

Maternal and Infant Nutrition Reviews



PAKISTAN

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MATERNAL AND INFANT NUTRITION REVIEWS

PAKISTAN

A Guide to the Literature

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INTRODUCTION

This monograph reviews the available literature on maternal and infant nutritional status, beliefs, and practices in Pakistan. It also lists current government, USAID, international agency, and private voluntary organization nutrition-related programs and policies.

This is not an all-inclusive listing, but it should provide enough information to enable the health/nutrition planner (our primary target audience) to ascertain quickly what is known (and what needs to be studied) about this subject. The information is organized according to a Maternal and Infant Nutrition Review (MINR) system outlined on page iii.

The map on page iv and Table 1 on page v show the extent to which various regions and specific locations have been surveyed. Pages vii and viii present the highlights of our findings. Pages 1 to 50 contain the data categorized according to the MINR classification system with boldface titles within each category to describe specific listings.

Pages 51 to 62 contain an annotated bibliography with each entry described in terms of type of study (original data or literature review), with methodology, sample characteristics, and location, where relevant, and a summary.

Special thanks are extended to Dr. Beatrice Lorge Rogers and Mr. Christopher Brown for reviewing and commenting on this report. These reviews are limited to documents available to us in the United States working under time constraints. We hope that we will be able to obtain further information and to update the reviews.

Rcn Israel
INCS Project Manager

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
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 - 2.4 About Breast Milk Substitutes (including bottle feeding)
 - 2.5 About Weaning
 - 2.6 About Illness and Cure

3. Dietary Practices
 - 3.1 General
 - 3.2 Women
 - 3.2.1 During Pregnancy
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 - 3.3 Infants 0-24 Months
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 - 3.4 Health and Medicine

4. Nutrition Status Correlations

5. Nutrition and Health Policies and Programs
 - 5.1 Policies
 - 5.2 Programs

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HIGHLIGHTS

- 1. NUTRITION AND HEALTH STATUS:** The maternal mortality rate is 8 per thousand; clinical signs of anemia are almost twice as common among pregnant and lactating women as among the rest of the female population. 25.6% of pregnant women consume less than 70% of the RDA for calories; 78.8% consume less than 70% of the RDA for vitamin A; 43% show deficient levels of plasma vitamin C. 100% of urban pregnant and lactating women have low or deficient levels of hemoglobin. The infant mortality rate is approximately 111 deaths per 1000 live births; 26% of children born alive die before they reach age 5; 11% die within the first year. 89% of children under five years of age were below 90% of standard weight for age; 3 to 10% were marasmic.
- 2. DIETARY BELIEFS:** The people have faith in the hakims, the traditional health care providers, and distrust Western medicine. The hakims practice Unani medicine and outnumber modern doctors 3 to 1. Unani dietary rules are very widely believed and followed. All foods are classified according to degrees of heat or cold, dryness or moisture. Foods considered "hot," like eggs or meat, often are avoided during pregnancy because of the fear they will have an ill effect on the unborn child. Ghee (clarified butter) is considered strengthening during pregnancy and lactation. Lactating women are advised to cut down on wind-producing foods, such as chickpeas and cabbage, which might upset a baby's digestion. Weaning is late and the majority of foods are not given to young children because they are considered too hot or too cold or indigestible for young children. Poor and uneducated mothers believe that when a child has diarrhea, his food and milk intake should be reduced. Health or illness is thought to be determined by the proportions of the four basic fluids or humors of the body--blood (the air humor), bile or cholera (fire), black bile or melancholia (earth), and phlegm (water). Foods, whether hot, cold or neutral, act to increase or decrease the different humors within the body.
- 3. DIETARY PRACTICES:** The staple food is wheat, followed closely by rice, bajra and gram. "Atta," whole wheat flour, is made into a type of "roti" or bread. Average intake of vegetables is 67.1 grams per person daily. Ghee has been the major cooking fat, but a shift to vegetable oils is evident. In most Pakistani families, all food purchasing is done by men. Within the family, wage earners get most of the protective food which is prepared, with the exception of milk, which may be reserved for children and other members of vulnerable groups. 58.9% of the average family income is spent on food. 38% of the population consumes less than 85% of the recommended dietary allowance for calories. There is no quantitative lack of protein in diets surveyed. Weaning is very late; the introduction of solids is delayed and the child receives only breast milk. The mean duration of breast feeding, for those who had breast fed their last (or only) child, was 16.2 months. Pregnancy is the most common reason for discontinuing breast feeding. The average per capita income is Rs. 140 per month, and it costs Rs. 105 per month to bottle feed one infant adequately. Solids are introduced late; throughout the first year of life, many children exist on a diet of breast milk and a few other liquids, most commonly tea. Often children are not given any semi-solid foods until they have passed their first birthday. Over 50% of children began to receive solid foods after one year of age. A significant number of children receive only liquids until two years of age. Rice, roti (bread), sweet biscuits, Khichri (rice and dal), and dalia (porridge of wheat and milk) account for 74%

HIGHLIGHTS (Cont.)

of first foods. Children often start receiving biscuits at 6 to 12 months, and bananas at 9 to 12 months. More than 26% of households report giving tea to children by five months of age.

4. **NUTRITION STATUS CORRELATIONS:** Duration of breast feeding decreases with increasing education and age and increases with number of births; population growth has outstripped increase in food grain production. Breast feeding is associated with a low prevalence of gastroenteritis; mixed feeding, with a high prevalence.

5. **NUTRITION AND HEALTH POLICIES AND PROGRAMS:** The Government of Pakistan has recently set good health care for the rural poor as a national priority. Only 15% of the rural population receives coverage from existing Western style health services. Expenditures for health were 3.52% of total development expenditures in 1974-75. The Government of Pakistan has a ration system which distributes subsidized whole-wheat flour and white sugar. The Government buys and stores cereals to release on the market when food is scarce to avoid high prices. The GOP is seeking to increase food production through construction of fertilizer plants, fertilizer importation, control of water-logging and salinity in 14 million acres of land, and increased production on rainfed land. The GOP is also sponsoring a cotton seed oil extraction research project. U.S.A.I.D. and the GOP have several joint nutrition projects including tea and flour fortification, village food processing and nutrition planning and research. The U.S. PL-480 commodity food program is distributed by CARE to 30,000 preschool children and up to 10,000 pregnant or lactating women through MCH centers. A special weight card, suitable to the cultural milieu of Pakistan (using the colors green, yellow, blue and red) has been designed.

1. NUTRITION AND HEALTH STATUS

1.1 TARGET GROUP NUTRITION AND HEALTH STATUS, GENERAL

NATIONAL

ANEMIA: Dietary intake evidence suggests adequate iron intake, although 16% of the population had pale conjunctiva and 40% had low levels of hemoglobin. Possible reasons for this discrepancy between intake and status include: 1) dietary iron is not available from wheat due to phytic acid, 2) anemia is due to folate or B₁₂ deficiency, 3) gastrointestinal disease is causing anemia through blood loss or poor absorption. (Nutrition Cell, 1978)

ANEMIA: 50% of women had adequate hemoglobin levels; 20% were marginal; and 30% were deficient. 83% of women had adequate hematocrits, 11% were marginal, and 6% were deficient. (Micro-Nutrient Survey, n.d.)

ANEMIA IN MEN: Hemoglobin and hematocrit readings indicated that men had lower iron levels than women or children relative to their requirements, as well as more pale conjunctiva. This is a disturbing result since adult men constitute the bulk of the producing labor force and anemia tends to decrease productivity and energy. (G.O.P., 1979)

RIBOFLAVIN (VITAMIN B₂) DEFICIENCIES: 7.9% of the population exhibited clinical riboflavin deficiency. (Nutrition Survey of West Pakistan, 1970)

GOITER: Prevalence of goiter is greater in rural areas than urban localities. (Nutrition Cell, 1978)

VITAMIN A DEFICIENCY: Vitamin A deficiency was widespread. 39% of all women of childbearing age had Bitot's spots. (Furnia, 1976)

VITAMIN A DEFICIENCY: 13% of the population had low plasma Vitamin A levels, and 1% had xerophthalmia or keratomalacia. (Nutrition Cell, 1978)

WOMEN'S WEIGHT: Average weight of adult women studied was 49 kilograms (108 lbs.). (Underwood, n.d.)

SKINFOLD THICKNESS: Women in urban areas had skinfold thicknesses lower than those of rural areas, indicating lower calorie intakes or greater expenditures. Dietary findings show that urban calorie intakes average 300 calories less than rural. (Nutrition Survey of West Pakistan 1970)

COMMUNICABLE DISEASES: Pakistan's inhabitants suffer from a variety of communicable diseases such as enteric fever, measles, mumps, tuberculosis, cholera, malaria, influenza, diphtheria, scarlet fever, dysentery and typhoid. Also found are trachoma, amebic and bacillary dysentery, tetanus, dengue fever, respiratory diseases and intestinal parasites. (Furnia, 1976)

1.1 NUTRITION AND HEALTH STATUS, GENERAL (Cont.)

CAUSES OF DEATH: 63.83% of deaths caused by 12 common serious diseases result from infective and parasitic disease, 10.44% are due to malaria; 7.36%, birth injuries; 5.55%, tuberculosis; 2.85%, cause unknown; 2.51%, dysentery, 1.2%, ulcer, appendicitis, or intestinal obstruction; 1.88%, accident, poison, or violence; 1.79%, heart and circulatory diseases; 1.14%, diabetes, 1.13%, complications of pregnancy and childbirth, and .34%, tumors. (Jeffalyn Johnson and Associates, Inc., n.d.)

MALE CHILDREN PREFERRED: The longer life expectancy for males in Pakistan is the reverse of that seen in developed countries, and indirectly reflects the sex preference for male children and the lower position of women in the culture. (World Bank, 1978)

RURAL

ANEMIA: 31% of rural women age 21-40 in Lulliani were anemic (hgb<10gm). (Underwood, n.d.)

MORBIDITY: In a baseline survey of Ferozewala and Gajji Matta, two villages in Punjab, 28% of the people had malaria, 99.5% of the stool examinations showed worm infestations, and children under five averaged 5.6 episodes of diarrhea per year. In addition, 33% of the adults had trachoma, 87% of the children had decayed or missing teeth, and 95% suffered from serious gum disorders. (World Bank, 1978)

1.2 TARGET GROUP NUTRITION AND HEALTH STATUS, WOMEN, PREGNANT

NATIONAL

MATERNAL MORTALITY: In 1974, the maternal mortality rate was about 8 deaths per 1000 births. (Furnia, 1976)

MATERNAL MORTALITY: Maternal mortality was 6 to 8 deaths per 1000 live births. (Khan, n.d.)

CALORIE INTAKE: 25.6% of pregnant women consumed less than 70% of the RDA for calories; 8.9% consumed 70-79% of the RDA; 13.3% consumed 80-89%; 12.8% consumed 90-99%; and 39.4% consumed 100% or more of the RDA. (Nutrition Cell, 1978)

BREAST FEEDING DURING PREGNANCY: Breast feeding was continued up to or even into the next pregnancy by many women; nearly 10% of the women reported as currently pregnant (62 out of 654) were still breast feeding. (Page, 1981)

ANEMIA: 26% of pregnant or lactating women had conjunctival pallor (pale inner eyelids, a sign of anemia). (Nutrition Cell, 1978)

ANEMIA: Clinical signs of anemia are almost twice as common among pregnant and lactating women as among the rest of the female population. (Nutrition Cell, 1978)

ANEMIA: Pregnant and lactating women had iron levels 1.50 points lower on hemoglobin and 2.03 lower on hematocrit, and had a 5.4% higher incidence of pale conjunctiva. (G.O.P., 1979)

HEMOGLOBIN: 17% of pregnant women had deficient hemoglobins (below 10gm/100ml) and 37.4% were marginal (10-11.9gm). (Nutrition Cell, 1978)

HEMATOCRIT: 15.5% of pregnant women had deficient hematocrits; 8.2% were marginal. (Nutrition Cell, 1978)

IRON CONSUMPTION: 11.8% of pregnant women consumed less than 70% of the RDA for iron; 13.3% consumed 70-99% of the RDA; and 74.9% consumed 100% or more of the RDA for iron. (Nutrition Cell, 1978)

VITAMIN A DEFICIENCY: 3.26% of pregnant and lactating women presented with Bitot's spots. 90% of pregnant or lactating women had deficient or low plasma vitamin A levels. (Nutrition Survey of West Pakistan, 1970)

VITAMIN A: 78.8% of pregnant women consumed less than 70% of the RDA for vitamin A; 9.4%, 70-99%; and 11.8%, 100% or more of the RDA. (Nutrition Cell, 1978)

VITAMIN C DEFICIENCY: 43% of pregnant and lactating women showed deficient and low levels of plasma vitamin C. (Nutritional Survey of West Pakistan, 1970)

GOITER: 8.9% of pregnant women had goiters: 3.4% Grade I, 4.4% Grade II, and 1.1% Grade III. (Nutrition Cell, 1978)

GOITER: 10 of 124 pregnant women (8%) showed signs of goiter. Goiter was more prevalent in rural Punjab, rural North West Frontier Province (NWFP) and in Lahore than in other areas. (Micro-Nutrient Survey, n.d.)

GOITER: Prevalence of goiter is more than twice as high among pregnant and lactating women than among women in the population as a whole. (Nutrition Cell, 1978)

CHILDBIRTH DEATHS: The Population Growth survey of 1971 estimated that 29% of all deaths of women over age 15 were due to childbirth. (World Bank, 1978)

RURAL

ANEMIA: 76% of rural pregnant and lactating women had low or deficient levels of hemoglobin (less than 12gm%). Dietary intake exceeds recommended allowances, but availability, parasites and diarrhea can create deficiencies. (Nutrition Survey of West Pakistan, 1970)

1.2 TARGET GROUP NUTRITION AND HEALTH STATUS, WOMEN, PREGNANT (Cont.)

URBAN

ANEMIA: 100% of urban pregnant and lactating women had low or deficient levels of hemoglobin (less than 12gm%). Dietary intake exceeds recommended allowances, but availability, parasites and diarrhea can create deficiencies. (Nutrition Survey of West Pakistan, 1970)

1.3 TARGET GROUP NUTRITION AND HEALTH STATUS, WOMEN, LACTATING

NATIONAL

CALORIE INTAKE: 22% of lactating women consumed less than 70% of the RDA for calories; 18.5% consumed 70-79%; 10.2%, 80-89%; 8.5%, 90-99%; and 40.8%, 100% or more of the RDA for calories. (Nutrition Cell, 1978)

IRON INTAKE: 15.2% of lactating women consumed less than 70% of the RDA for iron; 10.2% consumed 70-99%; and 74.6% consumed 100% or more of the RDA for iron. (Nutrition Cell, 1978)

ANEMIA: Pregnant and lactating women had iron levels 1.50 points lower on hemoglobin and 2.03 points lower on hematocrit, and had a 5.4% higher incidence of pale conjunctiva. (G.O.P., 1979)

ANEMIA: Clinical signs of anemia were almost twice as common among pregnant and lactating women as among the rest of the female population. (Nutrition Cell, 1978)

ANEMIA: 26% of pregnant and lactating women had conjunctival pallor. (Nutrition Cell, 1978)

HEMOGLOBIN: 20% of lactating women had deficient hemoglobin levels; 20.7% were marginal. (Nutrition Cell, 1978)

HEMATOCRIT: 7.8% of lactating women had deficient hematocrits; 3.7% were marginal. (Nutrition Cell, 1978)

VITAMIN A DEFICIENCY: 3.26% of pregnant and lactating women presented with Bitot's spots. 90% of pregnant and lactating women had deficient or low plasma vitamin A levels. (Nutrition Survey of West Pakistan, 1970)

VITAMIN A INTAKE: 67.8% of lactating women consumed less than 70% of the RDA for vitamin A; 13.6% consumed 70-99% of the RDA; and 18.6% consumed 100% or more of the RDA for vitamin A. (Nutrition Cell, 1978)

VITAMIN C DEFICIENCY: 43% of pregnant and lactating women showed deficient and low levels of plasma vitamin C. (Nutrition Survey of West Pakistan, 1970)

GOITER: Prevalence of goiter is more than twice as high among pregnant and lactating women than among the women in the population as a whole. (Nutrition Cell, 1978)

GOITER: 6.3% of breast feeding women had goiter: 5.2% Grade I, 0.7% Grade II, and 0.4% Grade III. (Nutrition Cell, 1978)

GOITER: 18 of 315 lactating women (5.7%) showed signs of goiter. Goiter is more prevalent in rural Punjab, rural North West Frontier Province (NWFP) and in Lahore than other areas. (Micro-Nutrient Survey, n.d.)

GOITER: Overall incidence of goiter in pregnant and lactating women was under 5%. However, incidence was much higher in certain areas. For example, in Lehtrar Village, 26 miles from Islamabad, incidence was 32%. (Nutrition Survey of West Pakistan, 1970)

RURAL

ANEMIA: 76% of rural pregnant and lactating women had low or deficient levels of hemoglobin (less than 12gm%). Dietary intakes exceeded recommended allowances, but availability, parasites and diarrhea may cause deficiencies. (Nutrition Survey of West Pakistan, 1970)

URBAN

ANEMIA: 100% of urban pregnant and lactating women had low or deficient levels of hemoglobin (less than 12gm%). Dietary intake exceeds recommended allowances, but availability, parasites and diarrhea may cause deficiencies. (Nutrition Survey of West Pakistan, 1970)

CALORIE, CARBOHYDRATE, AND FAT INTAKES: Lactating mothers consumed 1600 to 1800 calories; diets were composed of more than 70% carbohydrate and 10 to 15% fat calories. Fat calories were derived mainly from clarified butter fat (ghee) and some margarine (vanaspati). (Underwood, 1970)

QUALITY OF MILK: The total fat, lactose, nitrogen, vitamin A and calcium contents of breast milk of 9 women were found to be not significantly lower than those found in more affluent countries. (Lindblad, 1974)

1.4 TARGET GROUP NUTRITION AND HEALTH STATUS, INFANTS 0-6 MONTHS

NATIONAL

INFANT MORTALITY RATE: The infant mortality rate is 100 to 200 deaths per thousand live births. (Khan, 1979)

INFANT MORTALITY RATE: The infant mortality rate was about 130 deaths per 1000 live births. (World Bank, 1978)

INFANT MORTALITY RATE: In 1976, the infant mortality rate was 130 per 1000 live births, and the country ranked 90 among the world's nations. (Sivard, 1979)

INFANT MORTALITY: More than 1 out of every 10 children born dies before reaching one year of age. (Nutrition Cell, 1978)

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

INFANT MORTALITY: Infant mortality is approximately 111 deaths per 1000 live births. (Furnia, 1976)

INFANT MORTALITY: 13% of infants died in the first year of life. (Nutrition Survey of West Pakistan, 1970)

INFANT MORTALITY: The infant mortality rate is 115 deaths per 1000 live births. (Khan, n.d.b.)

INFANT MORTALITY: 11% of infants die within the first year of life. (Mahmud, n.d.)

MORTALITY: 11% of infants die within the first year of life, and another 10% die at between one and five years. (G.O.P., 1978)

BIRTH WEIGHT: The mean birth weight for boys was 6.3 pounds; for girls, 6.2 pounds. The infants grew well for the first three months, then growth fell off, so that the mean value of weight for age was at the 25th percentile at the end of one year (from Jalil 1974). (Mahmud, n.d.)

URBAN

BIRTH WEIGHTS: In a study carried out at the Jinnah Postgraduate Medical Center in Karachi, 8.2% of infants weighed 2000 grams or less at birth, 24.6% weighed 2500 grams or less, and 59% weighed 3000 grams or less. (Division of Family Health, 1980)

1.5 TARGET GROUP NUTRITION AND HEALTH STATUS, INFANTS 6-24 MONTHS

NATIONAL

MORTALITY RATES: Over 20% of children born alive die before their fifth birthday. (Nutrition Cell, 1978)

MORTALITY RATES: 26% of children born alive die before they reach age 5. (Furnia, 1976)

MORTALITY RATES: 13% of infants died in the first year of life, 12% at 1-4 years, and 0.8% between 4-5 years, for a cumulative mortality of 25.9% within the first five years of life. (Nutrition Survey of West Pakistan, 1970)

MORTALITY RATES: 11% of infants die within the first year of life and another 10% between 1 and 5 years. (Mahmud, n.d.)

CHILD MORTALITY: Mothers aged 40 years and over averaged 7.5 births and only 5.2 surviving children, a loss rate of over 30%. Among women aged 19 or less, 17% of their children had died. Nearly 47% of the women who have had at least one live birth have experienced the loss of a child. (World Fertility Survey, 1977)

MORTALITY AND PEM: Approximately 50% of the deaths in an average pediatric ward are caused either directly or indirectly (as a contributory cause) by protein energy malnutrition. (Khan, 1979)

MORBIDITY, MORTALITY, AND MALNUTRITION: About 80% of children under five years regularly suffer from diarrhea and respiratory infection. Acute dehydration caused by diarrhea kills 30% of malnourished babies infected, but only 2% of well-nourished babies. The parasitic load is also very heavy in children. (G.O.P., 1978)

CAUSES OF DEATH: The main causes of death in children are gastrointestinal and respiratory infections. Malnutrition is an underlying and contributory factor in many of these deaths. (Khan, 1979)

CAUSES OF MALNUTRITION: Malnutrition in preschool children is due mainly to two immediate causes: inadequate food intake, both quantitatively and qualitatively, and infectious diseases. (G.O.P., 1978)

CAUSES OF MALNUTRITION: Malnutrition in preschool children is due to a number of causes, but the two immediate causes of malnutrition are inadequate food intake, both quantitatively and qualitatively, and infectious diseases. (G.O.P., 1978)

ILLNESSES AND MALNUTRITION DEATHS: About 80% of children under five years regularly suffer from diarrhea and respiratory infections. Acute dehydration caused by diarrhea kills 30% of malnourished babies infected, but only 2% of well nourished babies. The parasitic load is also very heavy in children. (Mahmud, n.d.)

MARASMUS: In a review of seven studies of the nutritional status of young children, estimates of the prevalence of marasmus (severe malnutrition resulting from lack of calories) ranged from 3 to 10%. (G.O.P., 1978)

MARASMUS: 3% of children were marasmic. (Nutrition Survey of West Pakistan, 1970)

MARASMUS: Estimates of the incidence of marasmus, or severe malnutrition resulting from lack of calories, vary from 3% to 10%. (Mahmud, n.d.)

MARASMUS: 1.3% of children under five showed clinical signs of marasmus. All marasmic children were below 2 1/2 years of age. (Micro-Nutrient Survey, n.d.)

HEIGHT AND WEIGHT: At 2 years of age, an average child weighed 20 pounds and was 28.5 inches tall. An average European child at 2 years is 26 pounds, 34 inches. (Mahmud, n.d.)

HEIGHT, WEIGHT AND SEX: Multiple regression analysis indicated that female children generally achieved a higher proportion of standard height than males; there was no difference between the sexes in weight. (G.O.P., 1979)

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

HEIGHT FOR AGE: 13% of children under five years fell below 80% of the Harvard standard for height for age: 79% were between 80 and 90% of standard, and 9% were at or above the standard. (Micro-Nutrient Survey, n.d.)

WEIGHT FOR AGE: 56% of children less than five years of age were below 80% of the Harvard standards for weight for age, including 61% of girls and 52% of boys. 33% of the children were between 80 and 90% of standard for weight for age; 11% were 100% of standard or greater. (Micro-Nutrient Survey, n.d.)

WEIGHT FOR AGE: 15% of children under 5 years old were below 60% of the NAS reference median weight for age, which is third degree malnutrition according to Gomez classifications. (Nutrition Cell, 1978)

WEIGHT FOR AGE: During the first 3 to 4 months, weights are equal to Western standards but then fall off. After 2 years, the curve runs along the 16th percentile of the European standard. At 4 years, children average 12-13 kg., compared to 16-17 kg. for European children. (Nutrition Survey of West Pakistan, 1970)

WATERLOW CLASSIFICATION: 7.18% of children under 5 years of age were severely malnourished (weight less than 80% of standard weight for height for age, and height less than 90% of standard height for age). 9.5% had moderate to severe malnutrition (weight less than 80% of standard weight for height for age, but height greater than 90% of standard height for age). 43.36% were mildly malnourished, and 39.95% were satisfactory. (Nutrition Cell, 1978)

WEIGHT GAIN AND EATING SOLIDS: 72% of mothers reported that their children gained weight after beginning to eat solid foods. 3% said their children gained slightly, 3% lost weight, and 12% remained the same. 10% of the children received no solids. (Jafri, 1979)

CLINICAL FINDINGS: Among 1 to 2 year olds, 17% of the boys and 16% of the girls were in poor physical condition. 12% were apathetic, 60% were irritable, 78% had thin, brittle hair, 5% had muscle wasting, and 9.7% had pot bellies. (Nutrition Survey of West Pakistan, 1970)

GOITER: Less than 6% of children under 4 years were found to have goiter, although prevalence among older children and adults was higher. (Mahmud, 1976)

ILLNESSES: One third of infants suffered from diarrhea and about the same number had upper respiratory tract infections. Measles, whooping cough and tuberculosis were frequent illnesses and thread worm infestation was common among the children (from Falib 1974). (Mahmud, n.d.)

ILLNESS HISTORIES: Among children under 5 years, 86% of boys and 72% of girls had had diarrhea. 87% of boys and 72% of girls had had a

respiratory infection; 20% of boys and 1% of girls had parasites; and 5% of boys, but no girls, had malaria. (Nutrition Survey of West Pakistan,, 1970)

DIARRHEA: Over 5% of preschool children had had diarrhea for more than half of the previous year. (Nutrition Cell, 1978)

DENTAL HEALTH: Over 30% of children had decayed, missing or filled teeth. (Furnia, 1976)

RURAL

MORTALITY: 69% of all deaths in Lehtrar village near Islamabad occurred in children under one year of age; 85% of all deaths occurred in children under 5 years of age. (Mahmud, n.d.)

PREVALENCE OF MALNUTRITION: 11.5% of children aged 6 to 36 months had third degree malnutrition according to Gomez classifications (below 60% of standard weight for age); 30.8% had second degree, and 46.1% had first degree malnutrition (below 90% of standard weight for age). (Mahmud, 1976)

WEIGHT FOR AGE: Among rural children under five years old, 15.70% were below 60% of the Harvard standard for weight for age; 15.43% were between 60 and 69% of standard; 25.54% were between 70 and 79% of standard; 23.45% were between 80 and 89% of standard; and 19.9% were at or above 90% of standard. (McCarthy, 1978)

HEIGHT FOR AGE: Among rural children under five years old, 0.65% were below 60% of the Harvard standard height for age; 2.13% were 60 to 69% of standard; 10.24%, 70 to 79%; 39.96%, 80 to 89%; 38.09%, 90 to 99%; and 8.93% were at or above 100%. (McCarthy, 1978)

GOITER: 4.2% of preschool children in Lehtrar village near Islamabad had goiter. (Mahmud, n.d.)

URBAN

MORTALITY IN YOUNG CHILDREN: 91% of deaths recorded in the Nutrition Survey of Khudadad Colony, Karachi (1972) occurred among children from birth to four years of age. The major causes of death were fever of undetermined origin, pneumonia, smallpox, gastroenteritis, typhoid and premature birth. (Mahmud, n.d.)

MALNUTRITION: In Islamabad, the Family Health Care Project Survey found that 50 to 70% of the children surveyed showed some degree of malnutrition, and 10% of the malnourished group showed signs of severe or third degree malnutrition (below 60% NAS reference median weight for age). (Khan, 1979)

WEIGHT AND HEIGHT: Urban children averaged about 79% of the NAS reference median for weight for age, about 89% of the reference median

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

for weight for height and about 93% of the reference median for height for age. (Anderson, 1977)

WEIGHT FOR HEIGHT: Among 464 children not participating in a child feeding program, 56.2% were below 90%, and 10.1% were below 80% of the reference weight for height. Among 779 participants in child feeding programs, 52.8% were below 90% and 7.6% were below 80% of the reference weight for height. (Anderson, 1977)

WEIGHT FOR AGE: 13.22% of urban children under five years old were below 60% of the Harvard standard for weight for age; 21.53% were 60 to 69% of standard, 21.96%, 70 to 79%; 20.97%, 80 to 89%, and 22.28% were at or above 90% of standard. (McCarthy, 1978)

WEIGHT FOR AGE: Among 464 children not participating in child feeding programs, 44.4% were Gomez Class I (75 to 90% of NAS reference median weight for age), 29.7% were Gomez Class II (60 to 75% of reference), and 7.3% were Class III (below 60% of reference). Among 779 participants in feeding programs, 48.1% were Gomez Class I, 28.6% were Gomez Class II and 5.4% were Gomez Class III. (Anderson, 1977)

HEIGHT FOR AGE: Among urban children under five years of age, 1.12% were below 60% of the Harvard standard for height for age; 2.20% were from 60 to 69% of the Harvard standard; 10.34% were from 70 to 79% of standard; 40.66% were between 80 and 89% of standard; 38.67% were between 90 and 99% of standard; and 7.01% were at or above 100% of standard. (McCarthy, 1978)

HEIGHT FOR AGE: About 30% of preschool children fell below 90% of the reference median height for age. (Anderson, 1977)

STUNTING AND WASTING: Among 793 participants in child feeding programs, 26% were stunted (at least 80% of median weight for height but less than 90% of median height for age), 3% were wasted (less than 80% of median weight for height but at least 90% of median height for age), and 3.7% were wasted and stunted (less than 80% of median weight for height and less than 90% of median height for age). Among 464 children not participating in a feeding program, 25.2% were stunted, 5.4% were wasted and 4.7% were stunted and wasted. (Anderson, 1977)

MALNUTRITION RATES AND SEX: Rates of malnutrition were approximately equal among males and females. (Anderson, 1977)

ILLNESSES: 38% of the children had had pneumonia, 39% had had measles, and 10% had had chicken pox. Rates of illness that had a child bedridden or not eating normally for two weeks or more in the last year were 23.9% among children participating in feeding programs, and 27.4% among children not participating. (Anderson, 1977)

DIARRHEA: 5.9% of children had diarrhea, 13.4% had had diarrhea in the previous week, and 54.3% had ever had severe diarrhea. Intake was 100 to 137 calories lower in children who had diarrhea. (Anderson, 1977)

2. DIETARY BELIEFS

2.1 DIETARY BELIEFS, GENERAL

NATIONAL

FOOD CATEGORIES: The traditional way of categorizing all foods according to degrees of heat or cold and dryness or moisture is remarkably consistent throughout Pakistan and is one aspect of the Unani premodern medical theory. (Zeitlin, 1972)

WIDESPREAD AGREEMENT ON DIETARY BELIEFS: Food beliefs are generally constant from province to province. Unani and customary dietary rules are very widely believed and followed. (Zeitlin, 1972)

MILK: Milk is the only animal protein which is accepted and reserved for vulnerable groups. (Zeitlin, 1972)

UNANI FOOD BELIEFS: 96% of respondents named a spectrum of specific Unani food beliefs which they practiced in their homes. Although 19% claimed they did not believe in the system, only 4% did not practice. In Sind and Baluchistan samples, 100% were practicing. Even among professional families, 92% were practicing. (Zeitlin, 1972)

2.2 DIETARY BELIEFS ABOUT PREGNANCY

NATIONAL

REDUCED INTAKE: 45% of professionals and 79% of Tarlai villagers (55% of total) either cut out or reduce intake of animal protein foods or pulses during pregnancy, out of fear the "heat" of these foods will cause abortion. When pregnancy falls in summer, intake of protein from these foods is doubly reduced. (Zeitlin, 1972)

FOOD LIMITED IN PREGNANCY: Foods that are considered hot, like eggs or meat, often are avoided during pregnancy because of the fear they will lead to abortion or have an ill effect on the unborn child. Prices and the seasonal availability of some foods also play an important role in determining what food the pregnant woman eats. Customs such as the male members of the family eating first restricted the quality and quantity of food pregnant women received. Together these factors mean that pregnant women's diets were lacking in calories, protein and key vitamins and minerals. (Khan, 1979)

AVOIDANCE: Pregnant women are advised to cut down on foods believed to cause bleeding or other toxic effects due to too much "heat", especially during hot weather. These foods include eggs, meat, fish, some pulses, some vegetables, and fruits. Pregnant women should increase intake of milk and cooling vegetables. (Zeitlin, 1973)

GHEE: Ghee (clarified butter) is considered strengthening during pregnancy and lactation. It is often given to mothers in large quantities following childbirth and also, in mixtures, to the newborn baby. (Amin, n.d.)

2.2 DIETARY BELIEFS ABOUT PREGNANCY (Cont.)

INCREASED FRUITS AND VEGETABLES: Pregnant women are supposed to increase their intake of cold (usually vitamin-rich) vegetables and fruits. (Zeitlin, 1972)

PAPAYA: Papaya is feared to cause abortion, especially in Sind, where its seeds are sometimes used to attempt to induce abortion. (Amin, n.d.)

MANGO: Fresh sweet mango is very good during pregnancy when its hot effect is neutralized with milk to help produce a healthy child. (Amin, n.d.)

BITTER GOURD: Bitter gourd (karela) is a very hot vegetable which should be avoided in pregnancy. (Zeitlin, 1972)

LENTILS: Lentils are avoided by some women during pregnancy for fear their "heat" will cause abortion. (Zeitlin, 1972)

MILLET: Pregnant women should not eat millet. (Amin, n.d.)

ASH GOURD: If ash gourd is eaten during pregnancy, the child born will be very healthy. (Amin, n.d.)

GEOPHAGY CURE: If a pregnant woman is given black cumin seeds cooked with vegetables, she will be able to give up the habit of eating clay. (Amin, n.d.)

AFTER DELIVERY: When the child is born, the mother should be given white cumin seeds mixed with ghee and jaggery to strengthen her and clean the womb, but the amount of ghee should not be so much that it makes her milk upsetting to the child. (Amin, n.d.)

AFTER DELIVERY: After the delivery, the mother should take milk with turmeric for about 73 days to improve her health. (Amin, n.d.)

2.3 DIETARY BELIEFS ABOUT LACTATION

NATIONAL

COLOSTRUM AVOIDED: In some places, colostrum is not given because of the belief that it is bad for the infant. (Khan, 1979)

INCREASE BREAST MILK: Peas (mattar) are believed to increase breast milk, as will the spice Bishop's Weed (Ajwain). (Amin, n.d.)

MILK: Cow's milk is believed to produce more milk if drunk during lactation. (Zeitlin, 1972)

GHEE: Ghee (clarified butter) is considered strengthening during pregnancy and lactation. It is often given to mothers in large quantities following childbirth. (Amin, n.d.)

GHEE: Ghee is often given in mixtures for the newborn baby. (Amin, n.d.)

FOODS TO AVOID: Lactating women were advised to cut down on wind-producing foods such as chickpeas, cabbage, and other foods which might upset the baby's digestion. (Zeitlin, 1973)

LADY'S FINGER: Lady's Finger is not good for lactating mothers because the seed may come out through the nipple. (Amin, n.d.)

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

2.5 DIETARY BELIEFS ABOUT WEANING

NATIONAL

HOT AND COLD FOODS: Weaning was late and the majority of foods were not given to young children until about the age of two because they were considered too hot or too cold or indigestible for young children. (Zeitlin, 1973)

HOT AND COLD FOODS: Mothers are concerned about giving hot foods such as eggs or cold foods such as orange juice to their young children. (Khan, 1979)

HOT AND COLD FOODS: 45% of mothers said food for children should be neutral, 9% preferred cooling foods, 18% chose heating foods, 20% selected foods according to season, and 8% gave no reply. (Jafri, 1979)

WITHHOLDING HOT OR COLD FOODS: 54% of parents withhold certain foods from their children because these foods are either too hot or too cold for young children. This proportion was 37% among professionals and 68% among Tarlai villagers who have not attended maternal-child health centers. (Zeitlin, 1972)

TEA FOR CHILDREN: Pathans as a group have stronger prohibitions against tea than other groups. They feel tea blackens the child, burns his bones and retards growth, whereas milk will lighten the child's complexion. (Zeitlin, 1972)

FOOD DISLIKES: Pakistani families tend to be very permissive about children's food dislikes. Even in prosperous homes, children may be malnourished. Bribery appears to be an acceptable technique to get children to eat disliked foods. (Zeitlin, 1972)

WITHHOLD PROTEINS: 57% of the total sample, including 39% of the professionals and 61% of the Tarlai villagers, withheld protein foods (eggs, fish, meat, dal) from young children as they are too "hot". In summer, eggs and fish were usually totally removed from the children's diets and meat intake was reduced. (Zeitlin, 1972)

2.6 DIETARY BELIEFS ABOUT ILLNESS AND CURE

NATIONAL

ATTITUDES TOWARD DISEASE: Disease is accepted as part of the people's destiny and not to be contested. Thus, people are not shocked by the inordinately high mortality rates among mothers and small children. (Furnia, 1976)

DIARRHEA AND FEEDING: Poor and uneducated mothers believe that when a child has diarrhea, his food and milk intake should be reduced. If the baby is passing watery stools, the mother stops giving him much-needed liquids in the belief that this liquid and milk is just "passing through" and is not good for the baby. (Khan, 1979)

FLUIDS OR HUMORS: Health or illness in the human body is thought to be determined by the proportions of the four basic fluids or humors of the body. These are: blood (the air humor, hot and moist); bile or cholera (fire, hot and dry); black bile or melancholia (earth, cold and dry); and phlegm (water, cold and moist). Illness results if any humor becomes deficient or excessive. (Zeitlin, 1972)

FOOD AND HUMORS: Foods play an important role in health or illness because different foods act to increase or decrease the different humors within the body. (Zeitlin, 1972)

EFFECTS OF HOT AND COLD, MOIST AND DRY FOODS: Foods were defined as hot or cold not according to the temperatures of the foods, but according to the heating or cooling effects which the foods produced in the body. Foods were considered moist or dry in terms of producing mucus, relieving thirst or having a diuretic effect. (Zeitlin, 1973)

EFFECTS OF HOT AND COLD FOODS: All foods are categorized as hot or cold, moist or dry. The action attributed to a food is straightforward, e.g., a hot dry food such as pigeon will increase bile, the hot, dry humor. A cold, moist food such as cucumber will increase phlegm, the cold, moist humor. Hot and cold are more important in the popular mind than dryness and moisture. (Zeitlin, 1972)

EFFECTS OF HOT AND COLD FOODS: Hot foods are recognized as growth-promoting; cold foods are recognized as possessing anti-inflammatory protective properties. It is possible to refine the idea of hot foods to arrive at the concept of growth (protein) foods and to refine the idea of cold foods to arrive at a concept of protective (vitamin-rich) foods. (Zeitlin, 1972)

HOT FOODS AND ILLNESS: Heat in the form of hot weather, hot foods and hot medicines has a stimulating, expansive effect. Diseases attributed to heat include: excessive heat, dry mouth, thirst, gastrointestinal infections, diarrhea, vomiting, nervous irritability, manic mental states, insomnia, excessive sexual desire, hypertension, heart attack, stroke, tendency to bleeding--nosebleeds, excessive menstruation, abortion--eye and skin infection, and burning or concentrated urine. Cold foods and

medicine are curative for these ailments. In summer, consumption of hot foods is decreased. (Zeitlin, 1972)

COLD FOODS AND ILLNESS: Cold weather, cold food, and cold medicine have a sedating and condensing effect. Diseases and disorders associated with excess cold are: feeling excessively cold; respiratory infections such as colds, sore throat and bronchitis; paralysis; depressed mental states; excessive sleepiness; lack of vitality; lack of sexual desire; low blood pressure; anemia; poor circulation; lack of menstruation; rheumatic pain; excessive urination; and edema. In winter, consumption of cold foods should be decreased, and hot foods increased. (Zeitlin, 1972)

HOT AND COLD FOODS AND VULNERABLE GROUPS: Any food which falls into the extremes of heat, cold, dryness, or moisture will probably not be good for small children or other vulnerable groups because its effect may be too strong for them. (Zeitlin, 1972)

AVOIDING HOT OR COLD FOODS: Because of beliefs about hot and cold foods, people will avoid one or the other at certain times, such as during illness, pregnancy or lactation. During summer, mothers can be advised to use hot foods during the cooler times of day. (Khan, 1979)

HOT AND COLD FOODS: Animal protein (except for milk), nuts, and most pulses are considered quite hot. Most fresh fruits and vegetables fall in the cold category. (Zeitlin, 1972)

CLASSIFICATION: Foods are also classified as wind-producing, as heavy or light in terms of digestion time, and as constipating or laxative. Different foods also have different effects on different organ systems, some strengthening the brain, others the heart, and still others producing fresh blood. (Zeitlin, 1973)

GREEN GRAM: Green gram (moong) is the most readily accepted pulse for all vulnerable groups and for the sick, as it is believed to be light, easily digested, and slightly "cold" whereas all other pulses except fresh peas are "hot" and most are believed to be heavy, i.e. gas producing. (Zeitlin, 1972)

EFFECTS OF SPECIFIC FOODS: Almonds increase intelligence. Fish and milk taken together may cause spots on the skin. Peanuts cause sore throat. Oily or greasy foods cause sore throat. Taking cold food or drink immediately after hot food or drink causes tooth ache, sore throat or cold. Turmeric is an anti-inflammatory agent either taken orally or used as a poultice on cuts. (Zeitlin, 1972)

3. DIETARY PRACTICES

3.1 DIETARY PRACTICES, GENERAL

NATIONAL

GENERAL DIET QUALITY: The usual diet is based on wheat, usually made into a chapati, a roasted pancake. Intake of cooking fat is usually sufficient. There is considerable cooking loss of certain vitamins, especially vitamin C, riboflavin and thiamine. Calorie intake is low, especially in low income groups in rural and urban populations. There was no quantitative lack of protein in diets surveyed, but quality was poor. (Nutrition Survey of West Pakistan, 1970)

COMMON FOODS: Wheat is the most frequently consumed food grain, contributing over 50% of the total calories and almost 60% of the total protein consumed by the population. Rice consumption accounts for about 14% of all cereals. Other common foods include white potatoes and sugar in the form of gur which provides about 8% of the total calories in the average diet. Pulses are commonly eaten in the form of dahl. Vegetables include green leafy, green and yellow varieties, and onions which are important sources of micronutrients. Fruit consumption is an insignificant source of nutrients. (Khan, 1979)

AVAILABLE FOOD: According to the food balance sheets for 1977-78, the food available per person per day included 415 gm. cereals, 22 gm. pulses, .27 gm. oil seed, 266 gm. fruits and vegetables, 84 gm. sugar, 26 gm. meat, 2 gm. eggs, 260 gm. milk, 7 gm. fish, and 17 gm. oils. (G.O.P., 1978)

FOOD AVAILABILITY AND POPULATION INCREASE: Production of food grains increased almost 23% between 1970-71 and 1975-76 according to Government of Pakistan statistics, but per capita availability of food grains remained about the same because of rapid population growth. (Khan, 1979)

PRINCIPAL PRODUCTS: The principal agricultural products of vegetable origin are wheat, fruits, rice and vegetables, which contribute about half of the production. The main products of animal origin are buffalo milk, beef, buffalo, mutton, poultry and fish. Only about one third of the proteins consumed are of animal origin and two thirds are of vegetable origin. (Furnia, 1976)

STAPLE FOODS: The staple food of the people of West Pakistan is wheat, followed closely by consumption of rice, bajra and gram. (Underwood, n.d.)

CEREALS: Wheat accounts for 69% of calories in the diet. Per capita intake of cereals is 479.3 grams daily. Cereals contribute 76.5% of all calories and 80% of all protein consumed. (Nutrition Survey of West Pakistan, 1970)

WHEAT: Wheat, the most common staple, is consumed in the form of whole wheat flour, called atta, which is made into a type of "roti" or bread. (Khan, 1979)

3.1 DIETARY PRACTICES, GENERAL (Cont.)

ATTA: Pre-ground atta is considered inferior by most people who suspect such foods are adulterated and consider the quality to be poor. (Rogers, 1978)

AVAILABLE PROTEIN: Food balance sheets indicated that the available protein in 1977-78 was 63.2 grams per person per day. Since the recommended safe level of intake is 42.3 grams per capita, availability of protein currently exceeds the recommended safe level by a wide margin. (G.O.P., 1978)

PROTEIN: Only about 12% of protein intake is of animal origin. (Furnia, 1976)

POOR QUALITY PROTEIN: Even the very poor meet the quantitative requirement for protein, but protein from animal sources is lacking; 69% of protein is derived from cereals, and 31% from animal sources. Milk is the major source of animal protein, averaging 147.8 grams (5 fluid ounces) per person per day. Milk intake is higher in rural than in urban areas. (Nutrition Survey of West Pakistan, 1970)

PROTEIN INTAKE: Average protein intake is 68.8 grams per person per day, of which 7.9 grams (11%) is of animal origin. The FAO recommended allowance is 58.5 grams. (Nutrition Survey of West Pakistan, 1970)

HOUSEHOLD PROTEIN INTAKE: Only 2% of households failed to consume the RDA for protein. (Nutrition Cell, 1978)

ANIMAL PROTEIN AND SUGAR CONSUMPTION INCREASES: Consumption of animal protein—meat and eggs—has increased from two to four times per capita since 1947, as has consumption of sugar. (Furnia, 1976)

ANIMAL PROTEINS AND SUGAR CONSUMPTION INCREASES: During the first 27 years after the partition of Pakistan, the average Pakistani did not prosper, but the quality of life improved. One indicator of this improvement is a fourfold per capita increase in egg consumption, doubling of chicken consumption, fourfold increase in refined sugar consumption, and 17% increase in use of milk as reflected in household income and expenditure surveys. (A.I.D., 1974)

PULSES: Legumes, or pulses, are available in many varieties and are relatively inexpensive. Dal is the chief source of protein, other than foods of animal origin. Some of the legumes used are masur, mung and chana. Dal-roti and dal-rice are popular mixes commonly eaten. (Khan, 1979)

PULSES AND NUTS: 20.8 grams of pulses or nuts are eaten per person per day. Consumption is lower in urban than in rural areas. (Nutrition Survey of West Pakistan, 1970)

MEAT CONSUMPTION: Meats used were beef, buffalo, mutton, goat and poultry. Meat was consumed immediately after slaughter as there was no

facility for preservation or storage. Meat intake averages 13.9 grams per person per day and is higher in urban areas than in rural areas. (Nutrition Survey of West Pakistan, 1970)

MILK AND MEAT: The rural population consumes an appreciably higher proportion of milk products than do their urban counterparts, while meat consumption is greater in the cities. (Khan, 1979)

MILK PRODUCTS: Milk from cows, buffaloes and goats is used. Fresh milk is often made into yogurt. Lassi is a popular summer drink made from yogurt. Large quantities of powdered milk are imported; in 1978, Rs. 9 million was spent on milk imports. (Khan, 1979)

COMMON VEGETABLES AND FRUITS: Common vegetables include spinach, cabbage, tomatoes, carrots, onions, cauliflower, eggplant, and okra. Common fruits include banana, orange, mango, guava, grape and melon. (Khan, 1979)

VEGETABLE INTAKE: Average intake of vegetables is 67.1 grams per person daily. (Nutrition Survey of West Pakistan, 1970)

FATS: Intake of fats and oils had increased 2 1/2 times since 1965-66. Average consumption was 54.9 grams per day. 19% of households used ghee, 45% cooked with vegetable oils, and 36% did not specify. (Nutritional Cell, 1978)

FATS: Fats and oils usually used included vegetable oil, lard, ghee, or butter. Vegetable oils were most often used. (Khan, 1979)

FATS: Ghee was the major cooking fat, but a shift to vegetable oils was evident. Production of vegetable oil had increased fourfold since 1960 and was still short of demand. The Government promoted increased production of seed oils and imported oil. Average daily intake was 19.8 grams per person per day. (Nutrition Survey of West Pakistan, 1970)

SALT: 66% of households used rock salt, 20% used crushed salt, and 13% used sea salt. (Nutrition Cell, 1977)

MEN BUY THE FOOD: In most Pakistani families, since women are discouraged from appearing in public, all food purchasing is done by the men, so they are logical targets for nutrition education. (Zeitlin, 1972)

MEAL PATTERNS: Usually, 3 meals are eaten daily. Breakfast is wheat flour made into paratha or roti and tea. The mid-day meal is the main meal: roti with vegetables or meat, or pulses cooked as dal. In some areas, roti is taken with lassi (yogurt drink) or fish. The evening meal is similar to the mid-day meal. (Nutrition Survey of West Pakistan, 1970)

BREAKFAST: Breakfast consists of "paratha" and tea. Ghee is used if it can be afforded; if not, vegetable oil or nothing is used. Lassi (yogurt

3.1 DIETARY PRACTICES, GENERAL (Cont.)

drink) is sometimes used in Punjab. All family members, even small children, drink tea with milk and gur. (Nutrition Cell, 1978)

MID-DAY MEAL: The mid-day meal is composed of roti plus pulses, cooked as dal, a vegetable dish, and meat, if it can be afforded. Meats and vegetables may be prepared as curries. Pickles and chutney may be used. Among the well-to-do, curd or lassi may be eaten. (Nutrition Cell, 1978)

EVENING MEAL: The evening meal is similar to the mid-day meal. Leftovers may be used. Fresh roti is prepared. Rice may be used in Punjab and Sind. (Nutrition Cell, 1978)

SNACKS: Snacks are uncommon. One exception is the custom of afternoon tea, which is increasing. (Nutrition Cell, 1978)

FOOD DISTRIBUTION: Although calories and protein are available in sufficient quantity on a national basis, food is not equitably distributed in accordance with nutritional requirements at either the household or individual level. Food consumption is a function of income. (Mahmud, n.d.)

HOUSEHOLD FOOD DISTRIBUTION: Within each household, the male wage earner consumes the largest and best share of the food available. Therefore, malnutrition is most common among women, especially when pregnant, and among children. (Furnia, 1976)

HOUSEHOLD FOOD DISTRIBUTION: Multiple regression analysis indicated that children in the North West Frontier Province and in Baluchistan received less of the total family food than children in other provinces. Since these two provinces are the poorest in Pakistan, family intake is low to begin with. In Baluchistan, pregnant and lactating women are given small shares of the family total as well. (G.O.P., 1979)

INTRA-FAMILY FOOD DISTRIBUTION: Within the family, food is not distributed according to the needs of household members. Wage earners get most of the protective foods. Milk is given to children whenever it is available. (Nutrition Survey of West Pakistan, 1970)

INTRA-FAMILY FOOD DISTRIBUTION: The head of the family receives most of any protein food which is prepared, with the exception of milk, which may be reserved for children and other members of vulnerable groups. Cows' milk is neutral, not "hot," and is specifically recommended for vulnerable individuals. (Zeitlin, 1972)

FOOD COSTS: For an average family of 6, the food items necessary to meet the recommended monthly allowance cost Rs. 471. Families with incomes less than 500 Rupees per month are spending a very high percentage of their income on food. In spite of this, they are still spending only one fourth to one third of what the higher income groups are spending on food. On the average, 59% of income is spent on food. (Mahmud, n.d.)

FOOD EXPENDITURES: The representative family chosen in the Micro-Nutrient Survey had six members--2 adult males, one adult female, 2 children and one infant--with a mean income of Rs. 600 per month. 49.4% of the family income was spent on food: 15.2% on wheat, 15.3% on milk, 6.9% on ghee, 6.2% on meat and 5.8% on rice. (Mahmud, n.d.)

FOOD EXPENDITURES: In 1973, about 55% of all household expenditures went for food. (A.I.D., 1975)

FOOD EXPENDITURES AND INCOME: Among the very poor, 36.3% of the family income is spent on wheat; among the wealthy, 10.5% is spent on wheat. (Nutrition Cell, 1978)

FOOD EXPENDITURES AND INCOME: The average family income in the survey was about Rs. 800 per month. At this income level, 58.9% of income was spent on food. In a poor family making Rs. 300 per month, 97% is spent on food. (Nutrition Cell, 1978)

FOOD EXPENDITURES AND INCOME: Even among very wealthy families with incomes of Rs. 1500 per month, 42.8% was spent on food. Increases in income are likely to be spent on food. (Nutrition Cell, 1978)

FOOD EXPENDITURES AND INCOME: Families making Rs. 100 per month spent Rs 170 on food; families making Rs. 200 spent Rs. 239 on food, indicating that they did not report all income, drew on savings, or went into debt. (Nutrition Cell, 1978)

INCOME AND CALORIES FROM STAPLE: As income rises, the percent of calories obtained from wheat falls. In families earning 100 Rs. per month, 51.4% of calories were obtained from wheat; in families with 600 Rs. per month, 41.1%; and in families with incomes of 900 Rs. per month, 32.8%. (Rogers, 1978)

INCOME AND PROTEIN SOURCES: Among families earning 100 Rs. per month, 65.5% of protein was obtained from wheat, 13.4% from pulses, 7.1% from milk, 5.4% from meat and 4.6% from rice. In families with 600 Rs. per month, 56.1% of protein was obtained from wheat, 14.9% from pulses, 13.8% from milk, 7.4% from meat, and 5.4% from rice. In families with 900 Rs. per month, 47.5% of protein was obtained from wheat, 16.3% from pulses, 19.9% from milk, 9.3% from meat and 6.2% from rice. As income increases, so does consumption of protein from animal sources. (Rogers, 1978)

INCOME AND SUGAR: As income increases, the percent of calories obtained from sugar decreases. Among families with a monthly income of 100 Rs., 6.3% of calories come from sugar; among families with 600 Rs. per month, 6.1%; and among families with 900 Rs. per month, 5.9% of calories. (Rogers, 1978)

INCOME AND OIL AND BUTTER CONSUMPTION: As income rises, the percent of calories obtained from vegetable oil also rises. In families with monthly incomes of 100 Rs., 9.6% of calories are obtained from oil; in families with 600 Rs. per month, 12.2%; and in families with 900 Rs. per

3.1 DIETARY PRACTICES, GENERAL (Cont.)

month, 14.3%. A similar increase is seen with butter, which represents 2.2%, 4.6% and 6.6% of the total calories obtained by the increasing income groups. (Rogers, 1978)

DISTRIBUTION OF AVAILABLE NUTRIENTS: The average consumption of calories and other nutrients is equal to or slightly in excess of the recommended levels. Because of distribution effects between households, about one third of the rural households, and perhaps as many as one half of the urban households, are calorie deficient. Further problems due to distribution within the family are not well understood. (McCarthy, 1978)

MEN RECEIVE MORE NUTRIENTS: Men consume significantly more calories, protein, and iron than women. Men and women received about equal amounts of vitamin A. (G.O.P., 1979)

MALE NUTRIENT INTAKES BY REGION: Men in Lahore, urban Punjab, and urban Sind have nutrient intakes less than the national average for calories, protein, iron and vitamins. Men in rural Baluchistan have a vitamin intake 35% less than the national average. (G.O.P., 1979)

WOMEN'S NUTRIENT INTAKES BY REGION: Women in urban Punjab, urban Sind, and all of Baluchistan have intakes of calories, protein, iron and vitamins below the national average. Two other cities, Karachi and Lahore, have below average intake of calories, protein and iron. Four regions have average iron intakes between 27 and 39% less than the national average. (G.O.P., 1979)

AVAILABLE CALORIES: Data from food balance sheets indicated that, in 1969-70, 1992 calories were available per person per day, and in 1977-78, 2381 calories were available. The average daily energy requirement is about 2534 calories. (G.O.P., 1978)

CALORIES AND PROTEIN AVAILABLE: In 1976, there were 2255 calories and 62 grams of protein available per person. The country ranked 84 in calorie supply and 72 in protein supply among the nations of the world. (Sivard, 1979)

DEFICIENT CALORIE INTAKE: Estimates based on the Household Income and Expenditure surveys indicated that 38% of the population consumed less than 85% of the recommended dietary allowance for calories.

CALORIE INTAKE AND REGION: Nationwide, 21.2% of households received less than the RDA for calories. This proportion varies by region; Karachi, urban areas of the Northwest Frontier Province, and urban areas of Sind respectively have 56.8%, 54.2% and 45% of households getting less than the RDA. (G.O.P., 1979)

CALORIES: Food balance sheet estimates indicate a net per capita consumption of 2369 calories per day in 1976-77. Since the average daily energy requirement is estimated at 2354 calories, there is little allowance for waste and maldistribution. (Mahmud, n.d.)

CALORIE INTAKE: 38% of the population consumed less than 85% of the recommended dietary allowance for calories. (Mahmud, n.d.)

INDIVIDUAL CALORIE INTAKE: Individual dietary assessments indicated that over half of the individuals surveyed did not meet their full RDA for calories, and one fourth consumed less than 70% of their RDA. (Nutrition Cell, 1978)

HOUSEHOLD CALORIE INTAKE: 15% of households consumed less than the full recommended dietary allowance (RDA), and about 5% consumed less than two thirds of the RDA total for the household. (Nutrition Cell, 1978)

PROTEIN: The recommended safe level of protein intake for the country has been computed to be 42.3 grams per person per day. The food balance sheet estimate for protein consumption was 64.79 grams per person per day in 1976-77. On this basis, the per capita availability of protein exceeds the recommended safe level by 53%. (Mahmud, n.d.)

DEFICIENT VITAMIN AND MINERAL INTAKES: Both urban and rural populations had inadequate intakes of vitamins A and C, riboflavin, iron, and iodine. (Furnia, 1976)

VITAMIN INTAKE AND REGION: Nationwide, 48.5% of households received less than the RDA for vitamins. In urban Northwest Frontier Province, urban Sind and rural Baluchistan, the rate is even greater. (G.O.P., 1979)

VITAMIN A: Individual dietary intake data suggests low intakes of Vitamin A, 62 to 76% of the RDA. (Nutrition Cell, 1978)

RIBOFLAVIN: Almost all families consumed less than the recommended level of riboflavin, regardless of income. (Nutrition Survey of West Pakistan, 1970)

VITAMIN C: 50% of families consumed less than the F.A.O. recommended allowances of vitamin C. This data was calculated without considering cooking loss, so the situation may actually be more severe. (Nutrition Survey of West Pakistan, 1970)

IRON: Cereals contribute 59% of all iron consumed; 90% of this is from wheat. Much of this iron is bound to phytate and not available to the body. (Nutrition Cell, 1978)

IRON CONSUMPTION AND WOMEN: Multiple regression analysis suggests that the presence of women in the household increases consumption of wheat and vegetables (a main component of the vegetable aggregate was palak, a vegetable high in iron), the major sources of iron in the Pakistani diet. (G.O.P., 1979)

3.1 DIETARY PRACTICES, GENERAL (Cont.)

RURAL

CALORIE CONSUMPTION: In rural areas, in 1968-1972, average per capita calorie consumption was 1971 per day among the lowest income groups. Among the highest income group, intake was 2867 calories. (G.O.P., 1978)

CALORIE DEFICIENCY: 46% of families in rural areas consumed less than recommended allowances for calories; 11% of families consumed less than 70% of the recommended allowances. (Nutrition Survey of West Pakistan, 1970)

PROTEIN FROM PULSES: The chief source of vegetable protein is dal. Pulses contribute 6.1% of protein intake in rural areas. (Nutrition Cell, 1978)

FOOD PURCHASES: Total food purchases per person per month in rural areas were 23.65 rupees in 1971-72 out of a total expenditure of 41.13 rupees. This purchased 13.89 seers of cereal, .52 seers of potatoes, 1.21 seers of sugar, .58 seers of pulses, .60 seers of onions, .32 seers of beef, .07 seers of mutton, .03 seers of fish, 5.2 seers of milk and .79 seers of fats and oils per person per month (from the Statistical Division, Ministry of Finance 1971-72). (FAO, 1979)

URBAN

DEFICIENT HOUSEHOLD INTAKES: Households in urban Punjab, urban Sind and Karachi have nutrient intakes less than the national average for calories, protein, iron, and especially vitamins. (G.O.P., 1979)

CALORIE CONSUMPTION AND INCOME: In urban areas, among the highest income group, calorie consumption averaged 2362 calories per person per day. Among the lowest income group, intake was 1764 calories. (G.O.P., 1978)

CALCIUM INTAKE: The urban population studied had deficient calcium intakes. (Furnia, 1976)

PROTEIN FROM PULSES: The chief source of vegetable protein is dal. Pulses contribute 4.5% of protein intake in urban areas. (Nutrition Cell, 1978)

FOOD PURCHASES: Total food purchases, worth 23.65 rupees per person per month in 1972-2, included 13.89 seer of cereals, .52 seer of potatoes, 1 of sugar, .57 of pulses, .65 of onions, .46 of beef, .23 of mutton, .09 of fish 1.18 seer of milk, and 1.09 of fats and oils, representing 39% of the total per capita expenditure of 60.36 rupees. (FAO, 1979)

3.2 DIETARY PRACTICES, WOMEN

3.2.1 DIETARY PRACTICES, WOMEN, DURING PREGNANCY

NATIONAL

MORE NUTRIENTS: Pregnant and lactating women consumed significantly more calories, protein and vitamin A than other women, indicating that extra consideration is given to women during their periods of greater nutritional need. Iron intake did not vary significantly. (G.O.P., 1979)

REDUCED INTAKE: 45% of professionals and 79% of Tarlai villagers (55% of total) either eliminate or reduce intake of animal protein foods or pulses during pregnancy out of fear that the "heat" of these foods will cause abortion. When pregnancy falls in summer, intake of protein from these foods is doubly reduced. (Zeitlin, 1972)

INTAKE IN PREGNANCY: On the average, pregnant or lactating women consume about 1500 to 2000 calories per day. (Khan, 1979)

3.2.2 DIETARY PRACTICES, WOMEN, DURING LACTATION

NATIONAL

MORE NUTRIENTS: Pregnant and lactating women consumed significantly more calories, protein and vitamin A than other women, indicating that extra consideration is given to women during their periods of greater nutritional need. Iron intake did not vary significantly. (G.O.P., 1979)

LENTILS: Gram and lentils are the foods most commonly avoided by lactating mothers as "they upset the baby". (Zeitlin, 1972)

PROTEIN FOODS: 36% of respondents, including 45% of professionals and 64% of villagers, report avoiding one or more protein foods (usually dal chana) during lactation. (Zeitlin, 1972)

3.3 DIETARY PRACTICES, INFANTS 0-24 MONTHS

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

NATIONAL

PROLONGED UNIVERSAL BREAST FEEDING: Breast feeding was both nearly universal and prolonged. 94.3% of all children born in the 4 years before the survey were breast fed. The average duration of breast feeding (including a count of zero months for those children who were never breast fed) was 19.2 months. When only children who survived to the time of the survey were considered, 98% were breast fed and the average duration of breast feeding was 21.8 months. (Page, 1981)

3.3.1 DIETARY PRACTICES, INFANTS 0-24 MONTHS, BREAST FEEDING (Cont.)

NEVER BREAST FED: 5.4% of the children studied were never breast fed. (Nutrition Cell, 1978)

DURATION OF BREAST FEEDING: Mean duration of breast feeding for those who had breast fed the last (or only) child was 16.2 months. 16% of the mothers did not breast feed their last (or only) child. (World Fertility Survey, 1977)

DURATION OF BREAST FEEDING: Only 1% of mothers did not breast feed at all. 2% weaned their children at one year, 38% weaned at 2 years, and 59.8% breast fed beyond 2 years. (Nutrition Survey of West Pakistan, 1970)

DURATION OF BREAST FEEDING: 4% of children studied were breast fed for less than one year; 86% for 21 months or more; and 60% for 24 months or more. (Mahmud, n.d.)

FACTORS DECREASING DURATION: Younger, better educated, and urban women breast feed for shorter periods. (World Fertility Survey, 1977)

BREAST FEEDING DURING PREGNANCY: Breast feeding was continued up to or even into the next pregnancy by many women; nearly 10% of the women reported as currently pregnant (62 out of 654) were still breast feeding.

WEANING AND PREGNANCY: Another pregnancy is the most common cause for discontinuing breast feeding. (Khan, 1979)

RURAL

BREAST FEEDING IS TRADITIONAL: With few exceptions, in the countryside, women still breast feed their babies. Artificial feeding is used primarily in the cities. (Khan, 1979)

DURATION OF BREAST FEEDING: 75.5% of rural infants below six months of age were breast fed. Prevalence of breast feeding sharply declined to 29.8% at 6 to 12 months of age, 25.4%, 13 to 24 months of age, and 23.19%, after 24 months of age. (Khan, n.d.b.)

URBAN

DURATION OF BREAST FEEDING: 3.6% of mothers attending a CARE preschool feeding program had never breast fed or had stopped when the infant was still a newborn, among those who did breast feed, the average duration was 16.8 months. (Anderson, 1977)

ADVANTAGED FAMILIES: Average length of breast feeding is about 8 months among advantaged urban mothers. (Khan, n.d.a.)

DURATION OF BREAST FEEDING AND HEIGHT AND WEIGHT: The advantaged urban child who is breast fed through 2 years of age is 1.37 inches taller and 2 pounds heavier at that age than the two year old breast fed for only 2 months. (Khan, n.d.a.)

3.3.2 DIETARY PRACTICES, INFANTS 0-24 MONTHS, WEANING

NATIONAL

BOTTLE FEEDING: Labels on some brands of commercial formulas had no graphic instructions for safe preparation, or had labels in English only. Other brands gave graphic instructions, but gave no indication that the water should be boiled or utensils sterilized. (IBFAN, 1981)

BOTTLE FEEDING IS EXPENSIVE: At Rs. 3.5 per liter, it costs Rs. 105 to feed one infant adequately, about 1 liter each 24 hours, for one month. Since the average per capita income is only about Rs. 140 per month, it is impossible to buy sufficient quantities of powdered milk to keep the infant well nourished. (Khan, 1979)

WEANING PATTERN AND ILLNESS: Observational data indicate a typical pattern in which a baby is given a small supplement to breast milk and then gets diarrhea, leading the mother to withdraw or further dilute the supplement until the child is older. (Mahmud, n.d.)

SOLIDS INTRODUCED LATE: Throughout their first year of life, many children exist on a diet of breast milk and a few other liquids, most commonly tea. Often, children are not given any semi-solid foods until they have passed their first birthday. A significant number receive only liquids until two years of age, by which time they are severely malnourished. When solid foods are finally introduced, at a late age, they are not given in a quantity sufficient to meet the nutritional needs of the young child. (Khan, 1979)

FIRST FOODS: Rice, roti (bread), sweet biscuits, Khichri (rice and dal), and dalia (porridge of wheat and milk) accounted for 74% of first foods. (Nutrition Cell, 1978)

INTRODUCTION OF SOLIDS: Although most mothers stated that it is good to give solids at six months, most did not do so. (Khan, 1979)

INTRODUCTION OF SOLIDS: Over 70% of children started receiving biscuits between 6-12 months. 100% received banana between 9-12 months; 60% began roti between 9 and 15 months. (Nutrition Survey of West Pakistan, 1970)

INTRODUCTION OF SOLIDS: 5% of children first received solids when under 5 months of age, 41% between 6 and 12 months, 35% between 12 and 17 months, 10% at 18 to 23 months, 6% at 24 to 29 months, 2% at 30 to 35 months, and 1% at 36 to 47 months. These patterns are very similar among rural and urban children. (Nutrition Cell, 1977)

INTRODUCTION OF SOLIDS: 31% of mothers introduced no solid foods before the child was 11 months old. (Jafri, 1979)

SUPPLEMENTS AND DIARRHEA: Observational data indicate a typical pattern in which the baby is given a small supplement to breast milk and then

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

gets diarrhea, leading the mother to withdraw or dilute the supplement further until the child is older. (G.O.P., 1978)

WEANING FOODS AND MILKS: Common weaning foods are chapati and other cereal preparations, fruits (especially banana) and milk. Diluted cow, buffalo or goat milk is usually introduced during the first six months. Between 6 and 9 months, 40% of mothers try biscuits and 20% introduce wheat, rice or fruit. About 20% of mothers introduce no weaning foods until their baby is at least 18 months of age. Food supplements are usually given in inadequate amounts. (Mahmud, n.d.)

CALORIE INTAKE: Among children up to 3 years of age, average calorie intake was only 75% of the RDA. (Nutrition Cell, 1978)

PROTEIN FOODS: Introduction of high-protein foods did not start until 1 1/2 to 2 years in the traditional medical system. Most children did not receive egg until after 2 years of age, or fish until after 3 years (2 years in Sind and Baluchistan). Yogurt was most commonly introduced after the age of 2 and lassi, made from yogurt, after age 3. (Zeitlin, 1972)

FRUITS: Most fruits, especially citrus, are considered "cold", "moist" and often sour. Citrus is generally avoided during respiratory infections and is often not introduced into the baby's diet for fear it may cause cold, cough or sore throat. This adversely affects vitamin C intake. (Zeitlin, 1972)

INTRODUCTION OF TEA: More than 26% of households reported giving tea to children by five months of age. By 11 months, 48% had introduced tea into children's diets. Between 18 and 23 months, 83% of children had started drinking tea. By 5 years, all the children had been introduced to tea. (Nutrition Cell, 1977b)

RURAL

INTRODUCTION OF SOLIDS: 4.6% of rural mothers offered children cereal by six months of age. 12% of mothers added tea and biscuits to the child's diet by seven to twelve months, and 20% added papas, a form of toast. From one to two years, bits of chapati, vegetables and fruits were given to most children. Meat was given only once or twice a week. (Khan, n.d.b.)

FOODS OFFERED WHEN BREAST IS NOT SUFFICIENT: In Lehtrar village near Islamabad, milk, dalia, and rice were the most common foods offered to children when the mother's milk was judged not sufficient. (Mahmud, n.d.)

DIFFICULTIES IN PREPARING WEANING FOODS: Most mothers complained they had no money to buy food for weaning. Their practice was to buy biscuits or toast and not to cook simple dishes, dalia or kitchri, for which the ingredients are in the house. The author feels ignorance was an important factor in not making weaning foods at home, but other factors

include fuel, financial, time, and health constraints, particularly anemia or more general undernutrition of the mother may play a role. (Khan, n.d.b.)

PROTEIN FOODS: In Tarlai village, children were given 2-4 eggs per week, meat weekly or fortnightly, and yogurt and lassi daily. (Zeitlin, 1972)

BREAKFAST FOODS: Among rural mothers, most gave their small children tea, biscuits and papas, toasted bread, in the morning. They bought these foods from little shops outside the homes. Very few cooked cereal for the children in the morning. They said it was easier to buy these items and that their cooking started only after 11 A.M. (Khan, n.d.b.)

TEA CONSUMPTION: Tea consumption began at an average age of 19.9 months in rural areas. The average rural child under 2 years consumed roughly half a cup of tea per day, and increased to about 2 cups between the ages of 2 and 4. (Mahmud, 1976)

URBAN

INTRODUCTION OF SOLIDS: Among urban children from very high socioeconomic status families, the average age at introduction of solids was 5.3 months. (Khan, n.d.a.)

MALNUTRITION AND AGE AT INTRODUCTION OF SOLIDS: 81% of malnourished children and 69% of well nourished children had first received solid foods later than six months of age. (Anderson, 1977)

FIRST FOODS: The average age at which solids were introduced was 11.9 months among mothers participating in CARE preschool feeding programs. 24.8% of mothers introduced solids before six months. (Anderson, 1977)

SOLID FOODS AND WEIGHT GAIN: Advantaged urban children who received solids at 4 months weighed 21.2 pounds by 12 months of age. Advantaged urban children who received no solids during their first year weighed 16.8 pounds at 12 months. (Khan, n.d.a.)

CALORIE INTAKE: Among 207 children participating in a CARE feeding program who had not received their ration that day, 23.3% received less than 700 calories and 16.9% received less than 15 grams of protein. Among 47 children who did receive their ration, 17% consumed under 700 calories and 17.1% consumed under 15 grams of protein. (Anderson, 1977)

CALORIE INTAKE: Among children one to three years of age using a CARE feeding program, children not receiving their ration consumed 947 calories and 25.7 grams of protein; among children who did receive their ration, intake was 1080 calories and 29 grams of protein. (Anderson, 1977)

TEA CONSUMPTION: Tea consumption began at an average age of 21.3 months in urban Muzaffarabad. Consumption at age four years was slightly below two cups a day. (Mahmud, 1976)

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

NATIONAL

INSUFFICIENT CALORIE INTAKE: Children under five years consumed only 937 calories daily. This is unrealistically low and indicates a deficiency in the data. However, insofar as it is reliable, it indicates insufficient food intake by young children. (G.O.P., 1979)

RURAL

ADULT DIET: Children over two years of age were generally given the adult diet. Only 23% were receiving milk. (Khan, n.d.b.)

3.4 DIETARY PRACTICES, HEALTH AND MEDICINE

NATIONAL

EGG WHITE: Egg white is used for treating diarrhea, particularly in children. The egg white is mixed with water and given as a drink. (Amin, n.d.)

URBAN

SPECIAL DIET IN ILLNESS: In the Nutrition Survey of Khudadad Colony, Karachi (1972), the usual weaning diet was dalia, khichri, chapati, egg and meat. When a child developed diarrhea, he was given tea, khichri, banana and sagoodana. Most mothers stopped giving milk, chapati, meat, pulses and potato. (Mahmud, n.d.)

4. NUTRITION STATUS CORRELATIONS

NATIONAL

WEANING DIET AND MALNUTRITION: In older infants suffering gastroenteritis, the incidence and extent of malnutrition were greater among children on mixed diets of milk and solid foods compared to artificially fed, showing that weaning diets were inadequate in quality and quantity. Though breast feeding prevents malnutrition in younger infants, the persistence of breast feeding associated with poor weaning diet can lead to malnutrition. (Khan, n.d.b.)

FEEDING METHOD, MALNUTRITION, AND GASTROENTERITIS: Among 1834 children suffering acute gastroenteritis, 20% were exclusively breast fed, 45.4% were on a mixed diet, and 34.1% were artificially fed. Gastroenteritis and malnutrition were more common among artificially fed infants than breast fed ones. (Khan, n.d.b.)

FEEDING METHOD, MALNUTRITION, AND GASTROENTERITIS: Among 526 well nourished infants currently suffering gastroenteritis, 80% were fully or partly breast fed. As the incidence of breast feeding declined, incidence and degree of malnutrition increased among children suffering gastroenteritis. (Khan, n.d.b.)

BREAST FEEDING AND SEX OF CHILD: 93.9% of boys and 94.8% of girls were breast fed. The mean duration of breast feeding was 19.5 months among boys and 18.9 months among girls. (Page, 1981)

BREAST FEEDING AND PARENTS' EDUCATION: 95.2% of children of illiterate parents were breast fed (the mean duration of breast feeding was 20.1 months). 94.5% of children with an illiterate mother and a literate father were breast fed (mean duration: 18.8 months). 91.5% of children whose mother had a primary education were breast fed (mean duration: 18.2 months). 84.5% of children whose mother was educated beyond primary school were breast fed (mean duration: 11.2 months). (Page, 1981)

DURATION OF BREAST FEEDING AND EDUCATION: Mean length of breast feeding decreased with increasing education. (World Fertility Survey, 1976)

DURATION OF BREAST FEEDING AND NUMBER OF BIRTHS: Women with 4 or more live births tended to have a slightly longer mean length of breast feeding than those with less than 4 births. (World Fertility Survey, 1976)

BREAST FEEDING AND AGE OF MOTHER: The age of a child's mother at the time of birth did not have much impact on whether or not the child was breast fed, although those born to older women had a slightly higher chance of being breast fed. (Page, 1981)

DURATION OF BREAST FEEDING AND AGE OF MOTHER: Children born to women aged 15 to 24 years had a mean duration of breast feeding of 17.6 months; those born to mothers 25 to 34 years of age were breast fed an average of 19.7 months; and those born to mothers 35 to 49 years of age were breast fed for an average of 22.7 months. (Page, 1981)

4. NUTRITION STATUS CORRELATIONS (Cont.)

DURATION OF BREAST FEEDING AND AGE OF MOTHER: Younger women, under 25 years, have shorter mean length of breast feeding than women over 45 years. (World Fertility Survey, 1976)

FACTORS DECREASING DURATION OF BREAST FEEDING: Younger, better educated, and urban women breast feed for shorter periods. (World Fertility Survey, 1977)

FOOD AVAILABILITY AND POPULATION INCREASE: Production of food grains increased almost 23% between 1970-71 and 1975-76, according to Government of Pakistan statistics, but per capita availability of food grains remained about the same because of rapid population growth. (Khan, 1979)

FOOD DISTRIBUTION AND INCOME: Food distribution varies according to income. Therefore, the poor suffer the most from malnutrition. (Furnia, 1976)

INTRA-FAMILY FOOD DISTRIBUTION AND EDUCATION: Education had virtually no effect on the allocation of food within the family. (G.O.P., 1979)

HEIGHT AND WEIGHT AND EDUCATION: Multiple regression analysis showed that education has a statistically significant impact on anthropometry, adding 2.36% of the standard height and 2.37% of standard weight to people in families with educated heads of household. (G.O.P., 1979)

HEIGHT AND WEIGHT AND INCOME: Multiple regression analysis found that an increase in income of 100 rupees per month resulted in only a 0.2% increase in weight of family members and an even smaller increase in height. (G.O.P., 1979)

NUTRIENT INTAKE AND INCOME: Intakes of families of six persons with an income of 100 Rs. per month averaged 5314 calories, 144.6 grams of protein, 126.6 mg. of iron and 3793 I.U. of vitamin A. In families with an income of 300 Rs., total intake was 10,446 calories, 273.4 grams of protein, 230.2 mg. of iron, and 6595 I.U. of vitamin A. In families with an income of 900 Rs., total intake was 14,848 calories, 338.6 grams of protein, 241.8 mg. of iron and 5426 I.U. of vitamin A. (G.C.P., 1979)

ANEMIA AND INCOME: Poor people are more likely to have iron deficiencies than the rich. An extra 100 rupees per month leads to a 0.2% lower chance of having pale conjunctiva, a hemoglobin reading .06 points higher and a hematocrit reading .033 points higher. Iron-rich foods such as meat and leafy vegetables are relative luxuries, and their consumption increases with income. Higher income also buys a more sanitary environment and a lower probability of having parasites, which increase nutrient needs. (G.O.P., 1979)

ANEMIA AND OCCUPATION: Landless laborers are particularly prone to anemia. Members of this class have hemoglobin values averaging 8.45 points lower than other occupations and hematocrit readings 1.65 points

lower, and are 17.9% more likely to exhibit pale conjunctiva, indicating a very strong iron deficiency among this group. (G.O.P., 1979)

ANEMIA AND EDUCATION OF HOUSEHOLD HEAD: Multiple regression analysis found that the educated person averages 2.24 points higher in hemoglobin and 1.15 points higher in hematocrit, and is 0.1% less likely to have pale conjunctiva. Since income was controlled in the regression equation, the effect of education is not due to increased income but is an independent effect. Given a level of income, the educated person may be more aware of the value of iron-rich foods or more sensitive to the importance of sanitary conditions. It also indicates the limitation of an information campaign based on printed materials. (G.O.P., 1979)

IRON INTAKE AND FOOD PRICES: Prices were observed to have a strong effect on iron intakes. Iron is contained only in a very few foods in Pakistan, so any variation in prices which diverts expenditures from the few main sources will reduce iron consumption considerably. (G.O.P., 1979)

PROTEIN INTAKE AND INCOME: Meat and milk gain greatly in proportion to other foods as family income rises. Total proteins rise with income and the share of animal protein sources rises as well. Protein consumption is tied quite strongly to income and can be expected to increase continually as economic development proceeds. (G.O.P., 1979)

CALORIE CONSUMPTION AND INCOME: Average per capita calorie consumption between 1968 and 1972 was considerably lower than the recommended daily requirement. Furthermore, calorie consumption was closely related to income level, with the poor having the lowest intakes. (G.O.P., 1978)

CALORIE SOURCES AND INCOME: Among families earning 100 Rs. per month, 51.4% of calories came from wheat, 9.6% from vanaspati ghee, 2.2% from aslee ghee and 6.3% from sugar. At an income of 600 Rs., 41.4% of calories were from wheat, 12.2% from vanaspati ghee, 4.6% from aslee ghee and 6.1% from sugar. At 900 Rs., 32.8% of calories came from wheat, 14.3% from vanaspati ghee, 6.6% from aslee ghee, and 5.9% from sugar. (G.O.P., 1979)

CALORIE PURCHASES AND INCOME: A family earning 100 rupees per month (not uncommon in the sample) could purchase on average just under 8300 calories per day if it spent every rupee of income on wheat, the cheapest calorie source. This only meets the calorie requirements of a family of three and a half members. Any other expenses would reduce the ability to support even that many people. (G.O.P., 1979)

FOOD EXPENDITURE AND INCOME: Among families earning 100 rupees per month, food expenditure was 170.12 rupees per month, 170% of income; among families earning 200 rupees, food expenditure was 238.45 rupees, 119.5% of income; and among families earning 300 rupees per month, food expenditure was 291.45 rupees, 97.2% of income. Clearly, the very poor in the survey either had incomes much higher than those reported, or else used savings. (G.O.P., 1979)

4. NUTRITION STATUS CORRELATIONS (Cont.)

FOOD EXPENDITURE AND INCOME: A family earning 800 rupees per month (the average family income in this survey) spends 471 rupees per month (58.9% of total income) on food. This proportion decreases as income increases, but even among relatively rich people (earning 1500 rupees per month), food takes over 40% of income. (G.O.P., 1979)

FOOD EXPENDITURE CHOICES AND INCOME: As income rises, milk and meat increase in use more rapidly than other foods, while grains seem to decline. Families earning 100 Rs. per month spend 36.3% of family income on wheat and 20.7% on milk; families with 600 Rs. spend 15.3% on milk, 15.2% on wheat and 6.2% on meat; and in families with an income of 900 Rs., 14.1% goes to milk, 10.5% to wheat, and 5% to meat. (G.O.P., 1979)

MILK PURCHASES AND CHILDREN: According to a multiple regression analysis, the presence of children in a household increased the use of milk in the household. (G.O.P., 1979)

FOOD PURCHASES AND ADULT MALES: The commonly noted phenomenon of adult men receiving the major part of highly valued foods was supported by the results of a multiple regression analysis. In both the meat and the ghee equations, men had a strong positive effect on purchases of these foods, while all other members added less than an average person's amount to the purchase. Presence of children increased the use of milk in the family. (G.O.P., 1979)

STAPLE FOODS, PRICE ELASTICITY, AND INCOME: Staple foods' price elasticities are very low at high income. For wheat, for example, a reduction in the price will barely increase consumption by well-off people at all: a one percent reduction will increase consumption by .159% in families with an income of 900 Rs. per month. A subsidy of staples, then, will increase their consumption proportionally more among the poor than among the rich. (G.O.P., 1979)

RURAL

GOITER AND INCOME: No clear relationship between goiter and income was found. (Mahmud, 1976)

URBAN

DURATION OF BREAST FEEDING AND MOTHERS' LITERACY: Mothers' literacy did not significantly affect breast feeding or weaning practices. (Anderson, 1977)

GOITER AND INCOME: No clear relationship between goiter and income was found. (Mahmud, 1976)

5. NUTRITION AND HEALTH POLICIES AND PROGRAMS

5.1 NUTRITION AND HEALTH POLICIES

NATIONAL

NUTRITION PLANNING: Nutrition planning was institutionalized in Pakistan in 1974 with the establishment of a Nutrition Cell within the Ministry of Finance, Planning and Economic affairs. The Nutrition Cell was strengthened by integrating its work into the mainstream of the Planning Division through a Nutrition Syndicate. A senior level group known as the Inter-ministerial Committee on Nutrition coordinated at the ministerial level. (McCarthy, 1978)

NUTRITION PLANNING: Nutrition planning was institutionalized in 1974 with the establishment of a Nutrition Cell in the Planning Division. The Nutrition Cell gathers data on the nation's nutrition problems and potential improvement programs, analyzes findings, develops policy and plans projects. (Nutrition Cell, 1977a)

GOVERNMENT POLICY ON RATION SHOPS: The government of Pakistan recently announced that if production of wheat reached 12 million metric tons this year, the ration shop system would be dismantled. A World Bank report has also suggested abandoning the ration system now, while the price differential is so small that popular resistance would be slight. The International Monetary Fund has also encouraged the dissolution of the system. The negative political consequences of such moves in other countries have been considerable. (Rogers, 1981)

FOOD AID PRIORITIES: Urban Punjab and urban Sind are below national average for intake of calories, protein, iron and vitamins for households--males and females. These regions are followed by Karachi and Lahore. Policy recommendations are that major cities and urban areas with large populations are the areas with nutrient intake below the national average and they are the ones which need immediate attention. (G.O.P., 1979)

NUTRITION-RELATED GOALS OF THE FIFTH PLAN: Goals of the five year plan (1978-83) include: 1) improving nutritional status, especially among low income and other vulnerable groups; 2) improving vitamin and mineral intake by increasing food intake; 3) reducing PEM; 4) providing nutrition education; 5) developing a data base to assist in nutrition planning; and 6) developing nutrition planning capability at the national, provincial and local levels. (G.O.P., 1978)

NUTRITION OBJECTIVES OF THE FIFTH PLAN: Objectives of the five year plan (1978-83) include development of a nutrition program capable of improving the population's nutritional status significantly and the institutionalization of nutrition planning, including implementation capability. (G.O.P., 1978)

NUTRITION-RELATED TARGETS OF THE FIFTH PLAN: Targets of the five year plan (1978-83) include increasing available calories from 2381 to 2789 per person per day, reducing the prevalence of third degree malnutrition

5.1 NUTRITION AND HEALTH POLICIES (Cont.)

to zero, avoiding all new cases of goiter, removing signs of vitamin A deficiency, reducing infant mortality from 105 per 1000 live births to 79, and reducing the child mortality rate. (G.O.P., 1978)

PROPOSED NUTRITION ACTIVITIES OF THE FIFTH PLAN: Some programs suggested by the five year plan (1978-83) included fortification of tea and ghee with vitamin A, fortification of atta with vitamins and minerals, iodization of salt, development and distribution of a weaning food, a community nutrition program, and nutrition education programs through the mass media and the school system. (G.O.P., 1978)

HEALTH CARE IN THE FIFTH PLAN: The draft fifth plan envisioned a substantial shift from the present doctor-oriented strategy for delivery of health services to one employing auxiliaries and community health workers. It aimed to change the emphasis of these services from curative to preventive measures. The rural areas would be the priority regions to receive these new workers and services. By 1983, it was hoped that 65% of the population would be covered by this system, a substantial increase from the 20% currently covered. (World Bank, 1978)

FIRST FOUR DEVELOPMENT PLANS: The four five-year development plans, 1955-1975, focused on creation of infrastructure, some increased agricultural productivity, and light industry for export promotion. These plans have been relatively successful. The plan for 1975 through 1980 focuses on export-oriented public enterprises, some heavy industry in the public sector, and agricultural production. For the first time, funding has been planned for human resources to provide the average Pakistani with improved health care, education and housing. (Furnia, 1976)

HEALTH POLICY: The Government of Pakistan (G.O.P.) has recently set good health for the rural poor as an important priority. Goals include making health care available to the rural poor through the Basic Health Units staffed with western trained health teams and decreasing use of hakims. Two problems in the implementation are the low budget for health, which is inadequate for such a large undertaking, and the faith of rural Pakistanis in the hakims. (Furnia, 1976)

G.O.P. HEALTH PROGRAM: The G.O.P. health program focuses increasing amounts of resources on preventive medicine, environmental sanitation, health education and maternal and child health. (Furnia, 1976)

HEALTH EXPENDITURES: Out of the total expenditures in the health sector during the fourth plan (1970-75), 32.5% was spent on the malaria eradication program, 22.2% on medical education and training, 21.3% on hospitals, 13.8% for the rural health program, and 5.7% on communicable diseases, medical research and medical equipment. The remainder was not specified. (Furnia, 1976)

HEALTH EXPENDITURE: The GOP health expenditures for 1972-1974 were Rs. 5.93 per person, .5% of the GNP. This reflects no increase in priority for the health sector in the past 15 years. (Furnia, 1976)

HEALTH BUDGET: In 1970-71 in the non-development budget, expenditures for health were 2.26% of total expenditures. By 1974-75, expenditures had dropped to 1.9%. Similarly, in the development budget in 1970-71, expenditures for health represented 6.02% of total development expenditures, but by 1974-75, this had dropped to 3.52%. (Furnia, 1976)

POSSIBLE NUTRITION INTERVENTIONS: The G.O.P. is exploring several possible nutrition interventions: distribution of a ration of wheat, dried skim milk and butter to women and children through MCH centers; atta fortification with vitamins and minerals; and development and distribution of a protein-rich weaning food called protolac. A massive weighing program has also been suggested. (Mahmud, n.d.)

POSSIBLE NUTRITION PROJECTS: U.S. AID is working with the G.O.P. on several nutrition projects which include projects in tea and flour fortification, Village Food Processing, and Nutrition Planning and Research. The Tea and Flour Fortification Project would fortify wheat atta with niacin, riboflavin, iron and thiamine--the elements in which Pakistanis are most deficient. (Furnia, 1976)

5.2 NUTRITION AND HEALTH PROGRAMS

NATIONAL

NUTRITION PROGRAMS: The Government has exhibited sensitivity to nutrition problems since the 1960s and has proposed a variety of remedies including food fortification, mass media nutrition education, new weaning foods and village level food processing. Political instability, resource constraints and lack of coordination have caused implementation to be fragmentary and sporadic. (World Bank, 1981)

DROPPED PROGRAMS: The Fortification of Flour Project, the Fortification of Tea Project, the Village Level Food Processing Project, the Commodity Nutrition Education Project, and various other nutrition and nutrition-related projects apparently were planned, scheduled and postponed repeatedly, and eventually were dropped. (Jeffalyn Johnson and Associates, Inc., n.d.)

PROGRAMS OF THE NUTRITION CELL: Programs being pursued by the Nutrition Cell include vitamin A fortification of tea; fortification of atta (wheat flour) with iron, niacin, thiamin and riboflavin; a special food aid program supplying free food to vulnerable groups; iodized salt; and development of a weaning food "PROTOLAC" with a protein content of 20.5% targeted for consumption by infants and preschool children. (Nutrition Cell, 1977a)

NUTRITION PLANNING AND RESEARCH SCHEME: The objects of this project were to develop an adequate data base for national nutrition planning, to initiate an empirically proven set of nutrition interventions, and to establish institutional infrastructure for carrying out research and action. These activities, which were to be carried out by the Nutrition

5.2 NUTRITION AND HEALTH PROGRAMS (Cont.)

Cell, were intended to indicate the nature and magnitude of Pakistan's nutrition problems, their probable causes, and potential solutions to the problems. (Nutrition Cell, 1977a)

TEA FORTIFICATION WITH VITAMIN A: Tea fortification with vitamin A is being used in a number of preliminary regions. Survey results indicate that even at one year of age, about 50% of the population are introduced to tea. This suggests a good targeting vehicle. There are some medical reservations about the desirability of making tea consumption more attractive, particularly for children. (McCarthy, 1978)

WEANING FOOD PROJECT: A pilot project for the supply of a cheap weaning food called "PROTOLAC" is being undertaken. Some World Food Programme supplies are now being used, but the mixture is based on locally-available ingredients: 44% wheat, 44% chick peas, 10% dry skim milk, and some vitamins and minerals. A ration of 100 grams per day will be given to 85,000 infants initially. Although use of indigenous materials could produce a desirable outcome, such weaning foods are too expensive for the poor. (McCarthy, 1978)

RATION SHOPS: The Government of Pakistan has a ration system which distributes subsidized whole-wheat flour, an economically inferior staple providing much of the protein and calorie intake of the poor, and sugar, a luxury product. Sugar is monopolized by the government, while a free market exists for wheat. Ration shops are managed for profit by individual shop owners. (Rogers, 1978)

THE RATION SYSTEM AND TARGETING: Subsidized whole wheat flour is distributed throughout the country by the ration system. This flour is perceived as an inferior product because the wheat is preground and because imported wheat is less desirable than domestic wheat. Since the quality of the atta is considered poor, the program has achieved some degree of targeting toward the needy. The poor are more likely to purchase this subsidized, inferior food than the wealthy, who can purchase more desirable staples. (Rogers, 1976)

EFFECTS OF THE RATION SYSTEM: The ration system provided a supplement of 8.6% of recommended calorie intakes (based on WHO recommendations) and 24% of recommended protein in the second lowest income class (Rs. 50 to 99). The analysis was based on information collected in Karachi and Lahore. (Rogers, 1976)

RATION SHOPS: The ration depot system in Pakistan covers close to 90% of the population and is used for the purchase of sugar for about 90% of those covered. Ration atta, which is distributed primarily in urban areas, is purchased disproportionately by the low income population, making it an efficient carrier of a subsidy intended for the poor. (Rogers, 1978)

RATION SHOPS: 90% of those covered use ration shops to purchase sugar, and 33% to 64% to purchase atta (varies by province). This system

originated to ensure equitable distribution of scarce commodities and now provides considerable benefit to the poor. (Nutrition Cell, 1978)

RATION SHOPS SUGAR: Ration shops distributed refined white sugar, which is subject to statutory rationing. No trade in sugar may legally take place except under government auspices. This does not include brown sugar, which is freely traded. Atta, wheat flour, is subject to provisioning. All consumers are guaranteed to be able to purchase a limited quantity of atta at a fixed, low price from the ration shop, but additional supplies are freely available, at higher prices, on the open market. (Rogers, 1978)

USE OF RATION SHOPS: Bad quality of atta was given as the reason for not buying it in Sind (64% of non-users), 40% in urban Punjab, 33% in NWFP, and no one in Baluchistan, because there are few roller mills in the area, and many ration shops provide unmilled wheat, which is preferred. (Nutrition Cell, 1978)

THE COST OF THE RATION SYSTEM: The total cost of wheat for the ration program in the year 1974-75 was equal to ten percent of the nation's operating budget for that year. When the cost of administration and jute bags for packaging the wheat are included, the cost of the program is estimated at 10.8% of the Government's operating budget. With the reduced size of the subsidy on domestic wheat and the reduced price of wheat on the world market, the program cost less in 1975-76. (Rogers, 1976)

PRICE CONTROLS: The government bought and stored cereals to release on the market when food was scarce to avoid high prices. The program was only partially successful. (Nutrition Survey of West Pakistan, 1970)

AID SOCIAL SECTOR ASSISTANCE: Between 1952 and 1980, AID expenditures for population and family planning, health, and nutrition were \$78,152,000, including population and family planning, \$25,806,000; health promotion, \$52,070,000 (over 80% spent for malaria control); and nutrition promotion, \$276,000. (Jeffalyn Johnson and Associates, Inc., n.d.)

PL-480 FOOD: During the period October 1, 1977 through September 30, 1978, Pakistan received 7,349,000 bushels of wheat and flour and 176,370,000 pounds of fats and oils worth U.S. \$59.4 million under Public Law 480. (Food for Peace, 1979)

PL-480 FEEDING PROGRAMS: UNICEF, WFP, CARE, CWS and CRS conducted food assistance programs using PL-470 Title II commodities. UNICEF terminated its program in 1973, claiming that the government failed to cooperate with the management and monitoring of food distribution. CRS and CWS also terminated, citing lack of government cooperation. CARE ended its program in 1977 when a dispute between the government and a contractor resulted in the contractor refusing to release food commodities. WFP also ended PL-480 activities within a year, and now distributes food on a very limited basis. (Jeffalyn Johnson and Associates, Inc., n.d.)

5.2 NUTRITION AND HEALTH PROGRAMS (Cont.)

WORLD FOOD PROGRAMME (WFP): The World Food Programme supplies dry rations to about 200,000 mothers and about 500,000 preschool children. It supplies wheat, dry skimmed milk and butter oil through 2,000 outlets, primarily MCH centers, providing rations for each mother and child of 1,150 and 600 calories per day respectively. This program is based on assistance from abroad. (McCarthy, 1978)

CARE AND WFP SUPPLEMENTARY FOOD: A program for supplementing the diets of infants, pre-school children, and pregnant and lactating mothers through supplying free or subsidized food is carried out by CARE in Sind and Baluchistan, reaching about 33,000 beneficiaries, and by the World Food Programme, reaching about 740,000 beneficiaries. (Nutrition Cell, 1977a)

CARE AND PL-480 FOODS: CARE distributes PL-480 foods for up to 30,000 preschool children and up to 10,000 pregnant or lactating women through MCH centers. At these centers, Lady Health Visitors also teach hygiene, child care, and nutrition to recipients. (TAICH, 1977)

NUTRITION FOR INFANTS: The Salvation Army runs a nutrition program for infants in its dispensary in Sahntinagar. (TAICH, 1977)

NUTRITION FOR INFANTS: The Y.W.C.A. of the U.S.A. supports the Y.W.C.A. of Pakistan, whose projects include a special clinic with services for undernourished babies. (TAICH, 1977)

PVO HEALTH/NUTRITION PROGRAMS: WHO, UNDP and UNICEF funding helps in areas such as health manpower development, environmental health, disease prevention and control, nutrition, health education and family planning programs. (Furnia, 1976)

AID TO AFGHAN REFUGEES: \$6.5 million is being distributed to Afghan refugees by the InterAid Committee. Relief items include medical services, mobile health units, a special nutritional milk blend, and other items. (Spectrum, 1981)

PUBLIC HEALTH AID: At least 21 U.S. private voluntary agencies are involved in providing medicine and public health care through clinics, dispensaries and hospitals throughout Pakistan. (TAICH, 1977)

WOMEN'S ASSOCIATION: The All Pakistan Women's Association in Karachi has recently launched a community nutrition education program as an integrated part of its overall community development efforts. (Khan, 1979)

AVAILABILITY OF SUPPLEMENTARY FOOD: Only 8 of 37 families using MCH centers, 2 of 63 rural health center users and 3 families of 107 using hospitals said that supplementary food was distributed by their health care provider. Of these 13 households, 2 reported that there was a charge for the food, and only 4 accepted the food. Of the 9 families not using the food, 7 gave the poor quality of the food as a reason to avoid

it. Most families distributed the food to all members. (Rogers, 1978)

WEIGHT CARDS: A special weight card suited to the cultural milieu of Pakistan was designed by the author. The health path was green, a color signifying growth and fertility in Pakistani culture. The first degree malnutrition path was yellow, indicative of weakness and anemia; second degree malnutrition was blue, a sign of illness and disease; and the third degree malnutrition curve was deep red, signifying danger, blood and murder. (Jafri, 1979)

GOVERNMENT HEALTH SYSTEM: The government health center system is used, to some extent, to distribute subsidized weaning food and supplementary foods for pregnant and lactating women. (Rogers, 1978)

PEOPLE'S HEALTH SCHEME: It was not until 1972 that the Pakistan Government unveiled its first national health program for basic health services, the "People's Health Scheme." (World Bank, 1978)

SOCIAL SECURITY MEDICAL CARE: An important source of health care in Pakistan is the Social Security Program, a pension scheme to provide medical care to industrial workers and their dependents (average 5.7 dependents per worker). At present, this program functions in Punjab, Sind and North West Frontier Province, but not in Baluchistan. (World Bank, 1978)

USE OF HEALTH CENTERS: The majority of households use health facilities only for treatment of illness rather than for prevention. 33% of households used an MCH center for prenatal care, 20.2% for postpartum checkups, 11% for an infant checkup, 4.4% for well child care, and 1.9% to receive food, but 62.7% reported using an MCH center for illness treatment. When asked about use of rural health centers, 95.5% used them for illness treatment, and 91.6% used hospital clinics for illness treatment. (Rogers, 1978)

MEDICAL SERVICES USED FOR DIARRHEA: When a child has diarrhea, 41% of mothers consult a Lady Health Visitor, 16% use government hospitals or private doctors, 6% go to a local homeopath or get advice from a relative, and 37% treat the problem themselves. (Jafri, 1979)

HEALTH RESOURCES: In 1976 there were 3,814 persons per physician and 1,927 per hospital bed. (Sivard, 1979)

PERSONNEL SHORTAGES: Pakistan has a great shortage of both nurses and lady health visitors. The Moslem tradition of secluding women has provided a severe restraint on introducing women into the health professions. This shortage will only get worse as Pakistan carries out its proposed plans to increase the numbers of rural health centers. (Furnia, 1976)

MEDICAL TRAINING: The Medical Mission Sisters run a school of general nursing and midwifery as well as a primary residency in obstetrics and gynecology in Karachi. (TAICH, 1977)

5.2 NUTRITION AND HEALTH PROGRAMS (Cont.)

ACCESS TO HEALTH CARE: Only about 15% of the population has access to health services; in rural areas, where 75% of the population lives, the percentage drops to about 5%. (Khan, 1979)

PERMISSION FOR USE: Many women do not go to health centers because their husbands, fathers, or parents-in-law do not permit them to go. (Rogers, 1978)

INDIGENOUS MEDICINE: An indigenous system of native medicine practiced in Pakistan is the "ayurvedic" system, derived from India where it was introduced about 250 B.C. This system is based on the Hindu religion and philosophy, and employs the use of herbs in its treatment. Practitioners of the system are called "vaidis" and this system is recognized by GOP. (Furnia, 1976)

INDIGENOUS MEDICINE: An indigenous system of medicine, "unani," has been in Pakistan for many centuries. The unani system is derived from ancient Greek medicine as developed by Hippocrates and evolved through the Arab conquests of the Near and Middle East. Practitioners of this system are called hakims. There may be as many as 40,000 hakims now practicing. (Furnia, 1976)

TRADITIONAL MEDICINE: Unani medicine, a variety of Hippocratic medicine, is practiced by the Hakims or traditional doctors who outnumber modern doctors by at least 3 to 1. (Zeitlin, 1972)

HAKIMS: The people have faith in the hakims, the traditional health care providers, and distrust western medicine. These attitudes will require a relatively long time to change. (Furnia, 1976)

TRADITIONAL CURES: The eldest family member traditionally prescribes cures before anyone else is contacted. A long-standing folk treatment for pneumonia is to rub the blood of a rabbit or pigeon on the patient's chest. Sniffing Neem leaves is folk medicine for smallpox, and shaving the head is believed to reduce fever. Lack of success with such treatments may cause the patient to seek the assistance of a religious healer. The latter is likely to inscribe a verse from the Koran with soluble ink on paper. The ink is then washed from the paper and the patient drinks the results. (Jeffalyn Johnson and Associates, Inc., n.d.)

PRENATAL CARE AND DELIVERY: 74% of pregnant women get no help at all or rely on advice of relatives or neighbors in the prenatal period; 92.5% deliver at home. (Nutrition Cell, 1978)

MIDWIVES: Dais, the indigenous midwives of Pakistan, still preside over the majority of births in the country. For a short time, they were used as family planning motivators, but this practice was discontinued, as they were found difficult to control in a routine administrative structure. A study of the dais used in the program indicates they

themselves were reluctant to participate in a program which lacked good medical support. (World Bank, 1978)

INCREASED AGRICULTURAL PRODUCTION: To meet nutrition needs, the G.O.P. is seeking to increase food production through construction of fertilizer plants and fertilizer importation, control of water-logging and salinity in 14 million acres of land, and increased production of rainfed land. Other projects include cotton seed oil extraction research, and rural development such as electrification and roads. (Furnia, 1976)

MALARIA: Significant progress was achieved against malaria in the mid-1960s, but efforts have slackened and malaria has increased to epidemic level once again. Heavy monsoon rains are conducive to mosquito breeding especially in the riverine plains. In 1971, 10.4% of all deaths recorded were attributed to malaria. (Furnia, 1976)

RURAL

ACCESS TO RATION SHOPS: 22.3% of households have no access to a ration shop, or are two hours or more away from the nearest shop. (Rogers, 1978)

USE OF RATION SHOPS: Only 8% of rural families bought atta in ration shops, partly due to lack of access. 62% of rural households lived 0 to 30 minutes from a shop, and 17% of rural households had no shop available. (Nutrition Cell, 1977b)

BASIC HEALTH SERVICES PROJECT: AID is providing major funding for a pilot Basic Health Services Project, intended to establish basic health units in the rural areas. (Jeffalyn Johnson and Associates, Inc., n.d.)

BASIC HEALTH SERVICES PROJECT: Basic Health Units are established in rural areas where health services are lacking. They are staffed by Lady Health Visitors (LHV) and Medical Technicians (MT), the male counterpart. They have received training to treat minor illness, but physicians are greatly resistant to this. The presence of the LHV means that, in many places, women patients can be advised, examined and treated at a local clinic. (Jeffalyn Johnson and Associates, Inc., n.d.)

HEALTH PROJECT PROBLEMS: The AID-funded rural health project has been beset by difficulties, among them the opposition of physicians to having trained paramedics diagnose and treat minor health problems, and the inability to attract enough physicians and trained women paramedics to staff basic health units in rural areas, where social customs prohibit treatment of women by men. (Jeffalyn Johnson and Associates, Inc., n.d.)

MCH CENTERS: 44% of government-operated maternal and child health centers are located in rural areas. (Jafri, 1979)

AVAILABLE HEALTH CARE: 40.3% of respondents had access to a government health facility: 4.7% of respondents reported a maternal and child

5.2 NUTRITION AND HEALTH PROGRAMS (Cont.)

health center was available; 14.2% a rural health center; and 21.4% a hospital. (Nutrition Cell, 1978)

ACCESS TO HEALTH CENTER: 27% of rural families lived within 30 minutes of a health center, 18% had 30 minutes to 1 hour travel time, 18% traveled over 1 hour, and 35% of rural households had no access to a health center. (Nutrition Cell, 1977b)

TRADITIONAL BIRTH ATTENDANTS: In rural areas of Pakistan, more than 90% of births are attended by TBAs. Training of TBAs is carried out in public health schools, district hospitals and MCH Centers. Once trained, the TBA is eligible for registration. Unregistered TBAs are prohibited by law to practice. (WHO, 1981)

URBAN

USE OF RATION SHOPS: About 74% of households bought atta from ration shops. 97% of households lived 0 to 30 minutes from a ration shop. No urban household reported that a ration shop was not available. (Nutrition Cell, 1977b)

ACCESS TO RATION SHOPS: In urban areas, less than 1% of the population must travel more than one hour to a ration shop. (Rogers, 1978)

CARE: CARE distributes PL-480 foods in dry form twice a month or monthly, free of charge to beneficiaries. 95% of the foods are distributed through health posts, 5% in feeding centers. The program reaches 1% of the preschool population. 90% of the children served live in urban areas. Foods provided are whey-soy drink mix and oil, 1.6 kilograms per month, providing 298 calories and 7.6 grams of protein daily. (Anderson, 1977)

NUTRITION KNOWLEDGE OF MOTHERS: Among 251 mothers who had children in CARE feeding programs, 46.4% could describe the causes of malnutrition accurately and 35.5% could describe the treatment of malnutrition accurately. (Anderson, 1977)

URBAN ORIENTATION OF HEALTH: The public health care system has never reached more than 15% of the population. Although 70% of the population lives in rural areas, the medical care system has developed with an urban orientation. 80% of the Pakistani physicians practice in urban areas. (Furnia, 1976)

MCH CENTERS: 56% of government maternal and child health centers are located in urban areas. (Jafri, 1979)

AVAILABILITY OF HEALTH CARE: In urban areas, 23.4% of respondents had MCH centers available; 4.1%, rural health centers; 28.9%, hospitals; and 56.4% were covered by some government health facility, either an MCH or a hospital. (Rogers, 1978)

ACCESS TO HEALTH CENTER: 50% of urban families lived 0 to 30 minutes

from a health center, 13% had 30 minutes to 1 hour travel time, 8% traveled over 1 hour, and 28.5% had no access to any health center. (Nutrition Cell, 1977b)

6. COMMENTARIES

NATIONAL

REASONS FOR MALNUTRITION: Malnutrition occurs due to imbalance in production toward cash crops, bad distribution of food and inadequate facilities for the preservation of food. (Furnia, 1976)

EFFECTS OF NUTRIENT DEFICIENCIES: Surveys show that malnutrition is very prevalent and one of the principal causes of disease, not only because it produces disease itself, but also because it debilitates the body, reducing the resistance to other diseases. (Furnia, 1976)

NUTRITION ACTIVITIES: It appears that the government of Pakistan's activities in nutrition have been limited largely to working with international agencies which are attempting to solve some of Pakistan's nutritional problems. For the most part, these international agencies appear less than satisfied with the GOP's participation and support. (Jeffalyn Johnson and Associates, Inc., n.d.)

GOP PARTICIPATION IN FOOD AID: Available records indicate that GOP activities on nutrition have been largely limited to working with international relief agencies. For the most part, these agencies are less than satisfied with the Government of Pakistan's participation and support. AID's contribution was totally expended on a Nutrition Planning and Research Project which ran from 1974 to 1977 and for which records could not be located. Other projects were considered, scheduled, and eventually dropped. (Jeffalyn Johnson and Associates, Inc., n.d.)

INFORMATION ABOUT ANEMIA: Educated persons are less likely than the uneducated to suffer from anemia. This indicates that an information campaign based on printed material would be of limited value and other methods of disseminating information should be used. (G.O.P., 1979)

RATION SYSTEM: The government has recognized that some food assistance to the needy should be provided, since it has proposed in its Nutrition Plan the distribution of supplemental foods. The ration system with its wide coverage would be more effective than the health system for such distribution. Food supplements have been distributed through the health system in the past, but the distribution has been ineffective because of supply problems, lack of monitoring of quality and the low rate of use of government health centers. (Rogers, 1981)

RATION SHOPS: Because of the lack of a needs or income test on ration cards and the availability of non-rationed but subsidized foods, both high and low income families have equal access to food. People in more rural areas generally are at a disadvantage relative to urban consumers. The lower status of ration versus non-ration atta and flour, and of vegetable ghee versus milk fat, has tended to tilt supplies to lower income groups at least at lower price differentials. Overall, the government has done less than it could have to reduce income and nutritional imbalances. Though not a part of U.S. food aid policy with respect to refined sugar versus gur, which in effect promotes the former

6. COMMENTARIES (Cont.)

at the expense of the latter, it is subject to the same criticism. (Jeffalyn Johnson and Associates, Inc., n.d.)

TERMINATING THE RATION SHOP SYSTEM: The G.O.P. is considering dismantling the ration shop system. Some people are strongly advocating supplementary feeding programs for the vulnerable groups instead. Since the ration shop system now reaches over 90% of the population, it would be very difficult to implement supplementary feeding programs which would provide food to equivalent numbers of people. (Rogers, 1981)

EQUITY IN FOOD SUBSIDIES: Ration card distribution and other allocational systems for subsidized foods do not reflect variations in nutritional needs and income levels of different groups. Discussions on future food aid could include proposals to correct these inequities through improvements in food distribution and more equitable allocation of local currently proceeds. The author also calls for development and implementation of food distribution systems which better serve the nutritional and income needs of low income groups. (Jeffalyn Johnson and Associates, Inc., n.d.)

FOOD PRICES: Food prices have increased more than other commodities in the past ten inflationary years. And although agrarian economists state that the country produces enough food to meet its needs, rising prices are making it increasingly difficult for the poor to purchase an adequate diet. This condition is exacerbated through crop discrimination by geographic area, so that the price of some commodities is increased even more by transportation costs. (Jeffalyn Johnson and Associates, Inc., n.d.)

FOOD SUPPLY PROBLEMS: Inadequate facilities for the preservation of food are responsible for loss of much of the grain produced. Lack of transportation facilities also contributes to the limiting of varieties of foods among all Pakistanis. Other problems are the lack of dietary education which does not allow the population to consume inexpensive but adequate foods, and adulteration of foods, which, by press reports, seems to be very frequent in the country. (Furnia, 1976)

FOOD SUPPLY PROBLEMS: Storage, refrigeration and preservation facilities are very limited, resulting in a substantial wasting of food. Both road and rail facilities are inadequate, so populations are limited to the products of the areas in which they live. (Furnia, 1976)

HEALTH ASSISTANCE: Health promotion assistance by the U.S. accounts for only 1% of total U.S. aid, but it has had positive results. Pakistan's problems in this area are enormous and health services are by and large inadequate except in large urban communities. U.S. assistance to anti-malarial projects has helped achieve results, but on a more modest scale than anticipated. (Jeffalyn Johnson and Associates, Inc., n.d.)

ALLOCATION OF AID FUNDS: The AID funds allocated to all health programs, including population and nutrition, amount to two percent of the value of all AID assistance. This seems to be a remarkably small proportion given

the immensity of the problems, according to AID documents. This also is curious in light of AID's policy statements concerning giving high priority to improving quality of life conditions. (Jeffalyn Johnson and Associates, Inc., n.d.)

INTEGRATED RURAL AND HEALTH DEVELOPMENT: Pakistan's rural development program began in 1972 and is based on the idea that all aspects of rural life are interrelated and that all these problems should be attacked simultaneously. Agriculture and health are related in rural environments, so agricultural workers might be trained to recognize, prevent, and treat nutritional deficiencies, veterinarians could be trained in nutrition and home economics, and the farmer's training center could be enlarged to include a family health and home economics component for their wives. Nutrition education should be included in school books and the role of the teacher could be expanded to include recognition and treatment of common childhood disease. To make this goal possible requires cooperation from workers in various sectors: agriculture, health, education, etc., through training and regular meeting of workers from all sectors to discuss common goals. (Mahmud, 1974)

HEALTH CARE FOR WOMEN: Of critical urgency is the need to provide care for women, especially those who are rural. Social custom prohibits male physicians from caring for female patients. The extremely small number of female physicians lives in large urban centers almost without exception. Rural women are the least well served by the public health system while, paradoxically, their need, especially during the child bearing years, is probably greater than that of any other population group. (Jeffalyn Johnson and Associates, Inc., n.d.)

HEALTH PROBLEMS: The major health risks include widespread but preventable communicable diseases; moderate to severe malnutrition among children and women of childbearing age; inadequate or absent facilities for waste disposal and clean water supply; and high fertility rates with their concomitant risks for mothers and children. (World Bank, 1978)

ADEQUACY OF HEALTH SERVICES: The government has responded to the growing need for medical care by enlarging the public health care system and by training more personnel, but the available financial resources have increasingly been absorbed by the public hospitals which normally serve only the larger urban areas. Therefore, services remain inadequate in rural areas and small urban communities in spite of improvement efforts. (Jeffalyn Johnson and Associates, Inc., n.d.)

ROLE OF CHEMISTS (PHARMACISTS): There has been little evaluation of the role of the numerous chemists in Pakistan, who dispense medicines of all types without prescription. In Peshawar alone there are at least 60 chemists with shelves stocked with the latest American and European drug supplies. Vitamin preparations and aphrodisiacs are the largest sellers. Often, the appropriate medication is sold, in insufficient dosage. This indiscriminate use of drugs can induce drug-resistant strains of some organisms. The Pakistan Medical Society estimates that 64% of

6. COMMENTARIES (Cont.)

tuberculosis cases are now resistant to common, inexpensive antibiotic therapy. (World Bank, 1978)

LACK OF PHYSICIANS: It has been difficult to keep physicians working in rural health centers; most have no women physicians. Staff who work in urban areas are paid much more; a private physician's income is typically ten times that of a rural government physician's. Since earning a maximum salary is frequently given as a reason for entering the medical profession, it is hardly surprising that physicians are least attracted to rural health posts. Further, about half of all Pakistan-trained medical graduates leave Pakistan for Britain, the U.S., the Middle East, and European countries. (Jeffalyn Johnson and Associates, Inc., n.d.)

RURAL

HEALTH CARE OBSTACLES: The GOP has focused its limited health resources in urban areas instead of rural Pakistan where need is greatest. Rural Pakistan has inadequate facilities to train health manpower; administrative problems in the central, provincial and local public health services; grossly inadequate health data collection; and myriad financial problems. (Furnia, 1976)

URBAN

IMPORTANCE OF WEANING: The weaning practices which are detrimental to nutritional status among most mothers interviewed would provide good subject matter for a nutrition education campaign. The problem lies more in introduction of solid foods too late than in too short a period of breast feeding. (Anderson, 1977)

RADIO: 57% of mothers of preschool children listen to the radio daily; therefore, a mass media nutrition education campaign might be a good way of creating awareness about certain nutrition concepts. (Anderson, 1977)

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Method: Cross sectional. Information was collected on program participants and non-participants (CARE program distributing PL-480 foods) through questionnaires, center records, and anthropometric measurements. Questionnaires were also used for data collection from feeding center administrators and community officials.

Sample: 20 centers were randomly selected, and 50 mothers of preschool participants were selected on a "first come, first served" basis. A sample of fifty mothers and children who had never participated in a feeding program was drawn from each program community or a nearby community. An in depth survey was conducted on 254 mothers using the feeding program. Mothers for the in depth survey were selected from the 5 centers judged most effective and the five centers judged least effective on basis of observation of the field team. The total sample included 794 participants and 464 non-participants.

Geography: Baluchistan and Sind; 90% of the sample came from urban communities with over 5,000 inhabitants.

In 1976, CARE evaluated its preschool feeding programs. The object of the study was to identify essential factors for high-nutrition-impact feeding programs for preschool children. Mothers of participants and non-participants were interviewed and anthropometric measurements were taken on their children ranging in age from 1 to 5 years. Dietary intake as measured by 24 hour recall was collected for a subsample of program participants in their homes. Factors found to be associated with higher nutritional impact of the programs were higher percent of mothers introducing solid food to their children by six months,

BIBLIOGRAPHY (Cont.)

smaller families, less serious illness in the past year, and more nutrition knowledge among mothers.

Division of Family Health, World Health Organization

- 1980 "The Incidence of Low Birth Weight: A Critical Review of Available Information." World Health Statistics Quarterly 33(3):197-224, 1980.

This report summarizes available information on percent of low birth weight babies by country worldwide. It estimates that in 1979 about 17% of all births resulted in low birth weight infants.

Food and Agriculture Organization of the United Nations

- 1979 FAO Food and Nutrition Paper, Review of Food Consumption Surveys 1977, Volume 2: Africa, Latin America, Near East, Far East. Rome: F.A.O.

Original data.

Method: Two stage stratified sampling design. Interview with a 32 page schedule. Annual survey from 1968-69 through 1971-72.

Sample: 2770 rural households and 4525 urban households.

Geography: All rural and urban areas of West Pakistan except the Tribal Agencies and Special areas of Peshawar and D.J. Khan divisions (from Statistical Division, Ministry of Finance 1968-69 through 1971-72).

This volume reviews food consumption and expenditure surveys conducted during the period 1963 through 1976.

Food for Peace

- 1979 1978 Annual Report on Public Law 480. Washington, D.C.: Department of Agriculture.

This document reports on PL-480 activities during the period October 1, 1977 through September 30, 1978.

Furnia, A.H.

- 1976 Syncrisis: The Dynamics of Health. An Analytic Series on the Interactions of Health and Socioeconomic Development, XVIII Islamic Republic of Pakistan, Rockville, Maryland: Public Health Service, Office of International Health, DHEW/Pub/OS76-50036, June.

Pakistan's poor health environment is described and related to the country's history and politics, and the socioeconomic status of the people. Poor health is related to widespread infectious disease, poverty and ineffective policies.

G.O.P. (Government of Pakistan)

- 1979 Micro-Nutrients Survey of Pakistan (1976-77) Volume II. Islamabad: Planning and Development Division, Government of Pakistan, 1979.

Method: Regression analyses of data from the Micro Nutrient Survey dietary recall data, data on monthly food purchases.

Sample: Not specified.

Geography: National.

A micro-nutrient survey was conducted in 1976-77. This volume contains detailed multiple regression analyses of two types. First, a "demand study" estimates demand functions for food and indirectly for nutrients. Second, a "target study" investigates socioeconomic determinates of malnutrition.

G.O.P. (Government of Pakistan)

- 1978 The Fifth Plan 1978-83 Nutrition Plan. Karachi: Planning Commission, Government of Pakistan, Printing Corporation of Pakistan Press, June 1978.

This document outlines the plans of the government of Pakistan for improvement of the nutritional status of its citizens during the years 1978 to 1983. A review of studies defining the nutritional status of the population is included.

IBFAN

- 1981 Infant Formula Promotion. A report by the International Baby Food Action Network which exposes the aggressive promotion of powdered milk products for babies. May 1981.

This report compiles evidence that infant food companies have not fully complied with 1979 WHO recommendations for marketing of infant formula in third world countries. The evidence is based on statements by health professionals, consumer organizations, missionaries and development volunteers.

Jafri, N. S.

- 1979 The Child Weight Card; Its Effects on Pakistani Mothers for Better Child Care Practices, U.S. A.I.D. Mission to Pakistan, August.

Original data:

Method: Mothers were given 1 of 3 possible weight cards for 6 months to see how effective the various cards were. Interviews with mothers and Lady Health Visitors.

Sample: 108 mothers with 108 children 6 to 36 months of age using 10 MCH centers. Centers were selected to represent major regional differences, ecological and agricultural variations.

Geography: Four provinces. In Punjab: Gujranwala, Multan, and

BIBLIOGRAPHY (Cont.)

Islamabad; in Sind: Karachi, Sultanabad and Sukkur; in NWFP: Peshwar and Swat; in Baluchistan: Quetta.

A series of field probes was carried out by A.I.D. to assess the use of child weight cards in MCH centers, traditional treatment of diarrhea, and understanding of concepts of oral rehydration. Mothers with cards were found to attend MCH centers more regularly and to respond better to colorful cards with fewer written messages. Use of the card and MCH centers favors increased discussion with Lady Health Visitors on the subjects of weaning, oral rehydration and other topics.

Jeffalyn Johnson and Associates, Inc.

- n.d. A Review of United States Development Assistance to Pakistan 1952-1980. An Unpublished Report prepared for the Agency for International Development.

This study examines the course of Pakistan's development and the impact of AID's development assistance and interventions on that course. The current and future goals, objectives, and priorities of the Government of Pakistan (GOP) are reviewed.

Kamal, I.

- 1981 "The Traditional Birth Attendant in Pakistan." Unpublished, 8 pp. Karachi, Pakistan, 1979. Abstracted in: Supplement I Traditional Birth Attendants An Annotated Bibliography on their Training, Utilization and Evaluation. WHO document, HMD/NUR/81.1. Geneva: WHO.

This annotated bibliography contains 178 entries providing information on the utilization of TBAs with information on training and research projects undertaken in the last decade.

Khan, H.A.

- n.d.b "Breast Feeding, Feeding Habits and Supplementary Foods - A country report about Pakistan." Mimeograph.

Original data.

Method: (1) Whole child population of area was studied concerning feeding habits. (2) In the diarrhea research project detailed feeding histories were taken on infants suffering acute gastroenteritis.

Sample: (1) 1286 infants under 2 years of age. (2) 1834 infants from low socioeconomic status families suffering acute gastroenteritis.

Non-random sample.

Location: (1) Selected semi-rural areas populated by lower socioeconomic groups. (2) project conducted at the Institute of Child Health, Jinnah Postgraduate Medical Center.

This paper reports on two studies of feeding habits of young children. One observed feeding habits of children suffering severe gastroenteritis; the other, conducted by Dr. Razia Rahimtola of the Nutritional Research Project, studied feeding habits of children in a semi-rural area.

Khan, M.A. and Baker, J.

1979 Nutrition and Health Care for the Young Child, Health Publications LTD., Islamabad.

This book was written as a guide for health workers and others interested in better child care. It includes information on topics such as pregnancy and maternal nutrition, breast feeding, diarrhea and dehydration, oral rehydration and proper weaning practices.

Khan, N.A., Hammar, J.S., Lynch, L.E.

n.d.a "Pakistan Standards for Pre-School Child Feeding and Growth." Nutrition Cell, Planning and Development Divisions, Health Division, Government of Pakistan. 19 pp.

Original data.

Method: Mothers were interviewed. Height, weight, birth weight and age were collected.

Sample: 370 children below school age (0-71 months) living in high income neighborhoods.

Geography: Islamabad

Results indicate that timing of introduction of solids is very important to child's nutritional status. If solids are withheld through 1 year, growth falters. When solids were introduced by 4 months, Pakistani children grew as well as American standards.

Lindblad, B.S. and Rahimtoda, R.J.

1974 A Pilot Study of the Quality of Human Milk in a Lower Socio-Economic Group in Karachi, Pakistan. Acta Paediatrica Scand. 63:125-128.

Method: Breast milk was collected from mothers who accompanied their infants to the Pediatric Clinic, and was analyzed for protein, fat, lactose, Vitamin A and calcium levels.

Sample: 9 mothers accompanying sick babies to clinic.

Geography: Karachi.

The total fat, lactose, total nitrogen, protein, Vitamin A and calcium content of human milk from a very low socioeconomic group corresponded to known normal levels. The amino acid content, however, showed a comparative decrease in the content of two essential amino acids, lysine and methionine.

BIBLIOGRAPHY (Cont.)

Mahmud, S. and Fendall, N.R

- 1975 Health and integrated rural development. (Microfiche produced by International Development Research Centre.) Islamabad: Pakistan Planning Commission. August 1975.

This paper describes the proposed integration of health and rural development. The authors argue that health cannot be separated from other aspects of rural development as the problems are interrelated. They propose that workers from different disciplines, such as health, agriculture, and education, can work together in improving health care delivery, nutrition and population control in rural Pakistan through cooperation and development of common goals.

Mahmud, S., Maan, A. and Habibullah

- n.d. Nutritional Problems of Infants and Pre-School Children (0-5 Years) in Pakistan, Planning and Development Division, Nutrition Cell, Government of Pakistan.

The authors review seven nutrition surveys carried out in Pakistan between 1965 and 1977 on children under 5 years of age, and summarizes the results.

Mahmud, S.

- 1976 Report on Survey of Nutrition Related Factors in Selected areas of Azad Kashmir (June 15-20, 1976), in cooperation with Institute of Hygiene and Preventive Medicine, Lahore and Health Section of Planning and Development Division, Islamabad.

Original data.

Method: Cross-sectional survey with questionnaire and clinical exam. Weight and height for children 6-36 months. Non-random villages preselected.

Sample: 1973 persons in 325 households.

Geography: Rural areas, Dhatkot, Leepa and Panjgram; and in Muzaffarabad city.

This study was designed to assess the clinical signs of Vitamin A deficiency in Azad Kashmir, to collect data on prevalence of goiter, to collect anthropometric information for protein calorie malnutrition among young children, and to collect information on consumption of tea and salt. Also includes a general description of these urban and rural areas.

McCarthy, F.D.

- 1978 Food and Nutrition Planning for Pakistan. INP Discussion Paper No. 12. International Nutrition Policy and Planning Program. Cambridge, Massachusetts: M.I.T. Center for International Studies. March, 1978.

This document describes the history of nutrition planning in Pakistan. It examines consumer demand, demand for food, nutrition assessment, purchasing, the agricultural sector, marketing and their importance to food policy planning.

Micro-Nutrient Survey

n.d. Preliminary Findings: Information on Individuals. Mimeograph.

Original data.

Method: Cross-sectional. Included clinical exam, biochemical data was collected on every fifth person.

Sample: 6730 individuals from all four provinces (4083 in Punjab, 1536 in Sind, 786 in NWFP, and 325 in Baluchistan). Sample included 131 pregnant women and 333 lactating women.

Geography: National.

This survey investigated people of all ages for signs of malnutrition by clinical exam.

Nutrition Cell, Planning and Development Division, Government of Pakistan

1978 Micro-Nutrient Survey of Pakistan (1976-77), Volume I, Islamabad.

Original data.

Method: Cross-sectional. Random sample of most of the country (excluded some very remote, inaccessible areas). Two stage stratified random sampling design. Survey included questionnaires, dietary interviews, clinical exams, biochemical analysis of blood samples, and parasitological examination of stool specimen.

Sample: 1105 households, 6815 individuals randomly selected.

Geography: National.

This survey was carried out to update nutrition information in the areas of protein calorie malnutrition, anemia, vitamin A deficiency and goiter so better planning decisions could be made. Results indicate that infants and preschool children have many nutritional problems.

Nutrition Cell

1977a Nutrition Planning in Pakistan. Islamabad: Government of Pakistan, Planning and Development Division.

This document discusses the historical development of nutrition planning in Pakistan. It describes the governmental agencies currently responsible for nutrition planning, the present status of nutrition planning programs, policy and research undertaken, as well as plans for efforts to improve the nutritional status of the people of Pakistan.

BIBLIOGRAPHY (Cont.)

Nutrition Cell, Planning and Development Division, Government of Pakistan

- 1977b Interim Report on First Step Analysis of National Micro-Nutrient Survey, Printing Corporation of Pakistan Press, Islamabad.

Original data.

Method: Cross-sectional. Random sample excluding certain inaccessible areas. Included anthropometric measurement, clinical examination, and biochemical assay.

Sample: 6473 individuals, 1209 assessed biochemically. Included 947 preschool children.

Geography: National.

The Micro-Nutrient Survey was a multi-purpose study designed to yield baseline data for policy and program planning and development. It was done to generate nutritional status data, provide information on hypothesized determinants of nutritional status and to facilitate analysis of potential interventions.

Nutrition Survey of West Pakistan

- 1970 Nutrition Survey of West Pakistan (February 1965–November 1966), Ministry of Health, Labor and Family Planning, Directorate of Nutrition Survey and Research, Government of Pakistan, June.

Original data.

Method: Random (excluding certain sparsely populated areas) selection of 9 rural and 5 urban sites.

Sample: 1431 households; 8831 people appraised for food consumption; 5908 clinically examined; 682 blood samples; 835 urine samples.

Geography: (West) Pakistan.

The Nutrition Survey of West Pakistan was conducted to determine the epidemiology, magnitude and geographic distribution of malnutrition, as a data base for program design.

Page, H.J., Lesthaeghe, R.J. and I.H. Shah

- 1981 Breast-feeding in Pakistan: An Illustrative Analysis. Revised November 1981.

Original data.

Method: Questionnaire concerning reproductive history, socioeconomic status and breast feeding.

Sample: 4952 ever-married women under the age of 50 selected by a two-stage stratified sampling procedure.

Location: National

This report is a detailed statistical analysis of breast feeding data from Pakistan collected by the World Fertility Survey. Different possibilities for statistical analysis of the data are presented and

critical analysis weighs the advantages and disadvantages of each approach.

Rogers B.

1981 Personal Communication.

Rogers, B.L.

1978 Consumer Food Price Subsidies and Subsidized Food Distribution Systems in Pakistan. Cambridge, MA: MIT International Nutrition Planning Program Discussion Papers, No. 13.

Original data.

Method: This survey was conducted in conjunction with the Micro-Nutrient Survey. It included a questionnaire for information on income and expenditure, and ration shops and health center use as well as dietary intake and clinical assessment of nutrition status and morbidity. Multi-stage stratified random sample.

Sample: 1105 households in 108 clusters of from 9 to 16 households each.

Geography: National, all Pakistan except the tribal areas.

The findings showed that where ration flour is distributed, it is used disproportionately by the poor, while ration sugar is consumed slightly more by the wealthy.

Rogers, B.L. and Levinson, F.J.

1976 Subsidized Food Consumption Systems in Low Income Countries: The Pakistan Experience. Cambridge, Massachusetts: Massachusetts Institute of Technology, International Nutrition Planning Program and Center for International Studies, Discussion Paper No. 6.

This paper discusses food subsidy programs and their effects on producers and consumers. The subsidy program in Pakistan is presented as a case study; its history and its effects on pricing and wheat supply administration of the program, and its nutritional impact are considered.

Sivard, R.L.

1979 World Military and Social Expenditures 1979. Leesburg, Virginia: World Priorities, 1979.

This document summarizes the world situation in 1979 in statistics concerning military development and expenditures and juxtaposes these with figures on social underdevelopment concerning poverty, employment, food, health and education. Extensive statistical tables with figures for every country make up the core of this document.

BIBLIOGRAPHY (Cont.)

Spectrum

- 1981 A quarterly publication of Catholic Relief Services, Summer 1981.

This publication reviews and summarizes the work of Catholic Relief Services world wide.

TAICH

- 1977 TAICH Country Reports: Development Assistance Programs for Pakistan. New York, American Council of Voluntary Agencies for Foreign Service, Inc., Technical Assistance Information Clearing House, September.

This report describes the programs of 34 private, non-profit U.S. organizations which provide the people of Pakistan with development assistance and material aid.

Underwood, B.

- n.d. Nutrition Studies in Pakistan, Unpublished.

Original data.

Method: Cross-sectional, random sample, and a longitudinal study of child growth.

Sample: Data on 15.5% of 12,000 people in the 4 areas; 1925 persons.

Geography: Urban and rural populations in and around Lahore.

Lulliani and Gujrat and rural areas, Qulia Gujar Singh and R.A. Bazar are urban.

This paper summarizes anthropometric findings of nutrition studies conducted in West Pakistan.

Underwood, B.A., Hepner, R. and Abdullah, H.

- 1970 Protein, Lipids, and Fatty Acids of Human Milk from Pakistani Women during Prolonged Periods of Lactation, American Journal of Clinical Nutrition 23:400-407.

Method: Milk specimens were obtained from lactating women at 6 weeks, and at 6, 9, 12, 18 and 24 months. Dietary questionnaires were administered and weight, height, skinfold and hemoglobin were measured.

Sample: 60 lactating mothers from poor and low middle income groups. Geography: Urban and semi-urban Lahore.

Protein, fat and fatty acid levels were reported for milk collected.

World Bank

- 1981 Economic Developments and Prospects. Report No. 3328-Pak, South Asia Regional Office, Document of the World Bank. April 10, 1981.

This document describes trends in economic performance, agriculture, industry, energy, public finance and balance of payments, as well as population, health and education planning.

World Bank

- 1978 Pakistan: Population Planning and Social Services. World Bank Report No. 2018-pak, Development Economics Department, South Asia Programs Department. April 1978.

This document reviews information on demographic trends, population planning, the health and educational sectors in Pakistan.

World Fertility Survey

- 1977 The Pakistan Fertility Survey, 1976: A Summary of Findings, Voorburg, Netherlands: International Statistical Institute, London, England.

Original data.

Method: Random sample of households representing 92% of the total population (remaining 8% excluded due to logistic and administrative problems).

Sample: 5246 households in which 4996 women were interviewed in 1975 by 36 specially trained female interviewers.

The Pakistan Fertility Survey investigated a random sample of women, asking them about their reproductive history, marriage history, contraceptive methods and fertility preferences.

World Fertility Survey

- 1976 Pakistan Fertility Survey First Report, Population Planning Council of Pakistan, October.

Original data.

Method: Questionnaire, national, random. Multi-stage cluster sample.

Sample: 6000 women aged 10 to 50 years; 40% urban.

Geography: Whole nation.

This large scale survey was carried out to collect information on fertility and mortality and to measure the impact of the population program.

Zeitlin, M.

- 1973 Using Traditional Pakistani Food Beliefs as a Starting Point for Teaching Modern Nutrition--The Conclusions Drawn from Pretesting. Materials in this paper were presented at the Second Asian Congress on Nutrition in Manila, Philippines, in January 1973.

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This paper describes traditional food beliefs in Pakistan and a series of nutrition and health education talks designed to teach women modern theories and practices of nutrition and health.

Zeitlin, M.

1972 Report to USAID: A Three-Months (April-June 1972) Study of Traditional Beliefs about Food in West Pakistan, Unpublished.

Original data.

Method: Observation, discussion with traditional and modern doctors, questionnaire.

Sample: 400 questionnaires; 30 doctors, 15 hakims interviewed. Not randomly selected, but so much agreement they may be significant.

Geography: Not specified but many parts of the country.

A study of traditional beliefs about food was undertaken and the population was found to be well educated in an outmoded dietetic system. This system needs to be modified as it withholds animal protein from pregnant women and young children. It is based in theories of hot and cold, dryness and moisture.