came from home production; 6.3% were obtained on visits and 5.7% were gifts; 4.1% were payment for work; 1.8% came from the Alliance for Progress; and the remainder came from other sources. (Weil, 1979)

COOKING FACILITIES--COCHABAMBA: 58% of households used a wood stove or open fire, 36% gas stove, 4% kerosene stove, and the remainder used other cooking facilities. 43% of households used clay pots, 33% enamel pots, 21% iron pots, and the remainder used other kinds. 3.9% of households had refrigerators, 1.9% had pressure cookers, and 21.3% of households had electricity. (Soybean Utilization Project, 1981)

NO HUNGRY SEASON--COCHABAMBA: There was no clearly defined hungry season in the areas of Cochabamba studied, although energy intake was highest from January through March and lowest from OCtober to December. (Soybean Utilization Project, 1981)

CALORIES AND PROTEIN--COCHABAMBA: Per capita daily consumption was 2344 calories or 98.4% of calorie requirements. Protein consumption was 57.4 grams, animal sources accounted for 40.3% of protein consumed, in a community in the tropical Chapare lowlands. (Weil, 1979)

CALORIES--COCHABAMBA: 70.7% of dietary energy was supplied by carbohydrate, 15.1% by fat, and 14.2% by protein. Most energy was supplied by three staples: potatores which supplied 26% of energy, wheat which supplied 20.4%, and corn which supplied 12.8% of dietary energy. (Soybean Utilization Project, 1981)

PROTEIN--COCHABAMBA: 32% of dietary protein came from animal sources. Potatoes supplied 23.3% of protein in the diet, wheat supplied 17%, and corn 7%. Fresh lima beans and fresh peas supplied about 10% of protein intake. (Soybean Utilization Project, 1981)

STAPLES IN THE LOWLANDS: Lowland staples consisted of cassava, plantains, and bananas. (Weil et al., 1974)

DAILY FOOD INTAKE--LLANO: Daily food intake in the Llano region averaged 145 grams of wheat, 8 grams of corn, 133 grams of rice, 40 grams of roots and tubers, 67 grams of sugar, 112 grams of vegetables, 66 grams of fruits, 3 grams of legumes, 119 grams of meat and fish, 63 grams of milk, 8 grams of eggs, 29 grams of fat, 9 grams of coffee, and 9 grams of chocolate. (PIA/PNAN, 1976)

MEAT IN THE ORIENTE: Beef, pork, and some chicken were an important part of the diet in the Oriente. Meat not infrequently appeared at all of the day's meals. (Weil et al., 1974)

SALSA JALLPAHUIACA--ORIENTE: Salsa jallpahuiaca is a specialty of the Oriente made from tomatoes, red or yellow peppers, onions, and herbs. (Weil et al., 1974)

CALORIES AND PROTEIN--SUBTROPIC: Average daily intake in the Subtropic areas was 1894 calories per person in 1970, 15.7% below the recommended 2248. Animal protein intake averaged 16 grams, 30.5% below the recommended 23 grams. (U.S.A.I.D., 1976)

CALORIE AND PROTEIN INTAKE--TROPIC REGION: Average intake in 1970 in the Tropic region was 1892 calories (10.6% below recommended levels) and 16 grams of animal protein (24.9% below recommended levels). (U.S.A.I.D., 1976)

DIET IN THE YUNGAS AND VALLEYS: In the Yungas and the Valleys corn, wheat, and potatoes were the principal staples. Green vegetables, fruit, and meat were eaten somewhat more frequently than in the highlands. A large proportion of protein was derived from beans. (Weil et al., 1974)

AVAILABLE FOODS--VALLEYS: Foods available in the valley region included tomatoes, carrots, potatoes, beans, green peas, onions, beets, lettuce, cabbage, and fruits such as peaches, figs, apples, and grapes. Also produced were beans, peanuts, potatoes, barley, and corn. Foods of animal origin included pork, lamb, goat, poultry (hens and ducks), fish, cheese, and eggs. Foods of animal origin were generally sold rather than used for family consumption. (Murillo and de Yale, 1979)

DAILY FOOD INTAKE--VALLE: Daily food intake in the Valle region averaged 153 grams of wheat, 100 grams of corn, 37 grams of rice, 548 grams of tubers and roots, 32 grams of sugar, 138 grams of vegetables, 15 grams of fruit, 6 grams of legumes, 47 grams of meat and fish, 56 grams of milk, 3 grams of egg, 7 grams of fat, 3 grams of coffee, 1 gram of tea, and 1 gram of chocolate. (PIA/PNAN, 1976)

INTRA-FAMILY FOOD DISTRIBUTION--VALLEY: Diets for preschool children in the Valley were very inadequate and would not allow normal development. In this region available food appeared to go to working adults first. The same may not be true for the Altiplano. Concrete data for the whole country was difficult to find, and nutrient deficiencies were affected by geography and ethnic/cultural influences. (U.S.A.I.D., 1976)

3.1 DIETARY PRACTICES, GENERAL (Cont.)

FAMILY NUTRIENT CONSUMPTION--VALLEY: The average consumption of calories in Valle families met 88% of requirements, 98.1% of protein needs, 71.5% of animal protein needs, 60.9% of calcium, 227.2% of iron, 58.2% of vitamin A, 166.6% of vitamin B1, 69.2% of riboflavin, 113.6% of niacin, and 304.1% of vitamin C needs. (PIA/PNAN, 1976)

NUTRIENT INTAKE DEFICIENCIES--VALLEY: Families in the Valley region were below recommended levels for calcium, vitamin A, and riboflavin by 39.1%, 41.8%, and 30.8% respectively. This information agrees with information from the 1962 National Nutrition Survey. (U.S.A.I.D., 1976)

CALORIE AND PROTEIN INTAKE--VALLEY: Average intake in 1970 in the valley region was 1894 calories (15.7% below recommended levels) and 16 grams of animal protein (30.5% below recommended levels). (U.S.A.I.D., 1976)

CALORIES AND PROTEIN--VALLEY: The average family in San Benito (Valley region) consumed 1954 calories per person per day (88% of the recommended 2220 calories), 57.9 grams of protein (98.1% of the recommended 59 grams), and 12.6 grams of animal protein (71.5% of the recommended 17.6 grams). (U.S.A.I.D., 1976)

RURAL

INTRA-FAMILY FOOD DISTRIBUTION: There was little prejudice against the younger preschooler in family food distribution. Nutrient gaps compared to requirements for actual size were not greater in younger preschoolers than in older preschoolers, although anthropometric measures had shown the highest incidence of malnutrition in 1 to 2 year olds. Morbidity factors probably explain the peak incidence of malnutrition in 1 to 2 year old children. (CARE, 1978)

ANIMAL PROTEIN: The regular diet is mostly composed of soups, "laguas," and "mote." Potato is a key element in every meal. Animal protein is very rare except during special festivities. (Departamento de Alimentacion y Nutricion, 1981)

WOMEN'S WORK: In addition to household duties, women selected and prepared most of the seed, cared for most of the livestock, broke clods in the newly plowed fields, and did a major share of the harvesting work. Women were also almost completely responsible for marketing of the family harvest. A woman's work was considered equal to that of a man. (Stinson, 1980)

URBAN

FOOD EXPENDITURES: The average working class family in La Paz devoted half or more of its expendable income to food purchases. (Weil et al., 1974)

LACK OF STORAGE: Lack of storage and shipping facilities resulted in small amounts of fresh fruits, dairy products, and meat reaching small town markets. More variety was available in cities. (Weil et al., 1974)

3.2 DIETARY PRACTICES, WOMEN

3.2.1 DIETARY PRACTICES, WOMEN, DURING PREGNANCY

REGIONAL

DIETARY CHANGES--COCHABAMBA: 4.7% of pregnant women reported avoiding some food. 23% of pregnant women regularly took medicines: vitamins 37.5%, iron and vitamins 12.5%, and other medicines 50%. These medicines were taken on the advice of a doctor by 60% of the sample, on the advice of a midwife by 20%, and on advice of other people by 205. (Soybean Utilization Project, 1981)

NUTRIENT INTAKE--COCHABAMBA: Nutrient intake of 42 pregnant women in Cochabamba averaged 1562 calories per day, 46.9 grams of protein, 26.2 grams of fat, 275 grams of carbohydrate, 300 mg of calcium, 891 mg of phosphorous, 23 mg of iron, 379 mg of vitamin A, .7 mg of thiamin, 1.1 mg of riboflavin, 10.2 mg of niacin, and 69.1 mg of ascorbic acid. (Soybean Utilization Project, 1981)

3.2.2 DIETARY PRACTICES, WOMEN, DURING LACTATION

NATIONAL

NO EXTRA FOODS: The amount of food eaten by women during lactation was unchanged. In general, the lactating woman received the same food as the rest of the family. Only during the first and second week after the birth of the child were special foods provided. At this time the mother received chicken soup made without potatoes. Potatoes were believed to be harmful during the immediate postpartum period. (Czaplicki et al., 1981)

REGIONAL

DIETARY CHANGES--COCHABAMBA: 2.6% of lactating women reported avoiding some foods. About 27% of lactating women reported taking special food during six months of lactation. 52% ate the head of a sheep, 20% ate the mouth of a cow, and 7% drank infusions. (Soybean Utilization Project, 1981)

NUTRIENT INTAKE--COCHABAMBA: Nutrient intake of 238 lactating women in Cochabamba averaged 1781 calories per day, 53.6 grams of protein, 27.5 grams of fat, 313 grams of carbohydrate, 405 mg of calcium, 977 mg of phosphorous, 31 mg of iron, 393 mg of vitamin A, .8 mg of thiamin, 1.2 mg of riboflavin, 10.6 mg of niacin, and 73.8 mg of ascorbic acid. (Soybean Utilization Project, 1981)

3.3 DIETARY PRACTICES, INFANTS 0-24 MONTHS

3.3.1 DIETARY PRACTICES, INFANTS 0-24 MONTHS, BREAST FEEDING

NATIONAL

COLOSTRUM NOT GIVEN: In some communities newborns were not given the

breast for three days but instead were given water flavored with anise. (Czaplicki et al., 1981)

PRELACTAL FOODS: In a few communities the new-born infant is fed nothing but anise water which is believed to help the baby get rid of the "black tar" (brea negra) which causes colics. (Departamento de Alimentacion y Nutricion, 1981)

DURATION: Mother's milk was the principal food of the newborn in all regions of the country. In most cases breast feeding lasted more than a year and in some cases lasted as long as three to four years. Prolonged lactation was generally due to the belief that while the mother breast fed she would not become pregnant again. (Murillo and de Yale, 1979)

DURATION: 3.7% of mothers reported weaning their infants between birth and five months of age, 12.7% between 6 and 11 months, 45.4% between 12 and 17 months, 16.3% between 18 and 23 months, and 10.4% at 24 months or later. The remainder did not know or did not reply. (Czaplicki et al., 1981)

STOPPING BREAST FEEDING: Many mothers stopped breast feeding due to a new pregnancy. The milk of a pregnant owman was believed to cause a particular type of diarrhea known as aika. Breast feeding was stopped abruptly in such cases by the mother putting bitter substances on her breast. When there was no new pregnancy, weaning occurred gradually with the child slowly abandoning the breast. (PIA/PNAN, 1976)

ENDING BREAST FEEDING: In order to discourage children from breast feeding, mothers put bitter substances on their breasts. Sometimes mothers consumed large amounts of garlic or daubed the breast with garlic, which was believed to cause the milk to dry up. (Czaplicki et al., 1981)

REGIONAL

BEGINNING BREAST FEEDING: 35% of mothers in Altiplano, 60% in Valle, and 46% in Llanos who had participated in the "Buena Madre" project reported that they initiated lactation immediately after birth. Among non-participants, 18%, 42%, and 21% in each respective region reported putting the child to the breast immediately after birth. (Griffiths, 1982)

EXCLUSIVE BREAST FEEDING--ALTIPLANO: In the Altiplano many children received only mother's milk for 8 to 12 months. (Murillo and de Yale, 1979)

DURATION--ALTIPLANO: 0.5% of mothers in the Altiplano area stopped breast feeding their children between birth and five months of age; 9% between 6 and 11 months; 33.3% between 12 ans 17 months; 22.8% between 18 and 23 months; and 24.1% at 24 months or older. The remainder did not know or did not reply to the question. (Czaplicki et al., 1981)

TIME OF INITIATION OF BREAST FEEDING--COCHABAMBA: 56.8% of respondents reported starting breast feeding one day after delivery, 10.8% started

breast feeding within 12 hours after delivery, 13.5% started two days after delivery, and the reaminder started three days after delivery. (Soybean Utilization Project, 1981)

DURATION OF BREAST FEEDING--COCHABAMBA: 95.1% of infants and preschool children were reported to have been breast fed for an average duration of 11.7 months. The reasons for weaning given by respondents were: it was time to wean the child (59%); mother did not have more milk (9.4%); mother was pregnant (6%); mother was sick (5.1%); mother started work (1.7%), and other reasons (18.8%). (Soybean Utilization Project, 1981)

DURATION--LLANOS: 4.8% of mothers in the Llanos region stopped breast feeding their children between birth and 5 months of age; 19.7% between 6 and 11 months; 60.3% between 12 and 17 months; 3.2% between 18 and 23 months; and 2.3% at 24 months or later. 9.7% did not reply to the question. (Czaplicki et al., 1981)

REASONS FOR MAINTAINING BREAST FEEDING--LLANOS: Mothers in the Llanos Region who breast fed their children beyond one year of age were asked why they maintained lactation that long. 13% said it was the custom; 2% said it prevented a new pregnancy; 20% so the child would be strong; 17% continued until the child gave up the breast; 3% for other reasons; and 45% had no reply. (Czaplicki et al., 1981)

REASONS FOR TERMINATING BREAST FEEDING--LLANOS: Mothers in the Llanos region who stopped breast feeding their children before one year of age were asked the reason. 36% waid it was due to illness, 16% due to new pregnancy, 15% due to lack of milk, 10% due to medical advice, 10% because the child rejected the breast, and 13% due to other reasons. (Czaplicki et al., 1981)

DURATION--VALLES: 4.8% of mothers in the Valles region stopped breast feeding their children between birth and five months of age, 9% between 6 and 11 months, 40.7% between 12 and 17 months, 22.9% between 18 and 23 months, and 9.5% at 24 months or older. The remainder did not reply to the question. (Czaplicki et al., 1981)

REASONS FOR MAINTAINING BREAST FEEDING--VALLES: Mothers in the Valles Region who breast fed their children beyond one year of age were asked why they maintained lactation that long. 44% said it was the custom, 7% said it prevented a new pregnancy, 28% so the child would be strong, and 15% for other reasons. The remainder had no answer. (Czaplicki et al., 1981)

REASONS FOR TERMINATION BREAST FEEDING--VALLES: Mothers in the Valles Region who stopped breast feeding their child before one year of age were asked the reason why. 4% said it was due to illness, 8% due to new pregnancy, 3% said it was due to medical advice. 14% gave other reasons, and 71% did not answer. (Czaplicki et al., 1981)

RURAL

DEMAND BREAST FEEDING: Children were breast fed for at least one year in rural areas. The breast was freely given to the child whenever it cried

and for whatever reason it cried. Either one or both breasts might be offered to the child. (PIA/PNAN, 1976)

DURATION: 91% of infants aged 6 to 11 months and 55% of those aged 12-23 months were breast fed. (Ruth et al., 1981)

BREAST FEEDING DURING THE FIRST SIX MONTHS: Nationally, 96.3% of infants were breast fed during the first six months. Regionally, the breast feeding prevalence for the same age in the Altiplano, Llanos, and Valles regions were 99.5%, 95.2%, and 95.2%, respectively. (Departamento de Alimentacion y Nutricion, 1981)

BREAST FEEDING BEYOND THE FIRST YEAR: Taking all regions together, 72.4% of all infants were breast fed beyond the first year of life. In the Altiplano region this figure went up to 80.1%. In the Valles and Llanos regions 73.1% and 65.8% of infants, respectively, were breast fed beyond one year of age. (Departamento de Alimentacion y Nutricion, 1981)

DURATION: 97% of children less than one year of age were still being breast fed at the time of the survey. By 15 months of age 80% of children were reported to have been weaned from the breast. (Frerichs et al., 1981)

DURATION OF BREAST FEEDING: Only 6 out of 221 mothers had not breast fed their children for at least the first six months of life. (Anderson, 1981)

DURATION: 3% of babies had been breast fed less than 6 months. The average age of stopping breast feeding was 15.4 months in the rural communities of Tarija and Chuquisaca. (CARE, 1978)

URBAN

PREVALENCE OF BREAST FEEDING: 90% of sampled urban women in all socioeconomic groups breast fed for some period of time. This prevalence was greater than in other countries of Latin America. (Bertrand, 1981)

NO BREAST FEEDING: 6.6% of urban mothers did not breast feed their children at all. (Bertrand, 1982)

DURATION: Average duration of breast feeding in urban areas was about 10 months. 25.6% of mothers breast fed for less than 6 months; 47% between 6 and 12 months; 25% from 13 to 30 months; and 6.6% did not breast feed at all. (Bertrand, 1982)

DURATION--ALTIPLANO: In the Altiplano area 85% of children aged 6 to 11 months were breast fed. The rate dropped to 63% for the age group 12 to 23 months. (Ruth et al., 1981)

DURATION--LA PAZ: Women in La Paz had the longest average duration of breast feeding and the lowest proportion of non-breast feeders. This was probably due to the strong highland Indian influence in La Paz. (Bertrand, 1981)

DURATION--LLANOS: 44% of children 6 to 11 months old in the Llanos region were breast fed. This figure dropped to 24% for the age group 12 to 23 months. (Ruth et al., 1981)

DURATION--VALLE: 82% of children aged 6 to 11 months in the Valle region were breast fed. This figure dropped to 23% for the age group 12 to 23 months. (Ruth et al., 1981)

EARLY CESSATION: Early weaning, prior to six months, was seen in about 20% of children, but the majority of them were in the upper income class. The children of high income mothers had better supplemental diets and more hygienic environments than children of low income mothers. (Bertrand, 1982)

INSUFFICIENT MILK: Mothers who believed they had insufficient milk weaned very early. The belief that they had insufficient milk was more common in high income than in low income mothers. (Bertrand, 1982)

REASONS FOR STOPPING BREAST FEEDING: Mothers who nursed for 1 to 5 months most often reported insufficient milk as the reason to stop breast feeding. Those mothers who stopped between 6 and 12 months most often indicated that pregnancy was the reason. Women who breast fed longer stated sufficient time as the reason. (Bertrand, 1982)

3.3.2 DIETARY PRACTICES, INFANTS 0-24 MONTHS, WEANING

NATIONAL

PATTERN OF SUPPLEMENTATION: Supplementation generally began at six months of age. It consisted mainly of soups, mashed potatoes, coffee, and tea. Oranges and lemon were not considered appropriate for breast-fed infants. (Departamento de Alimentacion y Nutricion, 1981)

BREAST MILK SUBSTITUTES: When breast milk was not available for the new born child, bottles were given containing oats, corn, coffee, or tea. In only one case did a child receive evaporated milk. Corn soy milk, wheat soy blend, and powdered milk were not used to feed nurslings because the preparation of these foods was not known. (Murillo and de Yale, 1979)

BREAST MILK SUBSTITUTES: When breast milk was not available, children were given starch or cow's milk; only wealthy families were able to purchase milk. (Czaplicki et al., 1981)

SUPPLEMENTATION WITH COW'S MILK: Cow's milk was introduced in the diet by 42% of mothers in the Altiplano region, 22% in the Valles, and 24% in the Llanos. (Departamento de Alimentacion y Nutricion, 1981)

COST OF BOTTLE FEEDING: It was estimated that the cost of powdered milk to replace breast milk for an infant would be equivalent to 40% of the salary of an unskilled worker. (Instituto Nacional de Alimentacion y Nutricion, 1980)

COMPLEMENTARY FOODS: The introduction complementary foods had no specific time but generally began in the first six months of life. First

foods were frequently pieces of bread dipped in coffee or cooked cereals. Other foods had no particular order of introduction. (PIA/PNAN, 1976)

NO SPECIAL FOODS: No special foods were prepared for the child less than one year of age. The child ate the foods which were prepared for the family excluding chili and other foods which were considered "heavy." (Czaplicki et al., 1981)

WEANING STRATEGY: Some mothers smear garlic or aspirin (mesoral) to make the nipple unpalatable to the weaning infant. (Departamento de Alimentacion y Nutricion, 1981)

REGIONAL

DIET QUALITY: Diets of children whose mothers participated in the "Buena Madre" project were evaluated by 24 hour recalls. Each diet was judged very good, good, fair, poor, or very poor by a nutritionist. 73% of children in the Altiplano, 86% in the Valle, and 66% in the Llanos were judged either good or very good. Among control children, whose mothers had not participated in the program, 76%, 67%, and 54% of the children in each respective region had diets judged good or very good. (Griffiths, 1982)

INFREQUENT FEEDING BY REGION: 12 to 13% of children in the Altiplano were reported to be fed infrequently (less than twice a day); 3 to 4% in the Valle, and 24 to 27% in the Llano were reported to be fed infrequently. (Griffiths, 1982)

INTRODUCTION OF FOODS--ALTIPLANO: In the Altiplano, many children recieved only breast milk for 8 to 12 months. Weaning was begun with foods such as bread, potatoes, rice, and soups prepared for the family. (Murillo and de Yale, 1979)

PATTERN OF SUPPLEMENTATION--ALTIPLANO: In the Altiplano region the progression of supplementation starts with soups of potato, rice, quinua, and maize flour. Meat and eggs consumption is rare until after the 9th hour. (Departamento de Alimentacion y Nutricion, 1981)

COMPLEMENTARY FOODS--ALTIPLANO: 42% of children birth to six months of age in the Altiplano Region were reported to have had milk in the previous 24 hours, 15% had potatoes, 8% had rice, and 8% had eggs. Among children 6 to 9 months of age 16% had potatoes, 15% had rice, 14% had quinoa soup, and 9% had corn. Among children 9 to 12 months 16% had quinoa soup, 16% had beans, 14% had potatoes, 14% had meat, and 10% had eggs. Among children 12 to 15 months of age, 15% had beans, 15% had eggs, 11% had meat, 11% had vermicelli, 5% had potatoes, and 5% had quinoa soup. Among children 15 to 18 months of age, 22% had beans and 22% had meat. (Czaplicki et al., 1981)

NUTRIENT DEFICIENCIES--ALTIPLANO: In the Altiplano region children's intakes were deficint in calcium (47.6%), vitamin A (89.5%), niacin (56.7%), and vitamin C (56.7%). (U.S.A.I.D., 1976)

PRESCHOOL NUTRIENT CONSUMPTION--ALTIPLANO: The average consumption of preschoolers in the Altiplano region met 78.1% of calorie requirements, 93.4% of protein needs, 30.9% of animal protein needs, 52.4% of calcium, 200% of iron, 10.5% of vitamin A, 160% of vitamin B_1, 100% of riboflavin, 55.2% of niacin, and 43.3% of vitamin C needs. (PIA/PNAN, 1976)

INTAKE OF CALORIES AND PROTEIN--ALTIPLANO: Preschool children in Santiago de Llallagua (high plains) averaged 1006 calories (78.1% of recommended amounts), 25.7 grams of total protein (93.4% of recommended amounts), and 3.4 grams of animal protein (30.9% of recommended amounts). (U.S.A.I.D., 1976)

NUTRIENT DEFICITS--COCHABAMBA: Protein, energy, and iron consumption were inadequate in children under two years of age in the State of Cochabamba. (Edozien, 1978)

SUPPLEMENTATION--COCHABAMBA: Supplementation began at a mean age of 5.5 months. There was a period of 2 to 16 months of mixed feeding before breast feeding was stopped completely. The supplements fed included milk, 25%; corn or wheat soup, 21%; potatoes, 18%; bread, 7%; boiled rice, 14%; and other supplements, 14%. (Soybean Utilization Project, 1981)

MILK SUPPLEMENTATION--COCHABAMBA: Powdered milk was the milk supplement used most frequently and was fed 1 to 2 times a day in a 4-ounce bottle which contained one large tablespoonful of powdered milk per bottle. All mothers boiled the water used for making up the milk. Children who were not breast fed received cow's milk, infant formula, or milk and corn water; it appeared that none of these foods was fed exclusively to any one infant. (Soybean Utilization Project, 1981)

COMPLEMENTARY FOODS--LLANOS: 24% of children birth to 6 months of age in the Llanos region were reported to have had milk in the previous 24 hours, 18% potatoes, 10% flour soups, 10% rice, 9% noodles, 6% eggs, and 6% had had meat. Among children 6 to 9 months of age 17% had soup of rice and noodles, 15% tea or coffee, 11% rice or noodles, 10% bread, 10% eggs or meat, 8% fruit, and 6% vegetables. Among children 9 to 12 months of age 17% had soup of rice and noodles, 17% tea or coffee, 15% bread, 19% rice or noodles, 8% eggs or meat, and 3% had yuca. Among children 12 to 15 months of age, 17% had coffee or tea, 14% had bread, 11% had rice or noodles, 11% had eggs and meat, 10% had soup, and 4% had fruit. Among children 15 to 18 months of age 27% had tea or coffee, 14% had bread, 11% had rice or noodles, 11% had soup, and 5% had meat. (Czaplicki et al., 1981)

PATTERN OF SUPPLEMENTATION--LLANOS AND VALLES: In the Llanos and Valles regions the supplementary foods include pasta and rice soups, tea, and coffee. Meats and eggs are introduced before 9 months by some mothers. (Departamento de Alimentacion y Nutricion, 1981)

INTRODUCTION OF FOODS--PLAINS: In the plains areas (rural Trinidad and Santa Cruz) children received orange juice, rice, and carrots as their first foods. (Murillo and de Yale, 1979)

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

INTRODUCTION OF FOODS--VALLEYS: In the valley region (rural Cochabamba, Terija, and Sucre) children received foods such as potatoes, carrots, corn, and fruit juices by 3 to 4 months of age. (Murillo and de Yale, 1979)

COMPLEMENTARY FOODS--VALLES: 22% of children birth to 6 months of age in the Valles Region were reported to have had milk in the previous 24 hours, 16% had rice, 13% potatoes, 13% flour porridge, 8% quinoa porridge, and 7% noodles. Among children 6 to 9 months of age 23% had soup of rice and noodles, 18% had tea or coffee, 14% had corn or yuca, 9% had meat, 4% had eggs, and 4% had fruits. Among children 9 to 12 months of age 17% had soup of rice and noodles, 14% had tea or coffee, 10% had potatoes, 10% had rice, 10% had yuca or corn, 7% had laguas, 3% had meat or eggs. Among children 12 to 15 months old, 19% had tea or coffee, 17% had rice or noodle soup, 12% had bread, 12% had rice or noodles, 8% had laguas, 6% had potatoes, and 2% had meat or eggs. Among children 15 to 18 months 22% had rice and noodle soup, 17% had tea and coffee, 13% had bread, 13% had rice and noodles, and 9% had lagua. (Czaplicki et al., 1981)

NUTRIENT INTAKE DEFICITS--VALLEY REGION: Diets of preschool children in the Valley region were below recommended levels for calcium, vitamin A, riboflavin, and niacin by 74.9%, 40.3%, 62.5%, and 19.2% respectively. (U.S.A.I.D., 1976)

PRESCHOOL NUTRIENT CONSUMPTION--VALLEY REGION: The average consumption of preschoolers in the Valley region met 63.3% of calorie requirements, 77.5% of protein needs, 66.3% of animal protein, 25.1% of calcium, 100% of iron, 59.7% of vitamin A, 140% of vitamin B_1, 37.5% of riboflavin, 80.8% of niacin, and 238.7% of vitamin C needs. (PIA/PNAN, 1976)

INTAKE OF CALORIES AND PROTEIN--VALLEY REGION: Preschool children in San Benito (Valley region) averaged 855 calories (63.6% of recommended amount), 21.7 grams of toal protein (77.5% of recommended amount), and 7.3 grams of animal protein (66.3% of recommended amount). (U.S.A.I.D., 1976)

RURAL

INTRODUCTION OF SOLID FOODS: 58% of mothers in Tarija and Chuquisaca introduced solids after their children were 6 months of age. The mean age of introduction of solids was 8.1 months. (CARE, 1978)

URBAN

INTRODUCTION OF FOOD OTHER THAN BREAST MILK: The median age for introduction of foods was 3 to 8 months. More than 50% of mothers gave juice by 3 months and at 8 months more than half fed their children regular family meals. (Bertrand, 1982)

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

REGIONAL

SUBSTITUTES FOR BREAST FEEDING--COCHABAMBA: Children who were not breast fed received cow's milk, infant formula, or milk and corn water. Powdered milk (75%) and whole cow's milk (25%) were the only kinds of milk reported. When milk powder was fed, the infant received an average of 3.3 bottles each day, and each 8-ounce bottle contained three medium sized tablespoons of milk powder. All the mothers said they boiled the water used for preparing milk. The reasons for not breast feeding were: mother did not have milk, 77.8%; mother was sick, 11.1%; child did not tolerate milk, 11.1%. (Soybean Utilization Project, 1981)

ENERGY INTAKE: Except for children in the 18 to 23 month age group, the energy intake of preschool children seemed adequate when compared to the estimated requirements of children set by WHO. (Soybean Utilization Project, 1981)

RURAL

BREAD AND CORN: Bread consumption was much higher in Tarija than in Chuquisaca. This resulted in higher calorie and protein intakes because bread is eaten continuously by children throughout the day as a kind of pacifier. In Chuquisaca boiled corn takes the place of bread and is eaten with meals throughout the day. (CARE, 1978)

CALORIES AND PROTEIN: The average rural child lacked 360 calories and 8.6 grams of protein when compared to FAO requirements for actual weight and age. (CARE, 1978)

BREAKFAST: In villages in Chuquisaca and Tarija breakfast generally consisted of tea or coffee with sugar and a piece of bread or boiled corn. (CARE, 1978)

AFTERNOON AND EVENING MEALS: Afternoon and evening meals were composed of soups made with potatoes, onions, and alternating cereals or cereal products such as wheat, rice, corn, and noodles. Cassava (yuca) often took the place of potatoes in lower altitudes (less than 1200 meters). Occasionally a small piece of meat or some vegetables were added to the soup. (CARE, 1978)

DIETARY DEFICIENCIES: In general fruits, vegetables, and sources of animal protein were absent from the diet. Occasionally children drank sheep or cow's milk (fresh or powdered) and ate eggs, but this was exceptional. Due to the monotony of the diet and the heavy dependence on cereals and tubers, intakes of vitamin A, riboflavin, calcium, and iron were all insufficient to meet requirements. Many people were also iodine deficient as evidenced by the high incidence of palpable goiters. (CARE, 1978)

CARBOHYDRATE, PROTEIN, AND FAT: The diets of rural children in Chuquisaca and Tarija were composed of 75% carbohydrates, 12% protein, and 13% fat. (CARE, 1978)

3.4 DIETARY PRACTICES, HEALTH AND MEDICINE

NATIONAL

TREATMENT OF GOITER: In the treatment of goiter and lymphatic swelling, a mouse was sometimes applied as a poultice. (Weil et al., 1974)

TREATMENT OF DIARRHEA--HOME REMEDIES: Home remedies given to children suffering diarrhea included rice cooking water, herb teas such as cinnamon, anise, and camomile tea, other liquids, and laxatives. (Czaplicki et al., 1981)

HOME REMEDIES: 55% of mothers reported the use of astringent liquids, while 7% reported using laxatives to treat cases of diarrhea. (Departamento de Alimentacion y Nutricion, 1981)

HOME THERAPY FOR DIARRHEA: 15% of mothers reported the use of foods with known laxative properties such as chocolate, paiko, and saliva. Additionally, there is a large variety of home remedies which are still unclassified. (Departamento de Alimentacion y Nutricion, 1981)

DRUG THERAPY FOR DIARHHEA: 76.6% of mothers reported that they purchased commercial preparations to treat diarrhea episodes. Sulfas, bactrin, chloramphenicol, and other unidentified drugs were used. (Departamento de Alimentacion y Nutricion, 1981)

HERBAL REMEDIES: Respiratory ailments, headaches, and toothaches were treated with herbal remedies. A variety of herbal teas were used for digestive upsets. (Weil et al., 1974)

TRADITIONAL PRACTITIONERS: In many communities there were practicing midwives and in most there were men who specialized in the setting of bones. The best known of the folk practitioners were the Callahuayas of the Munecas Province in La Paz Department who traveled the length of the country selling herbal remedies, charms, and amulets. (Weil et al., 1974)

AVAILABILITY OF HEALTH CARE: From 72 to 99% of mothers participating in the "Buena Madre" Project reported there was a health post in their community; 33 to 55% had received health care in the last 30 days. Among those not participating in the program 48 to 97% had a health post in their communities, and 23 to 71% had used health services in the last 30 days. (Griffiths, 1982)

REGIONAL

TREATMENT OF DIARRHEA--ALTIPLANO: 55% of women interviewed reported that when their children had diarrhea it was treated at home; 27% reported that the child was taken to the doctor; the remainder coped in other ways or did not reply to the question. Many mothers reported that children were taken to the doctor only in the case of severe dehydration. (Czaplicki et al., 1981)

PRENATAL CARE AND DELIVERY--COCHABAMBA: 64% of currently pregnant women indicated they had never been to a prenatal clinic. 65% of women

delivered their babies at home. The husband delivered the baby in 24% of cases; the doctor, 23%; midwife, 29%; grandmother, 6%; and other, 18%. Data from lactating women indicated that 65% had not attended a postnatal clinic. (Soybean Utilization Project, 1981)

BIRTH ATTENDANTS--COCHABAMBA: 8% of all births were attended by doctors, 21% by midwives, 15% by other traditional practitioners (curanderos), and the remaining 56% were attended by a family member or neighbor. 92% of deliveries took place at home. (Weil et al., 1974)

COSTS OF TREATING ILLNESS--MONTERO: During the preceding 14 days, those interviewed reported an average expenditure for treating illness of $2.13 per person; this averaged out to $4.42 per episode of illness. 76% of the money was spent on medication, 15% to pay the fees of medical care providers, 5% for transportation, and the remainder for other expenses. (Frerichs et al., 1980)

RURAL

CHILDBIRTH--MONTERO REGION: Most births were attended by a friend or family member. 13% were attended by a physician and 15% by a midwife. 80% of deliveries occurred in the the woman's home, and 16% took place in the hospital. Women surveyed spent an average of 5.9 days in bed after the delivery. The average cost of a delivery was $10.31 U.S., 40% of which was for medication, 40% for fees, 3% for transportation, and 17% for other expenses. (Frerichs et al., 1981)

TREATMENT FOR DIARHHEA: The most common treatment for diarrhea was administration of herb teas. Although several herbs were mentioned, the most commonly used were cinnamon, anise, and chamomile. The practice of giving herb teas to a child with diarrhea is a very beneficial one as the teas provide water in a sterile form to counteract dehydration accompanying diarrhea. (CARE, 1978)

DIET DURING DIARRHEA: 2.7% of mothers reported not making any change in the diet when their infants were afflicted by diarrhea. On the other hand, 8.2% of mothers believed that no food at all should be given to a child with diarrhea. (Departamento de Alimentacion y Nutricion, 1981)

DIET DURING DIARRHEA: Mothers did NOT have the harmful habit of withholding food during a diarrhea episode as has been found in other countries. Consumption of calories and proteins were similar for children currently affected by diarrhea and for those who were healthy. (CARE, 1978)

MIDWIVES: In rural areas, most deliveries were performed by an untrained midwife or a family member. The umbilical cord was cut with a broken piece of pottery, because use of a metallic instrument is believed to cause the child to develop a belligerent character. (Weil et al., 1974)

SELECTING MEDICAL CARE: Rural people were eclectic. They used modern medical facilities when available as well as traditional cures on an alternative basis. (Weil et al., 1974)

3.4 DIETARY PRACTICES, HEALTH AND MEDICINE (Cont.)

URBAN

PHARMACISTS: In the Altiplano towns and large cities, drugs were available without prescription. and the druggist might be a traditional practitioner. Sophisticated but little-tested European drugs were available, and the prescribed doses were given in languages meaningless to the druggist and the buyer. (Weil et al., 1974)

4. NUTRITION STATUS CORRELATIONS

NATIONAL

INFANT MALNUTRITION AND SEX: No significant difference in the prevalence of malnutrition exists between male and female infants. (Ruth et al., 1981)

MALNUTRITION AND SANITARY CONDITIONS: The highest prevalence of chronic infant malnutrition is found in that subgroup whose families do not have access to latrines. (Ruth et al., 1981)

CHRONIC MALNUTRITION AND ILLITERACY: Children of illiterate parents are more likely to suffer from chronic malnutrition as defined by the Waterlow criteria. This association is stronger with the mother's state of literacy than with that of the father. (Ruth et al., 1981)

INFANT MORTALITY AND MOTHER'S EDUCATION: The highest infant mortality rate was found among children of women with no schooling. The lowest level of schooling among mothers was found in the Altiplano, according to a study carried out by the Latin American Center for Demography in 1975. (Trowbridge and Haverberg, 1977)

MALNUTRITION AND PRODUCTIVITY: Women and children provide 60% of the production and marketing labor in the traditional form. Since mothers and children are also the most affected by malnutrition, productivity is low in the traditional farming sector. (U.S.A.I.D., 1976)

CALORIE LEVEL AND INCOME: 50% of the population, representing the lowest income level, averaged 1356 calories per person per day. 30% of the population, the medium income group, averaged 2165 calories. 15%, the high income group, averaged 2861 calories. 5%, the highest income group, averaged 4813 calories. (U.S.A.I.D., 1976)

REGIONAL

MALNUTRITION AND NUTRIENT INTAKE BY REGION: The prevalence of malnutrition was greater in the Altiplano (where the deficit of calories averaged 17.2%) than in the Valles (where calorie deficits were 15.7% of the recommended amounts) or in the Llanos (where the calorie deficit averaged 10.6%). Relative deficit of animal protein was 48.3% in the Altiplano, 31.7% in the Valles, and 14.3% in the Llanos. (PIA/PNAN, 1976)

BREAST FEEDING AND MOTHER'S AGE--ALTIPLANO: In the Altiplano rural area, survey data indicate that the older the mother, the more likely it is that she will practice breast feeding. (Ruth et al., 1981)

INCOME AND CALORIE AND PROTEIN INTAKE--COCHABAMBA: Calorie and protein intake rose with income. In the bottom quartile, calorie intake averaged 1797 calories per person per day; in the second quartile, 1751 calories; in the third, 1781; and in the top, 1843. Protein intake also rose, averaging 49 grams, 49 grams, 54 grams, and 59 grams per person per day in each respective quartile. (Soybean Utilization Project, 1981)

4. NUTRITION STATUS CORRELATIONS (Cont.)

RECENT ILLNESS, AGE, AND SEX--MONTERO: 42% of those interviewed in Montero reported an episode of illness during the previous 14 days. Rates were relatively high during the first five years of life, fell to the lowest levels between 10 and 15 years of age, and gradually rose with increasing age. Females had higher reported illness rates than males, especially during the adult years. (Frerichs et al., 1980)

RURAL

CHILD MORTALITY AND LITERACY: 15.5% of all live births to literate mothers died before age 3, while 22% of those born to illiterate mothers died before the same age. A similar, although less marked, observation can be made about fathers' illiteracy. (Ruth et al., 1981)

BREAST FEEDING AND ILLITERACY: In concentrated but not in dispersed rural communities illiterate mothers are more likely to practice breast feeding. (Ruth et al., 1981)

MALNUTRITION AND CHILD'S AGE: Current malnutrition, as measured by low weight for height, was significantly higher in 1 to 2 year olds than in other age groups. There was a significant drop in the incidence of low weight for height and an increase in overweight in 2 to 3 year olds compared to 1 to 2 year olds. (CARE, 1978)

MALNUTRITION AND FEEDING METHOD: Malnourished children consumed 21% fewer calories and 24% less protein than the well nourished children. No significant differences were found between the breast feeding and weaning practices of the two groups. (CARE, 1978)

NUTRITIONAL STATUS AND ILLNESS: The prevalence of diarrhea and serious illness was higher in malnourished children than among well-nourished children. In the week prior to the interview, two out of three malnourished children had diarrhea (63%) and 35% of well nourished children had had diarrhea during that week. 31% of malnourished children had had a serious illness in the previous six months, and 17% of well nourished children had had a serious illness. (CARE, 1978)

OVERWEIGHT, STUNTING, AND SEX: The majority of overweight girls were also stunted (58%), but very few overweight boys were stunted (19%). (Anderson, 1981)

CHILD GROWTH AND HOUSEHOLD COMPOSITION: Children from households with many young, nonproducing children were found to be significantly smaller for their age than children from households with few nonproducing children. Absolute household size had no major effect on child growth. (Stinson, 1980)

DIET AND AGE: Nutrient gaps compared to requirements for actual size were no greater in younger prescoolers than in older preschoolers, although anthropometric measures had shown the highest incidence of malnutrition in 1 to 2 year olds. Morbidity factors may play a stronger role than dietary ones in explaining the peak incidence of malnutrition in 1 to 2 year old children. (CARE, 1978)

DIET AND ALTITUDE: Diets of children living in high altitude villages were significantly poorer than diets of children living at low altitudes. 74% of children were calorie deficient in low altitude villages; 94% were calorie deficient in high altitude villages. Solids were introduced later in high altitude villages where the mean age of introduction of solids was 12 months and 94% of mothers had not given solids by 6 months of age. (CARE, 1978)

ILLNESS AND ALTITUDE: Children living in low altitude villages were more frequently affected by diarrhea and serious illness than children living at higher altitudes. 59% of children living at low altitudes had diarrhea on the day of the interview or during the past seven days; the rate was 38% for children at high altitudes. Serious illness affected 17% of low altitude children during the six months prior to the survey, but only 5% of those at high altitude. (CARE, 1978)

URBAN

BREAST FEEDING AND MALNUTRITION: A significant association linking lack of breast feeding and chronic malnutrition was found in the urban communities of La Paz and Cochabamba. (Ruth et al., 1981)

BREAST FEEDING AND ILLITERACY: Illiterate mothers are more likely to practice breast feeding than their literate counterparts in the Altiplano region. The same observation is not applicable to the Valle and Llanos regions. (Ruth et al., 1981)

WEIGHT AND ALTITUDE: Among advantaged urban boys weights were generally higher in the city of Santa Cruz (a low altitude city) than in La Paz and Cochabamba (cities of higher altitudes), except during the age range 18 to 36 months. (Daza and Reynoso, 1980)

HEIGHT AND ALTITUDE: Heights of boys in Santa Cruz (altitude 460 m.) were greater than heights of boys living in Cochabamba (2570m.) and La Paz (3600 m.) in all age groups from birth to 17 years of age. (Daza and Reynoso, 1980)

HEIGHTS AND ALTITUDE: Among advantaged urban girls, birth to 17 years of age, heights in Santa Cruz were greater than heights in Cochabamba and La Paz (cities at higher altitudes), except during the period 33 to 60 months of age when heights from all cities were very similar. (Daza and Reynoso, 1980)

INITIATION OF BREAST FEEDING AND SOCIAL FACTORS: Non-initiation of breast feeding was twice as frequent in upper income women than in low income women. Upper income urban mothers were more able to adopt new feeding techniques. They were more likely to be aware of alternatives. (Bertrand, 1982)

BREAST FEEDING AND SUPPLEMENTARY FOODS: Early cessation of breast feeding was related to early supplementation of all foods, even when social class was controlled. Mothers who ceased breast feeding between 1 and 5 months introduced other milks at 3.1 months; those who breast fed fro 6 to 12 months introduced other milk at 7.8 months; and those who

breast fed beyond 12 months introduced milk at an average age of 10.9 months. (Bertrand, 1982)

DURATION OF BREAST FEEDING AND SOCIOECONOMIC CLASS: The most significant variable in predicting breast feeding was social class as measured by a level of living scale and education. The higher the socioeconomic status, the lower the average period of lactation. (Bertrand, 1981)

BIRTH WEIGHT ANTHROPOMETRY AND ALTITUDE: When samples of similar ethnic and socioeconomic compositions were compared, the birth weights of high altitude children were from 174 to 342 grams less than children born at low altitudes. Measures of crown-heel length, crown-rump length, and head circumference also differed significantly between high and low altitude Indians. Non-Indian infants at low altitude were significantly smaller in comparison to their highland counterparts on thigh circumference and triceps skinfold. (Haas, 1980)

BIRTH WEIGHT AND ALTITUDE: Infants born at high altitude were 282 grams lighter than low altitude infants when other factors such as ethnic background, sex, and maternal factors were held constant. (Haas, 1981)

BIRTH WEIGHT AND MATERNAL HEMOGLOBIN: In La Paz there was a 45 gram decrease in birth weight with each gram increase in maternal hemoglobin concentration. (Haas, 1980)

BIRTH WEIGHT AND ETHNICITY OF MOTHER: Infants born to Indian mothers were 184 grams heavier in Santa Cruz and 155 grams heavier in La Paz than infants born to non-Indian mothers from the same city. Socioeconomic status of Indian women was poorer than non-Indian, but the birth weights were still heavier. (Haas, 1980)

BIRTH WEIGHT AND ETHNIC BACKGROUND: Indian infants were 143 grams heavier than non-Indian infants when factors such as sex, altitude, and other covariates were controlled. (Haas et al., 1980)

LENGTH AT BIRTH AND ETHNIC BACKGROUND: Indian infants were 0.5 cm. longer than non-Indian infants at birth. (Haas et al., 1980)

LENGTH AT BIRTH AND ALTITUDE: Infants born at high altitude were 0.6 cm. shorter than low altitude infants when other intervening variables were controlled. (Haas et al., 1980)

LENGTH AT BIRTH AND SEX: Males were 0.9 cm. longer than females at birth. (Haas et al., 1980)

5. NUTRITION AND HEALTH POLICIES AND PROGRAMS

5.1 NUTRITION AND HEALTH POLICIES AND PROGRAMS, POLICIES

NATIONAL

NUTRITION POLICY: Only recently has nutrition become a major policy concern with a multi-sectorial coneptual framework and a national nutrition policy. There is a growing group of high level policy makers and technical personnel in various sectors aware of the nutrition problem. GOB (Government of Bolivia) has defined and begun to staff a core structure within the national administration to carry out nutrition policy. (U.S.A.I.D., 1976)

NATIONAL FOOD AND NUTRITION PLAN: The National Food and Nutrition Plan had three priority goals: 1) meet the demand for basic foodstuffs, 2) increase the proportion of local foods that meet national requirements, and 3) decrease the incidence of protein energy malnutrition, goiter, and anemia. No detail was provided on the programs or resources needed to meet the goals. (Brown, 1979)

1979/80 NUTRITION PLAN: The 1979/80 nutrition plan included six objectives: 1) reduction of the prevalence of malnutrition in young children, 2) improvement of the nutritional status of pregnant and lactating women, 3) reduction of PCM in school age children, 4) increased availability of calories and protein, 5) decreased importation of basic foods, and 6) decreased prevalence of goiter. (Brown, 1979)

EXECUTING THE NATIONAL NUTRITION PLAN: The Ministry of Planning has primary responsibility for executing the National Food and Nutrition Plan. Within the Ministry of Planning, the National Technical Group for Food and Nutrition was responsible for organizing and directing all nutrition activities. At the Departmental level, employees of the Ministry of Planning have been designated as nutrition coordinators. (U.S.A.I.D., 1979a)

FIVE YEAR PLAN: In June 1976 the Five Year Plan (1976 to 1980) was approved by the GOB. Nutrition was treated as a separate sector. The primary target groups were children six and under and pregnant and lactating mothers. The goals were to 1) meet the demand for food which will allow reaching recommended dietary levels, 2) increase local foodstuffs to meet the national food needs, and 3) decrease the incidence of protein energy malnutrition, goiter, nutrition anemias, and vitamin deficiencies. These goals were very ambitious. (U.S.A.I.D., 1976)

NUTRITION POLICY: There was no clear expression of Government of Bolivia policy concerning where and how nutrition fits into the national social and economic development policy. There was no evidence of a national effort to improve the nutritional status of the rural population. (Robert R. Nathan Associates, Inc., 1978)

NUTRITION AND HEALTH POLICY: The 1976 to 1980 Economic and Social Development Plan called for decreased malnutrition through programs of food assistance and through improvement of sanitation and health

services. These improvements would be planned and carried out with the active participation of the community. (PIA/PNAN, 1976)

HEALTH POLICY: The basic objective of the national health policy was full realization of the potential of the population of Bolivia. To carry out this policy the National Health Plan of 1977-1980 called for improved programs and services of preventive health care, especially in the rural areas. The Plan emphasized training of health care workers, use of appropriate health technology, increased emphasis on health education, and studies to examine the extent of health problems in the country and to allow for maximum utilization of available health resources. (Republica de Bolivia, 1977)

FOOD POLICY: The Economic and Social Development Plan for 1976 to 1980 called for food self-sufficiency. The plan emphasized reduced dependence on imports for basic foodstuffs and increased production of basic foods in the country. (PIA/PNAN, 1976)

FOOD POLICY: Government of Bolivia policies encouraged the introduction of some food crops such as wheat, rice, and soybeans to the detriment of traditional crops such as corn, tarhui, and quinoa. Virtually no resources were available to develop improved varieties of indigenous crops or financing inputs such a fertilizer or insecticides to improve yields and make indigenous crops competitive. (Roush and Merrill, 1980)

NUTRITION GOALS: The nutrition goals of the 1976-1980 Economic and Social Development Plan called for an increase in consumption of calories from 1890 to 2000 per person per day and an increase in consumption of protein from 44 to 56 grams; reduction of food imports by 20% and increase in national production of food by this amount; reduction in the prevalence of protein calorie malnutrition by 25% among children under six years of age; reduction of the prevalence of goiter so it affects only 28% of the population by 1980; and reduction of the prevalence of anemia in pregnant and lactating women from 40% in 1975 to 28% in 1980. (PIA/PNAN, 1976)

NUTRITION STRATEGY: The 1976-1980 Economic and Social Development Plan called for providing basic foods which would satisfy reasonable levels of dietary intake, increase the proportion of foods produced locally which would satisfy the need for calories and protein, and decrease the prevalence of protein calorie malnutrition, goiter, nutritional anemia, and specific vitamin deficiencies. (PIA/PNAN, 1976)

NURSING ALLOWANCE: Laws establishing nursing breaks in Bolivia could not be found. A provision is made for a nursing allowance for women who breast feed their children. This consists of either 1000 bolivianos a month or an equivalent amount in milk or food, to continue until the child is one year old. (Richardson, 1975)

MIN PLAN: The Ministry of Planning coordinates and evaluates all nutrition activities. It reviews and approves specific policies and programs related to the National Food and Nutrition Plan. (U.S.A.I.D., 1976)

INTERMINISTERIAL COMMISSION FOR FOOD AND NUTRITION: In 1975 the Government of Bolivia established an Interministerial Commission for Food and Nutrition. The Commission developed a national food and nutrition plan which became a special section of the 1976-1980 National Development Plan. (Roush and Merrill, 1980)

NATIONAL TECHNICAL GROUP OF FOOD AND NUTRITION: The National Technical Group of Food and Nutrition is part of the Integrated Program Office of the Ministry of Planning and Coordination. (Grueso-Ortega, 1979)

NATIONAL TECHNICAL GROUP OF FOOD AND NUTRITION: The Ministry of Planning had primary responsibility for executing the National Food and Nutrition Plan. Within this Ministry the National Technical Group on Food and Nutrition had primary responsibility for organizing and directing all nutrition activities. This was a permanent organizational structure for nutrition-related activities. (Brown, 1979)

NATIONAL TECHNICAL GROUP OF FOOD AND NUTRITION: The National Technical Group of Food and Nutrition was part of the Ministry of Planning. Its functions included formulation of national food and nutrition policies, coordination and implementation of sectoral plans at the national and regional levels, integration of food and nutrition departmental plans into the national plan and provision of technical assistance, monitoring and evaluation activities. (Brown, 1979)

TECHNICAL GROUP FOR FOOD AND NUTRITION: The Technical Group on Food and Nutrition was primarily a planning group, dealing with the entire range of food and nutrition problems. It was very concerned with the apparent lack of well defined and consistent national food and nutrition policies. (Roush and Merrill, 1980)

DEPARTMENT OF FOOD AND NUTRITION: The Department of Food and Nutrition, part of the Ministry of Planning, has proposed the following activities for 1982: formulation of an integrated national food and nutrition policy, a national campaign against goiter, review of the national policy on supplementary foods, a study of the socioeconomic impact of donated foods, a study to formulate a policy concerning wheat and what products, creation of food balance sheets, integration of nutrition into the school curriculum, a mass media nutrition education campaign, and a study of prevalence and treatment of anemia. (MPC, 1982)

NATIONAL TECHNICAL GROUP OF FOOD AND NUTRITION: The Government of Bolivia established a National Technical Group of Food and Nutrition (GTNAN) responsible for formulating policies and programs to increase food production and improve the nation's nutrition situation. In 1978 this group recommended establishment of a National Food and Nutritional Institute (INAN) which was to be attached to the Ministry of Planning and Coordination (MPC). (Roush and Merrill, 1980)

NATIONAL FOOD AND NUTRITION INSTITUTE (INAN): The National Food and Nutrition Institute (INAN) was created by supreme Decree in July 1978. (Grueso-Ortega, 1979)

5.1 NUTRITION AND HEALTH POLICIES AND PROGRAMS, POLICIES (Cont.)

INAN: In June 1978 the Government of Bolivia created the National Food and Nutrition Institute as the financial and implementing mechanism of the nutrition planning system. (Brown, 1979)

INAN: INAN began its work in 1979. It had been given a broad range of responsibilities from carrying out nutrition studies to coordinating and implementing nutrition programs. (Roush and Merrill, 1980)

INAN: The National Food and Nutrition Institute (INAN) was established in 1978. INAN will fund and guide policy change including pricing and marketing and fund direct impact programs through health service, educational service, agricultural rural development, etc. It will also guide research conducted by universities and others as well as provide training for personnel of all sectors. (U.S.A.I.D., 1979a)

INAN: The responsibilities of the National Food and Nutrition Institute included technical and administrative coordination of supplementary feeding programs; data collection; formulation of food balance sheets; development of basic, applied, and operations research; training of personnel; supervision of higher level nutrition programs. (Brown, 1979)

INAN: The National Food and Nutrition Institute was an autonomous entity attached to the Ministry of Planning. Its functions included implementation of studies; development of training programs; performance of national nutrition education programs; and coordination, monitoring, and evaluation of food assistance programs. (Brown, 1979)

INAN FUNDING--TAX ON IODIZED SALT: A tax is to be levied on iodized salt, and the revenues are to be utilized to finance operations of the National Food and Nutrition Institute. (Brown, 1979)

CONE PLAN: The National Council for Economic and Political Planning is the president's economic and technical advisory group. It must approve the National Nutrition Plan and the Departmental Nutrition Operational Plans. It also must approve any change in institutional responsibilities in the nutrition sector. (U.S.A.I.D., 1976)

NATIONAL NUTRITION COORDINATING COMMITTEE: This committee was formed to coordinate nutrition efforts on the national and departmental levels. Its roles include development of a nutrition planning system, guidance of various agencies involved in nutrition, evaluation of nutrition activities. (U.S.A.I.D., 1976)

DIVISION OF NUTRITION: Prior to 1975 nutrition policy and activities were centered in the Division of Nutrition in the Ministry of Social Welfare and Public Health. The work of this division created heightened awareness of the nutrition problem. In 1975 an Interministerial Commission was established to prepare a discussion of nutrition for the five year plan and ultimately to prepare a National Food and Nutrition Plan. At that time the Commission was transferred to the Ministry of Planning. (Brown, 1979)

HEALTH INFORMATION SYSTEM: The Government of Bolivia has established a health information system to report births, deaths, and utilization of

medical services. Marked under-reporting limits this system's usefulness. (Frerichs et al., 1980)

ORGANIZATIONAL STRUCTURE: GOB (Government of Bolivia) has defined an organizational structure to carry out activities in the nutrition sector as of July 1976. The three highest level units are The National Council for Economic and Political Planning (CONE PLAN), Min Plan (Ministry of Planning and Coordination), and the Interministrial Commission on National Nutrition Policy and Programs. (U.S.A.I.D., 1976)

WEAK ADMINISTRATION: GOB's (Government of Bolivia's) administrative system is weak. Weaknesses were identified in the human resource base and training capability, information generation and management, financial and program management, planning and reach of activities. (U.S.A.I.D., 1976)

INSTITUTIONAL STRUCTURE: Bolivia now has an institutional structure that can plan and implement nutritional programs as well as USAID support and Title III funds for such programs. There is interest in the impact of government policies on the nutritional status of the population and also the potential to use information about such policies to improve the nutritional status of low income groups. (Roush and Merrill, 1980)

MOH/DN: Division of Nutrition of the Ministry of Social Welfare and Public Health (MOH/DN) directs title II feeding programs, provides nutrition education for these programs, sets norms for and directs nutrition rehabilitation programs, monitors nutritional status of the population, directs the National Public Health Laboratory, and coordinates training of nutritionists. (U.S.A.I.D., 1976)

DEVELOPMENT POLICY: The development policy of the Government of Bolivia concentrated on the urban/rural centers along the pricipal "development axis" of La Paz, Cochabamba, and Santa Cruz. A relatively low priority was assigned to the more remote areas. (Robert R. Nathan Associates, Inc., 1978)

"ACCESSIBLE" AREAS: The Ministry of Public Health defined areas of Bolivia as "accessible" or "inaccessible." The quality of human life was low in the "inaccessible" areas. Most urban areas were located in "accessible" areas. Almost all public and private programs and investments were concentrated in "accessible areas," as were most health and nutrition programs. (Robert R. Natnan Associates, Inc., 1978)

INSTITUTIONAL FRAMEWORK FOR AGRICULTURE: The Ministry of Agriculture has direct responsibility for planning and performing services. Decentralized institutions have had major responsibilities for research, extension, forestry, rural development, animal health, etc. The Ministry of Industry, Commerce, and Tourism regulated several agencies directly involved in agriculture through the Bolivian corporations engaged in agricultural development activities. (Roush and Merrill, 1980)

AGRICULTURAL POLICIES: The Government of Bolivia's main agricultural policies and programs can be explained in terms of attempting to provide urban and organized labor with low cost food. Major attention was given

to opening new land which provided the most food per dollar invested. Colonization programs were directed at providing labor to farm new land. Major road investments emphasized linking the new land areas to major population centers. Little attention was given to subsistence farmers or food crops which were not important to urban consumers. (Roush and Merrill, 1980)

POLICY ON BASIC GRAINS: The policy of the Government of Bolivia concerning basic grains was not clear because each change in government brought somewhat different agencies carrying out programs affecting basic grains. Further, the government's programs related to basic grains differed from region to region. As a result, one agency might be attempting to increase rice production through research while another might be discouraging its production through price controls. (Roush and Merrill, 1980)

AGRICULTURAL STRATEGY: The Government has been unable to formulate a strategy to reach the stated agricultural development goals of improving the welfare of the rural poor, increasing agricultural exports, and increasing food production. The primary objectives of agricultural policies during the past 25 years have been to improve the well being of the consumer. (Roush and Merrill, 1980)

PRICE CONTROLS: The Government of Bolivia has a policy of price controls. For example, the prices of wheat and wheat products have been controlled closely by the government. Food price controls result in a transfer of income from rural to urban areas. (Roush and Merrill, 1980)

FOOD PRICES: The prices of nearly all major farm commodities have been controlled at some time or another during the past twenty years. The food crops most frequently price-controlled were beef, sugar, rice, edible oils, coffee, wheat, and milk. The effectiveness of these measures was unclear. The government did not usually have the means to purchase and store most commodities under price control. (Roush and Merrill, 1980)

GROWTH IN THE AGRICULTURAL SECTOR: Growth in the agricultural sector had averaged 2% per year during the period of 1968 to 1975. The Economic and Social Development Plan for 1976 through 1980 called for an average annual growth rate of 7.4% in the agricultural sector. (PIA/PNAN, 1976)

GOAL OF THE USAID MISSION: The overall goal of the Mission was to improve the nutrition status of the rural and marginal poor in Bolivia, especially infants and children under 6 and pregnant and lactating mothers. (U.S.A.I.D., 1976)

POLICIES AFFECTING PL-480 TITLE II FOODS: The principal development strategy was urban oriented. A low priority was given health, education, nutrition and rural programs. The import policy was favorable to Title II. There was a general lack of coordination among institutions' delivery of services. There was little institutional infrastructure or network beyond the 100 mile radius of cities. (Robert R. Nathan Associates, Inc., 1978)

COORDINATION OF FOOD ASSISTANCE: An evaluation of Food Assistance programs (Title II, World Food Program, Red Cross, etc) conducted by the Technical Group for Food and Nutrition resulted in a coordinated mechanism in which all food assistance programmers were planning for use of their resources in a cooperative manner. (Brown, 1979)

SOCIAL AND ECONOMIC DEVELOPMENT 1976-1980: The goals of the social and economic development plan for the period 1976 to 1980 included: growth of the Gross National Product, increased growth and diversification of exports, gradual decrease of imports, food self sufficiency, incorporation of marginal rural groups into the national life, progressive improvement in distribution of income, increase in services which maintain the quality of life, and assuring peace and internal stability. (PIA/PNAN, 1976)

SOCIAL SECURITY SYSTEM: The social security system [CNSS (Caja Nacional de Seguridad Social)] operates through two broad undertakings: social insurance and family sibsidies. Participants in the various funds were insured against the risks of illness, maternity, occupational diseases, injury, old age, and death. (Weil et al., 1974)

FAMILY SUBSIDIES: Family subsidies provided lump-sum payments and gifts of infant clothing to new parents, free distribution of milk to children under one year of age, and monthly child support payments. (Weil et al., 1974)

SOCIAL SERVICE PROGRAMS: There was a general lack of commitment to social service programs on the part of the Government of Bolivia, especially outside urban areas. It was very difficult for new programs to be targeted to the rural poor in inaccessible areas. (Robert R. Nathan Associates, Inc., 1978)

5.2 NUTRITION AND HEALTH POLICIES AND PROGRAMS, PROGRAMS

NATIONAL

WHEAT FLOUR FORTIFICATION PROJECT: In 1977 a project was begun to test the feasibility of fortifying wheat flour with soy flour and to develop a national composite flour program including the use of rice and quinoa flour. Testing facilities have been established, personnel have been trained, and a fortified composite flour has beeen developed for bakery products. Fortified pasta production is to be tested. (McKigney, 1979)

IODIZED SALT: The production of iodized salt was to be initiated in 1979, but the marketing and consumption aspects required a major promotional and education effort due to cultural and pricing constraints. (Brown, 1979)

QUIMBABOL: The state business "Quimbabol" has encountered large financial problems in the construction and start-up operations in the Uyuni industrial salt processing plant. (Grueso-Ortega, 1979)

NUTRITION IMPROVEMENT PROJECT: The Nutrition Improvement Project was an AID funded project carried out to establish a multi-sectoral planning,

implementation, monitoring, and evaluation system for the Government of Bolivia's National Food and Nutrition Plan at the national level in three departments. It was developed as a result of the 1975 health and Nutrition Assessment which identified the need to establish an institutional framework for implementing nutrition programs. (Brown, 1979)

NUTRITION IMPROVEMENT PROJECT: The goal of the Nutrition Improvement Project was to improve the nutritional status of poor people in Bolivia, especially children under 6 and pregnant and lactating mothers. (Brown, 1979)

NUTRITION IMPROVEMENT PROJECT: The goal of the Nutrition Improvement Project was to improve the nutritional status of the poor, particularly children and pregnant and lactating women. The Ministry of Planning and Coordination (MPC) was the principal executing agency, supported by the Ministries of Agriculture and Campesino Affairs (MACA), Education and Culture (MEC), Social Welfare and Public Health (MSW/PH), Industry and Commerce (MIC), and the Department of Development Corporations (DDC). (U.S.A.I.D., 1979b)

NUTRITION IMPROVEMENT PROJECT: The purpose of the Project was to establish a multisectoral planning, implementation, monitoring, and evaluation system of the Government of Bolivia's National Food and Nutrition Plan. The project provided technical and financial support for implementation of nutrition programs. Activities of the program included organizational development, baseline studies, nutrition training, and policy development. (U.S.A.I.D., 1979b)

NUTRITION IMPROVEMENT PROJECT: The Nutrition Improvement Project run by USAID and Bolivia worked to improve the nutritional status of low income pregnant and lactating women and their children. Objectives of this project were to organize and institutionalize a national feeding and nutrition system, develop human resources for nutrition programs, and develop an information base to improve nutrition planning. (Grueso-Ortega, 1979)

NUTRITION IMPROVEMENT PROJECT--WORKSHOPS: The Nutrition Improvement Project of USAID/Bolivia has held courses and seminars on nutrition planning for nutritionists and dietitians, educators, and government officials. Some courses had to be postponed during 1978 due to three changes in government. (Grueso-Ortega, 1979)

NUTRITION IMPROVEMENT PROJECT--RESEARCH: The Nutrition Improvement Project of USAID/Bolivia has conducted research on the food gap and levels of income, farmer productivity, the dairy system, food assistance, nutrition education through mass media, weight and height surveys to establish growth patterns for Bolivia, nutritional anemia, and determination of iodine levels in salt. (Grueso-Ortega, 1979)

NUTRITION IMPROVEMENT PROJECT--EDUCATION: The Nutrition Improvement Project sponsored a mass media education campaign to promote breast feeding and has facilitated research on breast feeding prevalence. This project will host a national seminar in May 1982 concerning interventions

to be implemented at all levels by the Ministry of Health and the Private Voluntary Organizations. (U.S.A.I.D., 1982)

NUTRITION IMPROVEMENT PROJECT--ACCOMPLISHMENTS: Outputs of the Nutrition Improvement Project included organizational development, baseline studies, training and policy development. These outputs were desired in order to support a more comprehensive followup project. (Brown, 1979)

EXTENDING THE NATIONAL NUTRITION IMPROVEMENT PROJECT: The proposal to extend the National Nutrition Improvement Project called for expansion of the project to three new departments, La Paz, Potosi, and Tarija; coordination of existing programs; organization and coordination of nutrition education courses; design, coordination, monitoring and evaluation of an information system; provision of technical personnel; coordination of food assistance programs; and monitoring and evaluation of basic studies. (Brown, 1979)

AID NUTRITION PROGRAMS: AID/Bolivia initiated a nutrition improvement grant of $1,200,000 in FY 1976 to establish a multisector planning, implementation, and evaluation system. PL 480 Title II food commodities valued at over $10,000,000 were distributed in FY 1980. In 1978 an agreement was signed for a five year PL 480 Title III program totaling $75 million. Of these Title III funds, $10 million were allocated for nutrition improvement, malaria eradication, immunization, and control of tuberculosis. (Roush and Merrill, 1980)

PL-480 TITLE II FOODS: Distribution of 46,658,000 pounds of food (bulgur, corn-soy milk, non-fat dried milk, soy fortified rolled oats, wheat flour, and vegetable oil) worth about $7,849,100.00 is planned for FY 1982. (Food for Peace, 1981)

TITLE II FOODS: Title II foods distributed in Bolivia included wheat flour, instant corn soy milk, whey soy drink, nonfat dry milk, vegetable oil, rolled oats, and wheat soy blend. Sorghum and bulgur were also distributed. In 1976 12,300,000 pounds of foods were used in maternal child health programs distributed by CRS and CARE. (Robert R. Nathan Associates, Inc., 1978)

TITLE II PROGRAM AND INSTITUTIONS: Four principal institutions were involved in Title II programs: AID, the Ministry of Health, Catholic Relief Services, and CARE. The World Food Program is planning on running some of the mothers' clubs currently sponsored by CRS, and CRS will be responsible for establishing new clubs in inaccessible areas. (Robert R. Nathan Associates, Inc., 1978)

SUBSIDIZED FOOD AND NUTRITION EDUCATION: The Ministry of Public Health has shifted its orientation to support of food distribution on a subsidized, rather than free basis. This has led to virtual elimination of the nutrition education aspects of the Title II program. (Robert R. Nathan Associates, Inc., 1978)

CATHOLIC RELIEF SERVICES: During FY 1977 CRS supplied 20,000,000 pounds of food valued at $4,200,000, principally PL-480 foods donated by the U.S. Government. The foods were used in school feeding programs, in

nutrition and health education programs, and in distribution through institutions and clinics. CRS also trained local nutrition aides to work in rural health projects. (TAICH, 1978)

CORN SOY MILK (CSM) AND BULGUR: Corn soy milk and bulgur were unfamiliar foods in rural areas of Bolivia. This implies that it is necessary to demonstrate the preparation of these foods and adapt them to local customs. (Murillo and de Yale, 1979)

FOOD DEMONSTRATIONS: Distribution of PL-480 Title II foods was administered by CARITAS. This agency did not provide demonstrations of the preparation of the distributed foods. In La Paz and Cochabamba the agency contracted promoturas to demonstrate preparation of these foods. (Murillo and de Yale, 1979)

TITLE II RATIONS: In theory an MCH or preshool ration in 1979 provided 750 calories daily, 55% of daily needs of the preschool children, plus 34 grams of protein or 130% of daily needs. However, in practice the ration was diluted and preschool children received only a fraction of this amount of food. (King, 1979)

SUPPLEMENTARY FOODS: Shipping delays due to weather, strikes, and other problems seriously hampered Title II operations. In 1977 only about 1/4 of the food programmed actually arrived. (King, 1979)

SUPPLEMENTARY FEEDING PROGRAMS--BENEFICIARIES: In 1977 there were 900,000 beneficiaries of supplementary feeding programs conducted by Food for Peace, the World Food Program, and the Red Cross. 180,000 were in the maternal child health category, and another 3,800 were preschool children. (King, 1979)

PL-480 AND WORLD FOOD PROGRAM: 5 to 7% of the population was reached by food relief programs. 180,000 children received lunch through PL-480 Title II foods; 50,000 received breakfast. 50,000 pregnant women received rations. 130,000 women participated in mothers' clubs. (U.S.A.I.D., 1976)

TITLE III FUNDS: The Government of Bolivia plans to use Title III programs funds to incorporate nutrition activities into rural health services and integrated rural development; initiate nutrition rehabilitation; integrate nutrition education into school curricula; encourage processing of quinoa; promote use of tarhui; develop appropriate nutrition technology; analyze the nutrient content of local foods; and encourage rabbit and guinea pig husbandry. (Brown, 1979)

A.I.D. TECHNICAL ASSISTANCE: To assist the Government of Bolivia and USAID/Bolivia, DS/N of AID has provided technical assistance services including identification of nutrition interventions, preparation of the Bolivian Nutrition Sector Assessment, assessment of nutrition education needs, and assistance in producing soy based weaning foods. (McKigney, 1979)

USAID/BOLIVIA--PRIORITY NUTRITION PROJECTS: The Nutrition section of USAID/Bolivia Offices of Rural Development and Health and Humanitarian

Assistance was especially concerned with specific nutritional problems such as the lack of iodine, the need for nutrition education, and the potential of high protein flour. (Roush and Merrill, 1980)

NUTRITION CURRICULUM: A nutrition curriculum, funded by AID through the International Nutrition Communication Service (INCS), has been developed to introduce nutrition into the school curriculum for children from preshool to grade eight. (Levinger, 1981)

MOTHERS' CLUBS: Mothers' clubs were established in 1972 by the Ministry of Health and Social Welfare in rural and marginal areas. The program has a staff of nutritionists, auxiliary nutritionists, nurses, auxiliary nurses, and social workers for the technical aspects of the programs and the distribution of food. The 600 clubs provide social promotion activities, preventive medicine, vaccination, control of child growth, and food assistance. Mothers pay a small fee each month. (World Health Organization, 1981)

MOTHERS' CLUBS--CARE: CARE was asked by the National Social Action Council (NSAC) to assist with the Title II program. CARE provided intensive supervision in the design, establishment, and management of mothers' clubs. (Robert R. Nathan Associates, Inc., 1978)

MOTHERS' CLUBS--TARGET GROUPS: Mothers' clubs served pregnant or lactating women. CRS/Caritas fed children under 6 years of age, and CARE/NSAC fed children under 8 years. Food was intended only for the target groups but was shared by all members of the family as it was taken home to be cooked and eaten. (Robert R. Nathan Associates, Inc., 1978)

MOTHERS' CLUBS--W.F.P.: Over the next five years the 588 mothers' clubs sponsored by CRS will be transferred to the World Food Program (WFP). In the WFP system members will not receive free food. They will pay an extra fee to purchase a subsidized ration of wheat flour, skim milk, vegetable oil, oats, sardines, rice, and canned meat. (Robert R. Nathan Associates, Inc., 1978)

MOTHERS' CLUBS: CRS/Caritas used PL-480 Title II resources to promote breast feeding through the mothers' club program. 1450 clubs were functioning nationwide in 1982. Clubs established a growth monitoring program and stressed the importance of breast feeding. (U.S.A.I.D., 1982b)

MOTHERS' CLUBS--ACTIVITIES: Activities undertaken by mothers' clubs included buying foods, household articles, school supplies, equipment, and materials for handicrafts or other small industries, clothing, etc. to be sold to members at prices lower than those prevailing in the market. Others have done community projects, such as driniking water facilities, construction of latrines, and social activities. (World Health Organization, 1981)

MOTHERS' CLUBS: Mothers' clubs emphasized nutrition, health, economic and community development. Provision of food and nutrition education served as a catalyst for economic and social development of the individual and the community. Mothers' clubs provided medical care

including immunization and weight charts, food distribution, nutrition, health and social education extension services. Each mother pays a small monthly fee. (Robert R. Nathan Associates, Inc., 1978)

LOCAL FOODS: The Government of Bolivia supplemented Title II foods with local foods, especially for the mothers' clubs. Maisoy, a national blended food of corn and soy, and a local nonfat dry milk were distributed to mothers' clubs. (Robert R. Nathan Associates, Inc., 1978)

NUTRITION EDUCATION: The Nutrition Division of the Ministry of Public Health sponsored seven or eight nutritionists who provided nutrition education courses to the mothers' clubs. There was no money for travel or per diem. Many nutritionists were unwilling to travel in rural areas. This seriously constrained the extent of nutrition education. Many clubs had not been instructed in preparation of donated foods. (Robert R. Nathan Associates, Inc., 1978)

NUTRITIONISTS: In 1974 there were 35 nutritionists working for Ministry of Health, almost entirely in urban areas. (U.S.A.I.D., 1976)

INSTANT CORN SOY MILK: Instant corn soy milk has been made available to mothers' clubs. This food can be prepared with previously boiled water and requires no cooking facilities. (U.S.A.I.D., 1979a)

MCH RATION: The rations provided by CARE and CRS for the mothers' clubs provided about 35% of the daily calorie requirement and 45% for protein, 200% for calcium, and 100% of the vitamin A and iron requirements. The ration was diluted, as the food was shared by the entire family. (Robert R. Nathan Associates, Inc., 1978)

MOTHERS' CLUBS--FOOD DEMONSTRATIONS: The Title II program suffers from a lack of nutrition education and demonstration of food preparation. Sporadic demonstrations were provided in La Paz, Santa Cruz, Beni, and Cochabamba by voluntary organizations, but these services were not provided in general. (Murillo and de Yale, 1979)

MOTHERS' CLUBS: Supervision of the mothers' clubs has been inadequate due to lack of economic resources and lack of transportation. This lack of resources has also impeded coordination among the private agencies and the government. (Murillo and de Yale, 1979)

RADIO USE: About 76% of the sample owned a functioning radio. When both working and non-working radios were considered, 81% of the sample owned a radio. 80% of the sample reported that they listened to the radio; 26% did so frequently. Most people listened in the morning. (Griffiths, 1982)

RADIO: The most effective channel of communication in the country was radio-a medium that reached virtually all the people. Radio broadcasting played a major role in the government's efforts to incorporate the isolated Indian population into the national society. (Weil, 1974)

MASS MEDIA CAMPAIGN: It was estimated that 75% of the population had access to a radio and a mass media campaign of nutrition education is to

be planned by the Department of Food and Nutrition in 1982. (MPC, 1982)

LISTENING TO THE RADIO: 15% of mothers listened to the radio at dawn; 28% in the morning; 15% at midday; 16% in the afternoon; and 19% at night. The remainder did not reply. The most popular programs were the news, preferred by 39% of respondents, music programs (21%), and stories (13%). (Czaplicki et al., 1981)

MASS MEDIA--ACCESS TO RADIO: Access to radio was a problem. A long-standing decree required free public access to radio and television. The radio stations felt that their obligation was fulfilled through broadcast of government press conferences and Presidential speeches. They felt that the Mass Media Nutrition Education Project should pay for access. (Cooke, 1980)

"BUENA MADRE" PROJECT: The "Buena Madre" (Good Mother) project was an educational program using both mass media and interpersonal communication media. It was carried out in each of the three regions, Altiplano, Valle, and Llanos. Media used included radio, posters, leaders of mothers' clubs, and nurse auxiliaries. Media were coordinated to provide reinforcement of material on each topic. Leaders and auxiliaries had a manual and flipchart for each topic with about six lessons per topic. Promoters and auxiliaries distributed posters and recipes to mothers. Short radio spots and stories were broadcast on radio stations. (Griffiths, 1982)

"BUENA MADRE"--TOPICS: Topics covered in the "Buena Madre" education program were breast feeding, early child feeding, childhood diarrhea, and goiter. (Griffiths, 1982)

"BUENA MADRE" PROJECT--GOALS: The goals of the project were to prevent early weaning and promote breast feeding; to promote consumption of local foods of high nutritional value among pregnant women and young children; to improve the nutritional intake of vulnerable groups and decrease nutritional deficiencies; to prevent and combat infant mortality; and to prevent and combat goiter. (MPC, 1982)

"BUENA MADRE"--RADIO SPOTS AND STORIES: The "Buena Madre" Project used short radio spots and stories broadcast on different local and regional stations. Each topic had six to ten 30-second spots that were rotated each week. They were played for six days once every hour. The stories were about ten minutes long and played on Saturdays. Unlike many programs, there were few problems in obtaining radio time for the spots. It was beneficial to hire a person from the region to monitor the radio stations, visit them, and distribute new materials to them periodically. (Griffiths, 1982)

"BUENA MADRE" PROJECT MATERIALS: Flip charts were designed for the "Buena Madre" project which coordinated with a guide for the promoter. The guide is a series of questions and answers coordinated with the drawing of the flip chart. Posters in public places enhance the impact of the program as well as recipes for weaning foods, radio jingles, and radio stories. (MPC, 1982)

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

"BUENA MADRE" PROJECT ADAPTATION: Both graphic material and radio broadcasts were designed in three distinct versions: the first oriented towards the rural Aymara of the Altiplano, the second to the Quechua population of the Valles, and the third to the population of Spanish ancestry in the Llanos. (MPC, 1982)

"BUENA MADRE" PROJECT COORDINATION: Presentation of graphic material, radio broadcasts, lessons by promoters, and field work were coordinated in the program to enhance impact of nutrition and health education. (MPC, 1982)

"BUENA MADRE" PROJECT--SUPERVISION: The major problem in implementation of the "Buena Madre" Project was supervision. More on-the-job supervision and training was needed for club members and nurse auxiliaries. (Griffiths, 1982)

"BUENA MADRE" PROJECT--EVALUATION: Evaluation of the project showed that the greatest differences between the participants in the program and non-participants resulted from attending the Mothers' Clubs and especially from the lessons in the Mothers' Clubs. Differences between participants and non-participants were not due to the frequency with which they listened to the radio, although listening to the radio seemed to reinforce the lessons presented at the Mothers' Clubs. (Griffiths, 1982)

"BUENA MADRE" PROJECT--EVALUATION: Almost 100% of mothers in the program in the Altiplano and Valle regions attended the lessons frequently, and 78% of mothers in the Llanos attended most of the lessons presented in mothers' clubs. Only 13%, 2%, and 5% of mothers in each respective region had difficulty understanding the material presented. 75%, 84%, and 62% of mothers in each respective region carried out the instructions of the lessons in a way which could be proved by the interviewers. 52%, 46%, and 16% reported hearing information on the radio from the "Buena Madre" project. (Griffiths, 1982)

"BUENA MADRE" PROJECT--EVALUATION: 65% of mothers in the Altiplano and 80% of those in the Valle who participated in the "Buena Madre" project reported that they heard child feeding advice on the radio and were able to act on the advice. Among mothers not participating in the "Buena Madre" project, 55% and 30% in each respective region heard the advice and acted on it. (Griffiths, 1982)

"BUENA MADRE" PROJECT--EVALUATION: In the Altiplano region significantly more mothers who had participated in the "Buena Madre" project stopped breast feeding due to a new pregnancy than non-participating mothers. In the Valle region mothers who had not participated in the project were more likely to wean because they believed that to breast feed longer would hurt the child than wereparticipants. In Llanos non-participants were more likely to wean due to new pregnancy and insufficient milk than participants. (Griffiths, 1982)

"BUENA MADRE" PROJECT--EVALUATION: Diets of children whose mothers participated in the "Buena Madre" project were evaluated by 24 hour recalls. Each diet was judged very good, good, fair, poor, or very poor by a nutritionist. 73% of children in the Altiplano, 86% inthe Valle,

and 66% in the Llanos were judged either good or very good. Among control children, whose mothers had not participated in the program, 76%, 67%, and 54% of children in each respective region had diets judged good or very good. (Griffiths, 1982)

"BUENA MADRE" PROJECT--EVALUATION: Diets of women who participated in the "Buena Madre" project in Valles and Llanos were significantly more likely to be judged good or very good than the diets of non-participants. No significant differences in diets of participants and non-participants were found in the Altiplano. (Griffiths, 1982)

"BUENA MADRE" PROJECT--LIQUID INTAKE: Women participating in the "Buena Madre" project were found to have greater intake of liquid than non-participating women. (Griffiths, 1982)

"BUENA MADRE" PROJECT--BEGINNING LACTATION: Mothers who participated in the "Buena Madre" project were significantly more likely to initiate breast feeding immediately (at the hour of birth) than non-participants. (Griffiths, 1982)

"BUENA MADRE" PROJECT--AGE AT WEANING: Mothers in the Altiplano and Llanos regions who participated in the "Buena Madre" project weaned their children significantly later than non-participants. In the both Valle and Altiplano regions a significantly higher percentage of participants breast fed their children beyond 18 months of age than non-participants. (Griffiths, 1982)

UNITED NATIONS AGENCIES: The U.N. through the World Food Program provided food for work and supplementary feeding programs. UNICEF had programs of agricultural production, credit, extension services, sanitation, and health education. The Inter-Agency Project for Promotion of National Food and Nutrition Policies (IAPNFNP) provided technical assistance and training. (U.S.A.I.D., 1976)

CARE AND THE NATIONAL COMMITTEE FOR SOCIAL ACTION: Administrators of the JNAS (National Committee for Social Action) were trained by CARE in the operation of feeding programs. A nutrition and health education curriculum was designed so that information regarding vocational guidance, proper nutrition, and responsible parenthood would be available to JNAS personnel for dissemination to parents participating in the Program. (TAICH, 1978)

PROJECT CONCERN AND MEALS FOR MILLIONS: An intensive nutrition education program was being planned by Project Concern and Meals for Millions to be implemented by health auxiliaries, trained and supervised by a nutritionist and Bolivian counterpart ream. This is part of a rural health care project being developed in the Department of Pando. (TAICH, 1978)

MENNONITE CENTRAL COMMITTEE: As part of its public health effort, the Mennonite Central Committee trained community health promoters, encouraged women's clubs, promoted sanitary practices. It also promoted health education for school children. (TAICH, 1978)

LUTHERAN WORLD RELIEF, INC.: This organization provided taining of local health and agricultural promoters in the areas of nutrition, hygiene, sanitation, midwifery, family planning, public education, well digging, water purification, and latrine construction. It also trained promoters to perform a variety of health services, and with community participation to construct latrines and wells. (TAICH, 1978)

REGIONAL

MOTHERS' CLUBS: Auxiliary workers in Beni were unable to travel to mothers' clubs to provide nutrition education and food demonstrations because the Ministry of Health was unable to provide travel funds. (Murillo and de Yale, 1979)

SOYBEAN UTILIZATION PROJECT--COCHABAMBA: The purpose of this project, begun in 1977, was to examine the feasibility of introducing soybeans as a staple source of protein among the rural poor. Soybeans have been brought into Cochabamba from other areas of Bolivia, and extensive education programs have encouraged the use of soybeans. (Edozien, 1978)

SOYBEAN UTILIZATION PROJECT: A project to promote utilization of soybeans is being tested in Cochabamba. Both raw and processed soybeans will be distributed through the market towns. Soybeans will be promoted by radio and through face to face promotion. It is hoped that increased consumption of soybeans will improve the nutritional status of the population. (Edozien, 1978)

SOYBEAN PROMOTION: Use of soybeans will be promoted through recipe books, posters, ads at the movies, walking promoters with loudspeakers, demonstration of soybean preparation, slide shows and film shows, and radio broadcasts. (Edozien, 1978)

RADIO--COCHABAMBA: 75% of households listened to the radio; 77% of these households listened daily. Reading matter was available in 20 to 50% of households, and only 19% watched television. Radio was chosen to promote the utilization of soybeans through 1 minute jingles throughout the day and special 15 minute programs broadcast at 6:30 am when more people listen to radio than at any other time of a day. (Edozien, 1978)

SOYBEAN UTILIZATION PROJECT--RADIO: 73% of the households listened to the radio, and of these, close to 80% listened every day. (Soybean Utilization Project, 1981)

SOYBEAN UTILIZATION PROJECT--RADIO: The heaviest listeners to radio were men and younger teenagers--not housewives, who had too much work to do to permit much listening. Radio functioned as a two-step information flow: from radio to men and teenage children and through them to the targets of the project, women of childbearing age. (Soybean Utilization Project, 1981)

SOYBEAN UTILIZATION PROJECT: The combined use of radio and person-to-person campaign proved very effective in creating an awareness and acceptance of soya by the target audience. (Soybean Utilization Project, 1981)

SOYBEAN UTILIZATION PROJECT--EATING TOO MUCH: A persistent problem was explaining how much soya to eat. At each demonstration the audience was told that soya cannot be eaten in large quantities. There were occasional reports of stomach ache, diarrhea, and flatulence. Most of those who became ill after eating soya ate large amounts. Toasted soya was popular, and many people ate large quantities of it. (Soybean Utilization Project, 1981)

SOYBEAN UTILIZATION CAMPAIGN--RESULTS: Abouut three-quarters of the test population reported that they had heard something about soya on the radio. A much wider audience than the test population was influenced, and this resulted in sale of soybeans in Cochabamba City. short jingles were more effective than long complicated messages, and radio was a relatively cheap promotional medium. (Soybean Utilization Project, 1981)

RURAL

DEMONSTRATION HEALTH PROJECT IN MONTERO: The Government of Bolivia and U.S.A.I.D. have established a demonstration project to deliver low cost health services in the Montero region of central Bolivia. Basic preventive and medical services are provided by locally recruited health "promoters" at the community level. (Frerichs et al., 1980)

MONTERO HEALTH PROJECT: The prime objective of the Montero Project was to meet basic health needs of the rural population. Preventive services provided included maternal child health, nutrition, communicable diseases control, environmental sanitation, and a medical attention program. (U.S.A.I.D., 1979b)

RURAL HEALTH DELIVERY SYSTEM--MONTERO: A pilot project for the Rural Health Delivery Services Project was established in 31 rural communities in Montero. This pilot has achieved coverage of the target population including training, equiping, drugs and vaccine stocking. Additionally, high impact delivery mechanisms in maternal child health, environmental sanitation, nutrition, curative medical and dental services, morbidity and mortality investigations, and health education activities have also bee developed for implementation at the community level by rural health promoters. (U.S.A.I.D., 1979b)

HEALTH SERVICE: It was estimated that the national health system reached sporadically only 15% of the rural population. (U.S.A.I.D., 1979b)

TRAINING HEALTH PROMOTERS: Meals for Millions Foundation (MFM) provided a nutrition educator for a nutrition education program implemented by the health promoters in the community. MFM worked with Project Concern to design, implement, supervise, and evaluate the nutrition component of the overall health program. (TAICH, 1978)

RURAL HEALTH DELIVERY SYSTEM: The goal of this project was to improve the health and well being of the rural poor through extending, improving, and supporting rural health services. The program was designed to stimulate community participation. The emphasis of the program was on preventive rather than curative health service through community based health promoters, supported and supervised by an improved rural health

infrastructure and administrative capacity of the Ministry of Social Welfare and Public Health. (U.S.A.I.D., 1979b)

RURAL HEALTH DELIVERY SYSTEM: The project provided health care at the rural community level, where services were virtually non-existent. Rural health promoters supported by a Community Health Committee and an efficient system of supplies and supervision provided rudimentary health care, nutrition interventions, and environmental sanitation services to the rural population. Curative care was somewhat more advanced, being provided by a Rural Auxiliary Nurse I or by a physician. (U.S.A.I.D., 1979b)

RURAL HEALTH DELIVERY SYSTEM--PROJECT ACTIVITIES: Project activities included motivation of community participation in essential health activities and services; development of low cost health and nutrition delivery system; the establishment of a paramedical training capacity; improvement of basic health infrastructure to improve referral and delivery of preventive health services; strengthening and improving the administrative and supply capacity of the Ministry of Social Welfare and Public Health; and design and implementation of a maintenance management system which stresses preventive activities. (U.S.A.I.D., 1979b)

SMALL FARMER ORGANIZATIONS: This combined loan and grant project develops and improves organizations of small farmers in Bolivia by providing resources to support income generating cooperative activities. As part of the program 5300 women are to receive training in community and cooperative development, nutrition, and handicrafts. (U.S.A.I.D., 1976)

URBAN

IODIZED SALT: Promotion of iodized salt was begun in La Paz in February 1980 and expansion to Pando-Gazi and Chuquisaco was planned. (Cooke, 1980)

SOYBEAN UTILIZATION PROJECT: About 50% of the 130 metric tons of soya sold during the campaign was sold in the city even though no person-to-person campaign was undertaken in the city. About 50% of those city people who bought soybeans said they got information about soya from the radio. (Soybean Utilization Project, 1981)

6. COMMENTARIES

NATIONAL

FOOD POLICY: It has been suggested that government price policy has favored the urban consumer to the detriment of agricultural producers, particularly the small farmer. Small farmers generally did not have access to credit and thus to inputs which improve yields. This also held down wages of farm workers, a low income and nutritionally vulnerable group. (Roush and Merrill, 1980)

NUTRITION DIVISION CONSTRAINTS: The Division of Nutrition of the Ministry of Social Welfare and Public Health is limited by lack of human resources and a perspective on nutrition which emphasizes dietetics more than a comprehensive view. (U.S.A.I.D., 1976)

PROBLEMS IN NUTRITION PLANNING: The structure of the nutrition sector is well organized, but planning is hampered by lack of good data, limited human resources (in 1974 there were 35 nutritionists working for MOH, almost entirely in urban areas), and financial and program management constraints. (U.S.A.I.D., 1976)

PROGRAM CONSTRAINTS--TITLE II: Logistical constraints affected the outreach of Title II programs in Bolivia; its landlocked status and the lack of a road network were serious obstacles to reaching the rural poor. (Robert R. Nathan Associates, Inc., 1978)

TITLE II--IMPACT ON AGRICULTURE: There was no evidence that the Title II program had a significant adverse impact on domestic agricultural production. (Robert R. Nathan Associates, Inc., 1978)

MALNUTRITION: Malnutrition was a problem, but the country was not a "starvation society." In many areas nutritious foods appeared to be readily available. (Robert R. Nathan Associates, Inc., 1978)

NUTRITIONAL STATUS: It was generally recognized that the nutrition status of the Bolivian population was among the lowest in South America. The three main problems were widespread incidence of protein energy malnutrition, iron deficiency anemia, and goiter. (Brown, 1979)

FOOD CONSUMPTION PATTERNS: Food consumption patterns have undergone important changes since the 1965 Inter-Departmental Committee of Nutrition for National Defense (ICNND) survey. New surveys are required. (Brown, 1979)

DECREASED FOOD CONSUMPTION: People are eating less food and lower quality food now than they did in 1952 due to lower real incomes and the change in national and family food consumption patterns. (U.S.A.I.D., 1976)

IMPROVED FOOD CONSUMPTION: The scattered information available indicated a gradual improvement in the diet during the 1950s and 1960s. Land reform program gave farmers the opportunity to produce more food both for their own consumption and for sales which ennabled them to purchase other

6. COMMENTARIES (Cont.)

foods. The improvement was limited, but increases in the heights and weights of army conscripts since the early 1950s indicated improvements in quality and/or quantity of diet. (Weil et al., 1974)

FOOD GAP: There is a substantial food gap and poor intake is made worse by the poor health status of population. To overcome this there should be a substantial increase in food supplies, and this increase would best come from cereals including corn, quinoa, rice, and wheat; oilseeds; potatoes and tubers; dairy products; and protein foods including pork, poultry, eggs, and guinea pigs (cuis). (U.S.A.I.D., 1976)

IMPORTANCE OF FOOD PRODUCTION: It is necessary to have the institutional structure required to carry out nutrition programs, but such structure is not sufficient to achieve development. Bolivia will have to develop the institutional structure to carry out programs to increase food production--only then will it be in a position to achieve its objective of improving the nutritional status of the population. (Roush and Merrill, 1980)

SUPPLEMENTARY FEEDING: Supplementary feeding programs should be accompanied by nutrition education and by health care. Supplementary foods should be made available in "inaccessible" as well as "accessible" areas as it is quite likely that large numbers of nutritionally vulnerable persons reside in the "inaccessible" areas. (King, 1979)

MOTHER'S CLUBS--RECOMMENDATIONS: Evaluation of the Title II programs resulted in the following recommendations: assist the clubs in economic and community activity, provide more nutrition education, and target new clubs to the neediest. (Robert R. Nathan Associates, Inc., 1978)

NUTRITION EDUCATION: Information about food habits of the low income population was scarce in Bolivia, except for studies of anthroplogical oddities. Much current nutrition education was based on guesses and wishful thinking. (Cooke, 1980)

PL-480 AND NUTRITION EDUCATION: Despite the fact that PL-480 food distribution programs had been in Bolivia for 22 years, the programs were generally characterized by an inadequate nutrition education component, including how to use PL-480 commodities and how to prepare acceptable nutritious foods for the primary beneficiaries: weaning age children, and pregnant and lactating women. (Callier, 1980)

NUTRITION COMMUNICATIONS: The formation of a small communications group with the skills to design communications strategies, develop materials for all media, manage campaigns, and appropriately test and evaluate the programs would be an asset to the continuing efforts of the Bolivian Government to improve the nutritional status of the population. (Griffiths, 1982)

COST OF IRON SUPPLEMENTS: The cost of supplementary iron tablets in local markets was estimated at $3,00. The cost of these tablets was only $0.020 outside the country, and the author recommended that tablets be imported as the price of these supplements in Bolivia was extremely elevated. (Ortega, 1980)

ETHNIC DIFFERENCES AND BIRTH WEIGHT: Indian mothers delivered significantly heavier infants than non-Indian mothers. The author attributed this to better adaptation to high altitude by the Indian population which has experienced several millenia of exposure to hypoxic stress. (Haas, 1980)

REGIONAL

REASONS FOR MALNUTRITION: In 90% of rural households there was food left over after everybody had eaten. When asked why all the food was not eaten, 95% of these households replied that everybody was satisfied. It appeared that the relatively low food consumption of rural children, especially those 12 to 23 months old, may not be due to lack of food. Infectious diseases and diarrhea may be contributory factors especially in the younger age groups. The quality and composition of the diet may be important, since amino acid deficiencies and imbalances, the low fat content of the diet, and vitamin deficiencies could influence appetite. (Soybean Utilization Project, 1981)

RURAL

COMMUNITY PARTICIPATION: Traditionally, most Indian communities have expected their members to provide a certain number of days of unpaid labor in public works projects. Village schools, roads, and communal irrigation systems have been built and maintained by the spontaneous enterprise and cooperation of rural people. (Weil et al., 1974)

URBAN

HEALTH CARE PROFESSIONALS: Health care professionals and health care facilities had an important influence on how mothers fed their children. More effort should be directed towards determining the knowledge and beliefs of health care providers. Intervention programs aimed at behavior change should include a component directed towards health care providers. (Bertrand, 1982)

BIBLIOGRAPHY

Anderson, M.A.

1981 Health and Nutrition Impact of Potable Water in Rural Bolivia. Journal of Tropical Pediatrics 27:39-46, February 1981.

Original data
Method: Questionnaire administered to mothers of preschool children; children 6 to 59 months of age were weighed and measured; 24-hour recall through interviewing the mother to determine the previous day's intake of her preschool child.
Sample: As many mothers of children 6 to 59 months of age as possible in each village were contacted, resulting in a sample of 221 children.
Location: 10 rural villages, six in the department of Chuquisaca and four in Tarija.

A baseline health and nutrition survey found current malnutrition in 8% of children. Stunting affected 36% of children. Rates of malnutrition were similar in children living at high and low altitudes. The primarily carbohydrate diet (75%) was deficient in calories, high quality protein, vitamin A, riboflavin, calcium, and iron. Breast feeding practices were beneficial, but solid foods were frequently introduced late, beyond six months of age, especially in children living at high altitude. Gastrointestinal infections were a serious health problem and a major determinant of malnutrition.

Bertrand, W. E.

1982 Bolivia Lactation Study: Report of Findings. Unpublished draft.

This draft reports on the further analysis of data described below concerning breast feeding in urban Bolivia. Non-initiators of breast feeding are removed from calculations of duration of breast feeding and socioeconomic factors are further analyzed.

Bertrand, W.E.

1981 International Nutrition Communication Service (INCS) Consultant Report for Bolivia (March 14-28, 1981). (Analysis of the results of a Government of Bolivia study of breast feeding practices in urban areas.) Submitted by Education Development Center to U.S.A.I.D., Washington, D.C.

This document describes a consultant trip to Bolivia to analyze the results of a Government of Bolivia study of breast feeding practices in urban areas. Preliminary results indicated that most (90%) of urban mothers did breast feed their children. Women from higher income levels had lower average periods of lactation. Recommendations are made to improve analysis of the data.

Brown, D.

1979 Action Memorandum for the Assistant Administrator re: USAID National Nutrition Improvement Project; includes project description. Unpublished report.

This paper describes the Bolivia National Nutrition Improvement Project. Activities to date included establishment of a multi-sectoral planning, implementation, monitoring, and evaluation system for the Government of Bolivia's National Food and Nutrition plan at the national level and in three departments. Plans to extend the program are described.

Callier, S.

1980 Bolivia Trip Report April 28-May 2, 1980. Unpublished report, USDA/RSSA-TransCentury.

This consultant report describes a one-week trip to La Paz to brief USAID and Government of Bolivia personnel on the AID/Washington funded Maternal/Infant Nutrition Project. The document describes the plans for a breast feeding survey, a seminar on the promotion of breast feeding for health professionals, and the mass media project.

CARE/Bolivia

1978 Integrated Rural Health and Nutrition Project in Chuquisaca and Tarija: Baseline Survey. CARE/Bolivia, June 1878.

Original data
Method: Baseline health survey. Questionaire for mothers. 24 hour recalls for children's intake the previous day. Children were measured for weight and height.
Sample: 230 children aged 6 to 60 months (as many children as possible were included in each village). Breast-fed children were not included in the dietary sample.
Location: 10 rural villages. In Chuquisaca the villages were Cumandayti, Monte Grande, Ocuri, Palscio Tambo, Pampa Herdis, and Piraimiri. In Tarija the villages were Tolomasa, Chocloca, Sella, and Canasmoro.

A baseline health and nutrition survey was conducted to provide a benchmark for future evaluations of the health impact of the potable water system CARE is installing with CODESA and CODETAR. 14% of children had low weight for height. Low height for age affected 25% of the children. Diet was high in carbohydrates (75%) and deficient in calories, riboflavin, calcium, and iron. Breast feeding practices were beneficial, but solid foods were introduced late. Gastro-intestinal infections were a serious health problem and a major determinant of malnutrition.

Cooke, Thomas M.

1980 Report of Technical Assistance Visit to Bolivia--Grupo Tecnico Nacional de Nutricion, March 3-March 14, 1980. New York: Manoff International Inc.

This consultant visit was undertaken to provide technical assistance in planning the household and community questionnaires for the Formative Evaluation Study for the Mass Media Nutrition Education Project.

Czaplicki, S., et al.

1981 Habitos Alimentairios y Algunos Patrones Culturales Frente a la Lactancia Materna, Alimintacion Complementaria, Diarrea y Bocio en Areas de Bolivia. Ministerio de Planeamiento y Coordinacion, Direccion de Planeamiento Social, Departamento de Alimentacion y Nutrition. La Paz.

Original data
Method: Interviews with female heads of household.
Sample: 701 female heads of household. Not a random sample but selected to represent the three geographic areas of the country.
Location: In the Altiplano, the Department of La Paz, and the Provinces of Omasuyos, Pacejes, Manco Kapac, Larecaja, and Nor-Yungas; the Department of Oruro, Privinces of Atahuallpa, Cercado, and Dalence. The Department of Potosi, the Province of Nor-Lipez. In the Valles, the Department of Chuquisaca, the Provinces of Oropeza and Yamparaez in the Department of Cochabamba, the Province of Carrasco. In Tarija, the Provinces of Cercado and Gran Chaco. In the Llano, the Department of Beni, the Provinces of Trinidad, San Borja, and Riberalta. In the Department of Santa Cruz, Montero, Camino Portachuelo, Carretera Santa Cruz-Cochabamba and Vallegrande.

Female heads of households throughout the country were interviewed concerning beliefs about lactation, complementary feeding, diarrhea in young childrn, and goiter. The majority of mothers were still breast feeding their child at 12 months of age. In general, children ate what the family ate, and no special weaning foods were prepared. Most mothers treated diarrhea with homw remedies and took children to the doctor only in cases of extreme dehydration. 60% of mothers did not know the cause of goiter, and 61% had never heard of iodized salt.

Daza, G. and Reynoso, M.T.

1980 Estudio Transversal de Crecimiento en Ninos y Adolescentes Bolivianos: Primer Informe. Miniterio de Prevision Social y Salud Publica Division Nacional de Nutricion. La Paz November 1980.

Original data
Method: Cross sectional study to establish growth standards. Height, weight, arm circumference, and head circumference were measured.
Sample: 7494 Bolivian children birth to 18 years of age selected because they came from advantaged families and suffered no health

problems. Children were selected at private maternity centers, private health care facilities, or from private schools. Location: La Paz, Santa Cruz, Cochabamba.

The purpose of this study was to create standards of growth for Bolivian children birth to 18 years of age, based on children who lived under favorable conditions of health, nutrition, and general environment. Standards were established in three ecological areas--the Altiplano, valleys, and plains. Bolivian standards for weight for age were very similar to North American standards through 11 years of age for boys and 9 years of age for girls.

De Muynck, A. and de Lagrava, M. S.

1977 Encuesta sobre parasitosis intestinales en escolares de Yapacani (Bolivia). Bol. Chile Parasit. 32:71-72.

Original data
Method: Survey of intestinal parasitic infections by the use of microscopic stool examination.
Sample: 855 school children (80% of the school age population) who lived in areas lacking potable water.
Location:Yapacani, a rural settlement located in the plains region.

Protozoa or helminth infections were detected in 96.1% of school-age children. Soil-transmitted helminths were the most frequent, with an average rate of 78% for A. lumbricoides, 77.1% for Ancylostoma sp., and 48.1% for T. trichiura.

Departamento de Alimentacion y Nutricion

1981 Habitos Alimentarios y Algunas Patrones Culturales Frente A: Alimentacion Complementaria, Lactancia Materna, Diarrea, y Bocio. Ministerio de Planeamiento y Coordinacion, Direccion de Planeamiento Social. La Paz, Bolivia.

This document presents the descriptive results of a survey carried out by the section of Education by Mass Media of the Planning Ministry. The survey does not constitute a representative sample of the country or its regions but does provide a view of the dietary beliefs and practices regarding breast feeding and the management of diarrhea. Additionally, some information regarding goiter and the use of iodized salt is presented.

Edozien, J.C.

1978 Soybean Utilization Project: Strategy for Promotion of Soybean consumption in Cochabamba, Bolivia. Chapel Hill, North Carolina: University of North Carolina School of Public Health Department of Nutrition.

Method: Baseline data. Anthropometric measurements taken. Household interviews concerning demographic, socioeconomic, communication, dietary, and nutritional data.

Sample: 6000 households, randomly selected, about 6% of the population in the area.
Location: The provinces, Esteban Arce, Jordan, and Punata in the State of Cochabamba.

This document describes a campaign to promote the utilization of soybeans in the Province of Cochabamba. The soybeans will be promoted through use of mass media, food demonstrations, posters, recipe books, and other face-to-face promotion activities. Soybeans will be made available in local markets in both raw and processed forms. Evaluation of the impact of the campaign is planned.

Food for Peace

1981 Fiscal Year 1982 Public Law 480 Title II ISC Approved Quantities Voluntary Agencies/WFP. Food for Peace, U.S.A.I.D., Washington D.C. Unpublished Computer Printout.

This document projects food to be donated in FY 1982 under PL-480 Title II. Information is available by country and be region and lists: program sponsor, type of program, number of recipients, type of commodity, weight of commodity, and dollar value.

Frerichs, R.R., Becht, J.N., and Foxman, B.

1981 Childbearing and breast feeding in rural Bolivia--a household survey. Journal of Tropical Pediatrics 27:245-249, October 1981.

Original data
Method: Questionnaire concerning births during the prior year and child feeding.
Sample: 3372 persons in 605 randomly selected households.
Location: 51 communities distributed throughout the Montero region of central Bolivia about 60 kilometers from Santa Cruz.

Summary: Nearly eight of every 10 deliveries occurred in the home. Among children less than one year of age, 97% were currently being breast fed. The median age of weaning among children less than six years old who had stopped breast feeding was 12 months of age.

Frerichs, R.R., Becht, J.N., and Foxman, B.

1980 A household survey of health and illness in rural Bolivia. Bulletin Pan American Health Organization 14(4):343-55, 1980.

Original data
Method: Baseline survey. Interviews with households collected data on demography including births and deaths and health care plus information on illness in the preceding two weeks. Height, weight, mid-arm, chest, and head circumference of young children were collected as well as blood and stool samples of children under six years of age.
Sample: 605 households, randomly chosen.
Location: The Montero region, 60 km. north of Santa Cruz.

A health survey conducted to determine the health status of the population of Montero found both birth and childhood death rates were high. Neonatal mortality was 59.5 deaths per 1000 live births, and infant mortality was 115.5 deaths per 1000 live births. 17% of children were low weight. Intestinal parasites were found in the stools of 61% of children below 6 years of age, and half of children in this age were anemic. Many residents (42%) reported having one or more episodes of illness in the previous two weeks before the survey.

Griffiths, M.

1982 Trip Report: La Paz (March 23-April 6, 1982); Evaluation of and Recommendation for the "Buena Madre" Project. Washington, D.C.: Manoff International Inc., under subcontract to New TransCentury Foundation, May 1982.

Original data
Method: Program evaluation conducted by questionnaires including 24 hour recall.
Sample: 76 mothers from the Altiplano, 100 from the Valles, and 81 from the Llanos who participated in the "Buena Madre" Project, and 100, 99, and 70 women from each respective area who had not participated in the project.
Location: Altiplano, Valles, Llanos

This document describes the evaluation of the "Buena Madre" project of nutrition and health education carried out through a number of media--lessons presented in mothers' clubs, radio messages and stories, and posters. The project was carried out by nurse auxiliaries and leaders of mothers' clubs. This evaluation compared knowledge, attitudes, and practices of mothers who participated in the program and those who did not. Results indicated that participants depended on the mothers' clubs for nutrition advice, initiated lactation immediately after the birth of the child, fed their children and themselves better diets than non-participants, and weaned their children later than non-participants. Topics covered by the program included breast feeding, early child feeding, diarrhea, and goiter.

Grueso-Ortega, R.G.

1980 Proyecto de Nutricion USAID/Bolivia Informe de Consultoria. Washington D.C.: TransCentury Corporation, January 1980.

This consultant report describes the various nutrition-related projects included in the national food and nutrition plan for 1980. The various plans and methods are examined and recommendations are made for the projects and the needs for technical assistance.

Grueso-Ortega, Reinaldo

1979 Final evaluation report for the Nutritional Improvement Program, USAID/Bolivia. USAID.

Proyecto de nutricion USAID/Bolivia: Informe de consultoria, Enero 1980. Washington D.C.: TransCentury Corp., January 1980.

This report summarizes the progress, difficulties, present status and future recommendations for the Nutritional Improvement Project USAID/Bolivia. The general objective of the project was to improve the nutritional status of low-income expectant and lactating women and children under 14 years of age. The project had tried to organize and institutionalize a national feeding and nutrition system, develop human resources, and develop an information base to improve national planning for nutrition interventions.

Haas, J.D., Frongillo, E.A. Jr., Stepick, C.D., Beard, J.L., and Luis Hurtado, C.

1980 Altitude, ethnic and sex difference in birth weight and length in Bolivia. Human Biology 52(3):459-77, September 1980.

Original data
Method: Data was collected on ethnic background. Maternal anthropometry included mid-upper arm muscle and fat cross sectional areas and stature. Infants were measured for birth weight and length.
Sample: 105 healthy mothers and infants from La Paz (3600m) and 77 mothers and infants from Santa Cruz (400m).
Location: La Paz and Santa Cruz.

The purpose of this research was to test the hypothesis that altitude differences in fetal growth exist independent of maternal nutritional status, and that indigenous Amerindian women deliver larger infants at high altitude than non-Indian women who were born and raised nad completed a full term pregnancy in the same altitude environment. Results indicated that smaller infants were born at high altitude to non-Indian women. Male infants were more affected by high altitude than female infants. Ethnic group differences in pregnancy outcome reflected a better state of adaptation to high altitude in this healthy indigenous population and long-term genetic selection may be the most plausible explanation for this difference.

Haas, J.D.

1981 Human adaptability approach to nutrition assessment: a Bolivian example. Federation Proceedings 40(11):2577-82.

This paper examines two examples of the interaction between nutrition and high-altitude stress, protein energy malnutrition and iron nutrition and hematological response. While malnutrition is a major limitation on the ability of people to function at optimal level, there is also the broader perspective of the important role of other environmental limits to human potential. Child growth and female reproductive performance are examined in relation to the multistress environment of the Peruvian and Bolivian high Andes.

Haas, J.D.

1980 Maternal adaptation and fetal growth at high altitude in Bolivia in L. Greene, ed. Social and Biological Predictors of Nutritional Status, Physical Growth, and Neurological Development. N.Y.: Academic Press. Original data
Method: Prospective study of mothers and infants included physical exams, anthropometry, and questionnaire administered during pregnancy and at 1, 3, 6, 9, and 12 months postpartum.
Sample: Pregnant women, generally free of pregnancy complications. Eight groups of Indian or non-Indian women born at high altitude, low altitude, or who moved from high to low or low to high altitude during childhood or adulthood.
Location: Cities of La Paz and Santa Cruz.

This article reviews the literature dealing with the effects of high altitude on growth during childhood and puberty; female fertility and reproduction; fetal growth and development; infant growth and mortality. Data is presented from a study of the effect of high altitude on birth weight.

Instituto Nacional de Alimentacion y Nutricion.

1980 Diseno para un Estudio Sobre el Diagnostico de la Situacion de la Lactancia Materna en Areas Urbanas de Bolivia. Instituto Nacional de Alimentacion y Nutricion., La Paz.

This document describes the design of a study of breast feeding among women in La Paz, Trinidad, and Sucre. The advantages of breast feeding are discussed, the rationale for the study is presented, and concrete plans are described.

King, J. M.

1979 Potential Nutritional Impact of Supplementary Feeding Program on the Bolivian Population. Paper presented at the First Workshop on Supplementary Feeding Programs, Bolivian Ministry of Planning and Coordination, La Paz, March 14, 1979.

(Also produced in Spanish: Primer taller nacional sobre programas de distribucion subsidiada de alimentos; impacto potencial de los programas de alimentacion suplementada en Bolivia.)

This paper describes the extent of malnutrition in Bolivia. It was estimated that 234,000 children under five years and 414,600 women were nutritionally vulnerable. The amount of food distributed in supplementaty programs would be inadequate to help these vulnerable groups even if they were targeted exclusively to the malnourished. Often foods go for feeding non-targeted groups. The author recommends that food distribution be accompanied by nutrition education and health care.

Levinger, B.

1981 International Nutrition Communication Service (INCS) Consultant Report for Bolivia (March 9-17, 1981), (Recommendations for a formative evaluation of a primary school nutrition curriculum design). Submitted by Education Development Center to U.S.A.I.D., Washington, D.C.

This document describes a consultant trip to Bolivia to provide technical assistance to an AID funded effort to introduce a nationwide nutrition education curriculum for preschool through grade eight. The author worked with the National Nutrition Institute, focusing on the formative evaluation development and design of the necessary instrumentation.

McKigney, J.

1979 Memo to Shane MacCarthy: Country Relationship Report-Bolivia. August 7, 1979.

This memo describes nutrition programs conducted by USAID and the Government of Bolivia.

MPC (Ministerio de Planeamiento y Coordinacior)

1982 Plan Operativo 1982. Ministerio de Planeamiento y Coordinacion Direccion de Planeamiento Social. Departamento de Alimentacion y Nutricion. La Paz.

This document describes the activities to be undertaken by the Department of Food and Nutrition during 1982. Planned activities include formation of an integrated national food and nutrition policy, a national policy for control of goiter, review of the national policy on supplemental foods, a study of the socioeconomic impact of donated foods, a study for the formulation of policy on wheat and wheat products, creation of food balance sheets, integration of nutrition into the school curriculum, a mass media nutrition education campaign, and a study of the prevalence and treatment of anemia.

Murillo, A. and de Yale, M.

1979 Informe Final de Trabajo para Programas del Titulo II de la Ley Publica 480 Alimentos para La Paz. La Paz: October 1979.

A project was undertaken to evaluate the use of donated PL-480 Title II foods in mothers' clubs and school feeding. It was found that corn soy milk and wheat soy blend were unfamiliar foods which people did not know how to prepare. Food demonstration and nutrition education were not generally available. Recipes were developed using PL-480 foods plus available local food in regions of Bolivia. Recipes were tailored to local food customs. Food demonstrations were presented. Recommendations for the program are included.

PIA/PNAN
(Proyecto Interagencial de Promoci'n de Politicas Nacionales de Alimentacion y Nutricion)

1976 Bolivia: La Alimentacion y la Nutricion en el Plan de Desarrollo Economico y Social 1976-1980. Government of Bolivia DD/PIA/PNAN/01, December 1976.

A strong position is taken emphasizing the importance of human development through improved health and nutrition. Policy objectives include decreased rates of protein calorie malnutrition, goiter, anemia, and other deficiencies. Decreased dependence on imported foods is stressed. The nutritional status of the population and the agricultural capacity of the country are reviewed.

Republica de Bolivia

1977 Plan Nacional de Salud 1977-80: Expansion de Cobertura de Servicios de Salud Area Rural, Proyecto de Inversiones Area Rural; Primera Etapa. Ministerio de Prevision Social y Salud Publica.

This document describes the health situation in Bolivia. Plans for improvement of the health situation during the period 1977 through 1980 are presented. The plan emphasizes preventive health services, especially in rural areas.

Richardson, J. L.

1975 Review of International Legislation Establishing Nursing Breaks. Journal of Tropical Pediatrics 21(5):249-58, October 1975.

The purpose of this paper was to ascertain what legislation existed in various countries to protect the nursing relationship. The intent of most of these laws is primarily to retain mothers in the labor force, and thus these laws are encompassed in maternity protection labor laws rather than in child welfare laws. Information was gathered mainly from the International Labor Office Publication "Legislative Series."

Robert R. Nathan Associates, Inc.

1978 An Evaluation Report of the P.L. 480 Title II Program in Bolivia. Washington D.C.: Office of Food for Peace, Agency for International Development, March 17, 1978.

An evaluation team visited Bolivia in January and February of 1978 to review PL-480 Title II programs there. An evaluation of Maternal/Child Health, Food for Work, and school feeding was carried out by reviewing reports and studies, interviews with officials and participants, and visits to mothers' clubs, schools, and Food for Work projects.

Roush, J. and Merrill, W.

1980 CEAP Project--Draft Scope of Work--Bolivia. A Report to the USDA Nutrition Economics Group under Contract no. 53-319R-0-86 and 53-319R-0-40. AID Development Support Bureau, Office of Nutrition, Economic Analysis of Agricultural Policies, April 1980.

This document reviews the effects of government agricultural policies on nutritional status and food availability. Infrastructure of the agricultural sector is described as well as availability of major grains. A project analyzing the effect of agricultural policies on nutrition is described.

Ruth, V., Moore, M., Varela, G., Lopez, R., Cossio, V., Rivero, J., and Aliaga, A.

1981 Estado Nutricional de la Poblacion Boliviana 1981. Ministerio de Planeamiento y Coordinacion, Instituto National de Alimentacion y Nutricion. La Paz, Bolivia.

This document is a report of a National Nutrition Survey aimed at determining the prevalence of PEM and of vitamin A deficiency in the population aged 6 to 59 months. Representative data on these topics for each of the three regions, each age group, and for the separate urban/rural universes is presented mostly at a descriptive level. Some interrelationships between breast feeding, literacy, mortality, and malnutrition are presented. The Waterlow criteria are applied in the identification of chronic and acute malnutrition.

Soybean Utilization Project

1981 Final Report. Chapel Hill, N.C.: University of North Carolina and Bolivia: The Greater University of San Simon.

Original data
Method: Baseline data collection plus three evaluations during an 18-month soybean promotion project. Questionnaire, plus clinical, anthropometric and biochemical examination of 50% of those interviewed.
Sample: 5% stratified sample of the test population of about 100,000 people, resulted in 3,663 sample person.
Location: The provinces of Punata, Jordan, and Esteban Arce in the state of Cochabamba.

This report describes a four-year AID funded project to develop a methodology for promotiong the consumption of unprocessed soybeans among the rural low income poor. A baseline survey was conducted plus three evaluation surveys. Soybeans were sold in the market and promoted through radio programs and jingles, posters, recipe books adapting traditional recipes to soybean use, and soybean preparation demonstrations. The campaign lasted for 18 months. Unexpectedly, the program had a large impact on urban dwellers who were not even a target of the campaign. Increased consumption of soybeans in rural areas, the actual target population, was less than had been hoped. Demonstrations were found to be more effective in promotion of

soybeans than radio spots, but the demonstrations were a more expensive method of promoting soybean use.

Stinson, S.

1980 Child growth and the economic value of children in rural Bolivia. Human Ecology: 8(2):89-104.

Original data
Method: Interviews were conducted with household heads concerning age and occupation of father and mother and sex and age of all living children. Anthropometric measurements were taken from children 6 to 21 years of age.
Sample: 510 Aymara children between the ages of 6 and 21.9 years of age who attended school in the town of Ancoraimes and four nearby villages.
Location: Ancoraimes county, 135 km northeast of La Paz.

This study evaluated the significance of children's economic input in rural Ancoraimes by using child growth as an indirect indicator of the economic value of children. Children from households with many young, non-producing children were found to be significantly smaller for their age than children from households with few non-producing children. Absolute household size had no major effect of child growth. While young children have a negative effect on the growth of children in the household, the positive effect of children as they grow older appears to make up for this loss. Children were neither a net liability nor a net asset to agricultural households in Ancoraimes.

TAICH

1978 TAICH Country Report: Development Assistance Programs for Bolivia. New York: American Council of Voluntary Agencies for Foreign Service, Inc. Technical Assistance Information Clearing House. July 1978.

This report describes the programs of 55 private, non-profit U.S. organizations which provide the people of Bolivia with development assistance and material aid.

Trowbridge, F.L. and Haverberg, L.N.

1977 Review of Nutrition Data Collection Alternatives for Bolivia: Report of a Consultant Visit January 17-29, 1977. Unpublished report.

This document reports on a consultant trip to Bolivia. The authors examine various data collection alternatives. A national survey is ruled out due to the very high cost of such a survey and the difficulties of travel in the country. Focused regional surveys are recommended instead. Continuation of routine surveillance through mothers' clubs is encouraged with some recommendations for improving this data collection.

U.S.A.I.D.
(U.S. Agency for International Development, American Embassy, La Paz)

1982 Telegram Re: Review of Breastfeeding, weaning, and maternal nutrition programs. La Paz, April 1982.

This telegram was a response to an AID/Washington request for information on current breast feeding, weaning, and maternal nutrition programs.

U.S.A.I.D.

1979a Preliminary overview of nutrition planning activities in selected developing countries. USAID Office of Nutrition, July 1979.

This document briefly describes the nutrition planning activities in Bolivia for the years 1976 to 1980.

U.S.A.I.D.

1979b Nutrition Improvement Project: Project Evaluation Summary. USAID, April 12, 1979; Jean Wright, Nutrition Officer.

This document describes the Nutrition Improvement Project in virtually incomprehensible developmentese.

U.S.A.I.D.

1976 Bolivian Nutrition Sector Assessment. U.S. Agency for International Development, 1976.

This document reviews the state of health and nutrition in Bolivia. The national nutrition system is described, and the organizational capability of the nutrition sector is assessed. Programs of international and bilateral donors in the nutrition sector are described. Alternative interventions are discussed, and the AID mission's proposed program in the nutrition sector is outlined.

Weil, C.

1979 Morbidity, mortality, and diet as indicators of physical and economic adaptation among Bolivian migrants. Soc. Sci. Med. 13D(4):215-22.

Original data
Method: Demographic information was obtained from a questionnaire. A diet survey was carried out: 24-hour recalls were conducted for seven consecutive days with the person who prepared the food. Anthropometry of household members below 17 years of age was collected.
Sample: Inhabitants of a newly settled village who had migrated from areas of higher altitude. 27 households with 173 persons, 55 persons under 17 years of age.
Location: Tropical Chapare lowland village in the department of Cochabamba.

Bolivian farmers are migrating from marginal farming areas to newly accessible settlement areas in the tropical lowlands. Local census health data and a community nutrition survey indicate that the migrants have a better diet and parcipate more in the market economy than do peasants in the highlands, but probably at the expense of a higher toddler mortality rate among their children.

Weil, T.E., Black, J.K., Blustein, H.I., Hoyer, H.J., Johnston, K.T., and McMorris, D.S.

1974 Area Handbook for Bolivia. Foreign Area Studies (FAS) of the American University. Washington D.C.: U.S. Government Printing Office.

This volume was one of a series designed for use by military and other personnel needing a compilation of basic facts about the social, economic, political, and military institutions and practices of the country. The book was compiled from published material and includes descriptions of food and nutrition patterns as well as discussions of health problems and facilities.

World Health Organization

1981 Dishing Out--Alternative Forms of Food Distribution for Women and Children. Iketsetse No. 2, Geneva: World Health Organization/Division of Family Health/Maternal and Child Health Unit.

This paper describes examples of individuals and communities which have solved the problems of promoting the health and welfare of women and children in interesting practical new ways. Examples are given from Lesotho, Bolivia, and India. In Bolivia mothers' clubs are described. This program provides social promotion activities, preventive medicine, vaccination, growth monitoring, and food assistance for women and children.