



BANGLADESH

International Institute for Comparative Law and Jurisprudence

MATERNAL AND INFANT NUTRITION REVIEWS

BANGLADESH

A Guide to the Literature

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INTRODUCTION

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

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

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

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

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

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

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MINR Country Reports:

AFRICA:

Cameroon
Gambia and Senegal
Ghana
Kenya
Lesotho
Liberia
Mali
Sudan
Tanzania
Zaire

NEAR EAST:

Egypt
Jordan
Morocco
Tunisia
Yemen

ASIA:

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

LATIN AMERICA AND CARIBBEAN:

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

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

MATERNAL AND INFANT NUTRITION REVIEWS

CLASSIFICATION SYSTEM

1. Nutrition and Health Status

- 1.1 General
- 1.2 Women, Pregnant
- 1.3 Women, Lactating
- 1.4 Infants 0-6 Months
- 1.5 Infants 6-24 Months

2. Dietary Beliefs

- 2.1 General
- 2.2 About Pregnancy
- 2.3 About Lactation
- 2.4 About Breast Milk Substitutes (including bottle feeding)
- 2.5 About Weaning

3. Dietary Practices

- 3.1 General
- 3.2 Women
 - 3.2.1 During Pregnancy
 - 3.2.2 During Lactation
- 3.3 Infants 0-24 Months
 - 3.3.1 Breast feeding
 - 3.3.2 Weaning
 - 3.3.3 After Weaning
- 3.4 Health and Medicine

4. Nutrition Status Correlations

5. Nutrition and Health Policies and Programs

- 5.1 Policies
- 5.2 Programs

6. Commentaries

Bibliography

TABLE I
LOCATIONS STUDIED

District	Thana	Village	Ahmed, 1977a	Ahmed, 1977b	Bhatia et al., 1979	Chen et al., 1979	Chowdhury et al., 1977	Ljukanovic and Mach, 1975	Hoyle et al., 1980	Huffman et al., 1980a	Huffman et al., 1980b	INFS, 1982	Islam et al., 1981	Khan, 1980	Kielman, 1980	Swenson, 1978	Vemury, 1980	World Fertility Survey, 1979	
Chittagong																			
	Teknaf												X						
Comilla																			
	Matlab				X	X	X		X	X	X								
	Meheran													X					
	"Old Trial Area"															X			
Dhaka												X		X				X	
	Savar		X					X											
Khulna																		X	
Noakhali																			
	Companiganj														X				
Rajshahi																		X	
Sylhet																			
	Sulla			X															
	Derai			X															
	Baniyachang			X															
National Sample																			X

HIGHLIGHTS

1. **NUTRITION AND HEALTH STATUS:** 3.8 million children in Bangladesh under 10 years of age are affected by moderate to severe malnutrition. The infant mortality rate is 150 deaths per 1000 live births. Of those surviving to their first birthday, another 45 per 1,000 die in the second year of life, for a total of 20% of all children who do not survive the first two years of life. 50% of infants born in Bangladesh are low birthweight babies (less than 2500 grams). A 1975-1976 national nutrition survey found that 86% of the children had moderate to severe malnutrition, as defined in terms of weight for age, a greater incidence of PEM than 25 similar surveys in Africa, Asia, and Latin America. 82% of children under 5 do not meet minimum acceptable levels for hemoglobin. 17,000 children a year go blind due to vitamin A deficiency. The major causes of morbidity and mortality in children are malnutrition, gastroenteritis, worm infestation, and respiratory disease. Undernutrition and malnutrition are particularly noticeable prior to harvesting of the rice crop. The maternal mortality rate is estimated at 7 to 15 deaths per 1000 deliveries.

2. **DIETARY BELIEFS:** Rice is considered the food; all others are side dishes. Few people of any class recognize a nutritional role for vegetables. Blood, strength, and energy are the key elements in good health. Some foods are believed to produce good blood and strength. Foods are also categorized according to classifications of hot and cold, and whether they are "nirdosh/nirog," fault and disease free and medicinal. Both foods and diseases are categorized as "hot" or "cold". Diseases of one extreme are treated with foods of the other. Bengalis believe that one cannot be strong without eating rice. High-yielding varieties of rice are believed to lack the strength-giving properties found in local varieties.

Although it is recognized that a pregnant woman needs more food, it is also believed that if she eats too much, there will be less space in which the baby can grow, and that a small baby is good because the mother will have an easier delivery. The process of birth is believed to increase the "coldness" of the body, making the mother susceptible to "cold" illnesses. The first six days after delivery are considered particularly critical to the survival of both mother and child and are therefore the most restricted. Breast milk is considered the ideal food for babies. In following the principle of "like produces like," the types of supplemental feeding deemed acceptable for an infant are foods which are similar to breast milk in appearance, rather than in composition. Therefore, the supplemental foods must be liquids and white in color. Mothers start bottle feeding when their infants cry for extended periods and they believe their breast milk is inadequate or that it is causing abdominal pain in the infant.

Most mothers believe their children are not ready to be weaned until certain physical signs appear, including ability to walk, appearance of teeth, ability to name the food, and sufficient degree of dexterity in feeding themselves. The most common reasons for the cessation of breast feeding are a subsequent pregnancy or the "drying up" of mother's milk. Diarrhea often is believed to be caused by problems with mother's milk.

3. **DIETARY PRACTICES:** Rice is the preferred food; about 600 grams per person are usually consumed in 3 meals. The Bengali diet is 75-80% rice, the balance being made up of fish, vegetables, greens, dal, and milk. Women eat last, after serving the best of what is available to their husbands and children, especially boys. Scarcities of water and fuel are two major

constraints faced by women in the preparation of food. The limited amount of water available for washing food and utensils increases the likelihood of bacterial contamination. Per capita food supply has not increased since 1975. About 51% of the rural population are landless. Lean periods occur during September and October, a time of post-monsoon floods, during which the main deep-water rice crop is maturing as the floods withdraw or fall. In rural areas low-income households spend 99.43% of their income on food, and the high-income households spend 41%. The breakdown in expenditures for food between low and high income groups is similar in urban areas.

Pregnant women consume 65.9 grams of protein per day (the standard is 88.7 grams) and 2340 calories per day (the requirement being 2469). 99% of women breast feed. Most mothers begin breast feeding on the third day postpartum, because they believe that colostrum is not milk and is not a fit food to give a baby. Most infants are breast fed at least two full years. The average duration for breast feeding is 31 months in rural areas and 23 months in urban areas.

Solids are introduced late, often not until well into the second year. In rural areas 36% of mothers weaned by introducing new foods gradually, 36% by applying bitter substances to the breast, 11% by introducing new foods abruptly, and the remainder by other methods. The first supplementary food given is usually rice. Locally prepared weaning foods typically consist of rice, dal, pumpkin, sugar, oil, and water. A lower overall caloric intake in children with diarrhea is attributed to reduced consumption of supplemental foods. Fish, meat, and eggs are rarely given to young children.

In urban areas the bottle is fast replacing breast feeding with deleterious results for the infants due to poor environmental sanitation. Among poor urban mothers, 21% gave their infants supplemental milk at birth, increasing to 45% at 6 months and 53% at one year. In rural areas 69% of mothers purge their children: 17% at birth, 18% during fever, 9% during diarrhea, 49% during constipation, and 27% for reasons not known.

4. **NUTRITION STATUS CORRELATIONS:** Significant predictors of a child's nutritional status are family income, mother's education, religion, birth order, the season after infancy, and sex (except in the first 6 months of life). Infants of heavier mothers weigh more at birth and maintain greater weights up to five years. Infants who were exclusively breast fed generally enjoyed good health. Duration of breast feeding is negatively correlated with mother's education in the rural areas. In rural areas children with diarrhea tend to consume only 50% as many calories as their healthy counterparts. In rural areas food intake is directly related to land holding. Factors significantly related to higher rates of infant mortality in rural areas include delivery complications of the mother or neonate, mothers below 20 years of age, and increasing size of the family. Parasite levels and rates of severe anemia were higher in areas using surface water rather than tubewells.

5. **NUTRITION AND HEALTH POLICIES AND PROGRAMS:** The objective of nutrition planning efforts in Bangladesh is to improve the nutritional status of the lowest income segment of the population, through the following measures: a partial reorientation of existing agricultural services; establishment of a nutrition unit within the Ministry of Agriculture to project the impact of production practices, policies, and programs on nutritional status; provision of benefits to low income groups through the use of sorghum in modified ration shops; and the incorporation of nutrition education within the mother's club network and in health center staff functions. The Government has established

a goal of foodgrain self-sufficiency by 1985 and has focused efforts on increasing agricultural production through increased use of high-yielding varieties of food grains. Under the Second Five-Year Plan (1980-1985) a National Nutrition Surveillance Program will be established. 70% of the Ministry of Health's budget is directed towards urban hospital services, but over 90% of the population live in rural areas. Moves are being made to shift the health care system from curative to preventive services, from an urban-based, institution-oriented approach to a rural-based, field-service approach at the thana level.

Nutrition education activities under the Second Five-Year Plan are designed to alleviate problems of malnutrition by training housewives and mothers to identify the right types of foods, prepare and feed properly, observe food economies, and prevent pre-cooking losses. Education and demonstration of supplementary and weaning foods from locally available foodstuffs also will be provided to 8,000 women in 100 villages. A goiter control program, through lipiodol injections, will be developed to cover 150,000 children in the goiter-prone zones of Rangpur, Dinajpur, and Jamalpur. A program aimed at increasing local fish production (carps and tilapia) from 200 kgs. to 1,000 kgs. per acre will be introduced. For fiscal year 1982 the approved quantity of U.S. PL-480 food for Bangladesh was 75,000 metric tons of wheat, worth US\$13.7 million, distributed through a CARE food-for-work program to 8.6 million recipients. Bangladesh is UNICEF's second largest operation, receiving US\$20 million per year. There is no course provided in nutrition or biochemistry in any of the eight medical schools in the country. The Bangladesh Rural Advancement Committee (BRAC) is an indigenous voluntary organization that provides preventive and curative health care at an affordable cost.

1. NUTRITION AND HEALTH STATUS

1.1 NUTRITION AND HEALTH STATUS, GENERAL

NATIONAL

PREVALENCE OF MALNUTRITION: About 3.8 million children in Bangladesh under 10 years of age are affected by moderate to severe malnutrition. About 5% of the population is suffering from protein-calorie malnutrition; the most severe types occur among young children and child-bearing women. (Women for Women, 1979)

NUTRITIONAL DEFICIENCIES: PEM is very common, especially among young children, and peaks during the dry season and midseason. Anemia is "everywhere". Vitamin A deficiency is common, especially among children; there are programs which treat it with high-dosage capsules twice a year. Goiter is rare, but is found in the northern part of the country. (Licross, 1979)

DIETARY DEFICIENCIES: The typical diet is lacking in vitamin A and riboflavin. About one-third of the population is anemic, associated with worm infestation as well as dietary deficits. (Women for Women, 1979)

CAUSES OF ANEMIA: Despite adequate intakes of iron, anemia is common, partially because of: prevalence of diarrheal diseases, which lead to iron losses; worm infestations; iron losses through sweat; and low intakes of vitamins A and C, which are essential for the optimum utilization of the iron consumed. (Women for Women, 1979)

CAUSES OF ANEMIA: Although the national nutrition survey found that iron intake was adequate (average daily intake 22.2 mg. per person), other nutrients needed for maintaining hemoglobin status were seriously inadequate. Average intake of vitamin C (9.5 mg.) met only 37% of the recommended levels; vitamin A (730 I.U.), 36%; and riboflavin (0.87 mg.), 64%. (INFS, 1982)

VITAMIN A AND BLINDNESS: Each year, about 17,000 children go blind, mostly because of vitamin A deficiency. (Women for Women, 1979)

GOITER: Goiter is concentrated in Jamalpur, Kinajpur, and Rangpur. (Ahmad, 1979)

VULNERABLE GROUPS: Infants, children, and pregnant and lactating women make up two-thirds to three-fourths of the entire population of the country; 50% of the population is below 15 years old. (Brown, 1978)

MCH PROBLEMS: Significant maternal and child nutrition-related problems include: cholera, tuberculosis, typhoid, malaria, avitaminoses, measles, diphtheria, anemias, pertussis (whooping cough), polio, birth injuries, low birth weight, leprosy, and complications of pregnancy. (Brown, 1978)

COMMON ILLNESSES: Diarrheal diseases are prevalent; most are of undetermined origin, but cholera is endemic and bacillary dysentery is also common; recent outbreaks have been resistant to multiple treatment.

1.1 NUTRITION AND HEALTH STATUS, GENERAL (Cont.)

Other major causes of death include typhoid, tuberculosis (possibly 100,000 deaths per year), measles (particularly in children), neonatal tetanus, and maternal mortality at childbirth. About 90% of children are infected with entero-parasitic diseases, human cases of brucellosis have been reported. Diphtheria, poliomyelitis, visceral leishmaniasis, yaws, and dengue are present, but details are not available. Rabies is endemic. Cases of echinococcosis have been reported. The last case of smallpox was reported in 1975. (Licross, 1979)

HEALTH PROBLEMS: Infectious diseases such as malaria, tuberculosis, smallpox, cholera, diarrheal diseases, diphtheria, neonatal tetanus, whooping cough, and measles are the most important causes of morbidity and mortality. Cholera is endemic. (Djukanovic and Mach, 1975)

PREVALENCE OF ILLNESS: In 1976-77, about one third of the population on average experienced illness in any given month. These illnesses usually lasted about 7 to 10 days, during which the subject was confined to bed for 1 to 3 days. (Chen et al., 1979)

CHOLERA: Cholera is endemic in the Delta, with a definite seasonal pattern in other parts of the country. Prevalence peaks in September in the North, in November to December in Dkaka, and from March to May in the South. (Licross, 1979)

MALARIA: Half the population live in malarial areas. The disease is particularly prevalent in Chittagong Hill Tract and border areas; transmission is year round in these areas, but limited to monsoon season elsewhere. The incidence has been declining over the last decade because of control measures, but there is a strong risk of resurgence. The parasite has developed some resistance to chloroquine. Transmission-free areas include Dhaka. (Licross, 1979)

RURAL

WORM INFESTATION: Examination of 192 samples in a rural community showed a 92% rate of worm infestation; 40% had more than one type. The most common types were ascaris and trichuris. (Rizvi, 1979)

1.2 NUTRITION AND HEALTH STATUS, WOMEN, PREGNANT

NATIONAL

MATERNAL MORTALITY RATE: The maternal mortality rate is estimated at 7 to 15 deaths per 1000 deliveries. (Brown, 1978)

MATERNAL MORTALITY: The maternal mortality rate is 5.7 deaths per 1000 live births. (Vemury, 1980)

CAUSES OF MATERNAL MORTALITY: The major causes of maternal mortality are: insanitary conditions associated with delivery; complications arising at the time of delivery with which the attending woman (the dai) is not qualified to cope; mild postpartum hemorrhage of an already malnourished woman; and postpartum sepsis. (Women for Women, 1979)

PURDAH AND MORTALITY: The enforced purdah (seclusion) system, the prolonged lack of sunlight causing pelvic deformity, often leads to death in the first childbirth. (Women for Women, 1979)

RURAL

MATERNAL MORTALITY: Maternal mortality was about 27% of all deaths to females aged 10 to 49 years, in one detailed study of rural areas. (Women for Women, 1979)

PREGNANCY AND MORTALITY: Pregnancy-related complications were the single most important killer of women of child-bearing age in the Savar Project area. (Ahmed, 1977a)

CAUSES OF MATERNAL MORTALITY: In Matlab Thana, almost one-third of all deaths among women aged 10 to 49 years were related to childbirth, occurring during pregnancy or within 90 days after its termination. Most of these deaths were due to postpartum tetanus and sepsis. (Bhatia et al., 1979)

AGE AT MENARCHE: Only a few of the girls in the study had attained menarche by age 13, and only one-fifth of girls aged 14 had reached menarche. (Chowdhury et al., 1977)

AGE AT MENARCHE: The trend of declining age of onset of menarche that has been observed in many European countries and the U.S. has not been observed in Bangladesh or other similarly impoverished nations where nutritional status has remained inadequate. Several studies have suggested that the age of onset of menarche is related to nutritional status. (Chowdhury et al., 1977)

1.3 NUTRITION AND HEALTH STATUS, WOMEN, LACTATING

NATIONAL

POSTPARTUM AMENORRHEA: The median duration of postpartum amenorrhea was 19.9 months for all women in the study. These results may be biased upwards by as much as one month. A seasonal trend in the resumption of menses was also evident. (Huffman et al., 1978)

POSTPARTUM AMENORRHEA: There is a higher rate of resumption of menses between September and December. Seasonal variation has a significant impact on the duration of postpartum amenorrhea: the average duration of postpartum amenorrhea was about 22 months for February births and 17 months for September births. Fifty-two percent of the women who resumed menses during the study did so between the months of September and December, during the time of the major rice harvest. However, editing procedures used by researchers would tend to produce a slight upward bias in the magnitude of the seasonal effect. (Huffman et al., 1978)

1.4 NUTRITION AND HEALTH STATUS, INFANTS 0-6 MONTHS

NATIONAL

MORTALITY RATE: The infant mortality rate in 1975 was 140 per 1,000 live births. (World Bank, 1979)

MORTALITY: Infant mortality was estimated from a survey to be 150 deaths per 1,000 live births. Of those surviving to their first birthday, another 45 per 1,000 die in the second year of life, for a total of 20% of all children who do not survive the first two years of life. (International Statistical Institute, 1979)

LOW BIRTH WEIGHT: WHO estimated that 50% of infants born in Bangladesh are "low birth weight" (less than 2500 grams). (WHO, 1980)

BIRTH WEIGHT: 36% of all infants weigh less than 2500 grams at birth. (JGUAG, 1980)

GROWTH RATES: At birth, the study group's mean weight was 74% of the Harvard standard. The growth curves were parallel until the third month; from the 4th month, the sample group's curve began to fall back and to attain a plateau. (Khan, 1980)

PERINATAL MORTALITY: Perinatal mortality, including stillbirths and deaths to liveborn infants before one month of age, was 230 per 1000 deliveries. (Brown, 1978)

NEONATAL TETANUS: The rate of neonatal tetanus was 27 per 1000 live births. (Brown, 1978)

INFANT MORTALITY: About 9% of all infants die in the first month of life (neonatal mortality); 12% die by the end of the first year. Males have a higher mortality rate in the first month, but a lower rate thereafter, apparently due to the cultural pattern in which parents provide better care for male children. (Women for Women, 1979)

INFANT MORTALITY: 20% of all children died in the first 2 years of life. (International Statistical Institute, 1975)

INFANT MORTALITY RATE: In 1978, the infant mortality rate was 130 deaths per 1000 infants. (World Bank, 1981)

INFANT MORTALITY: The infant mortality rate was 153 deaths per 1000. (Vemury, 1980)

INFANT MORTALITY: Infant mortality was about 140 deaths per 1000 live births. (Brown, 1978)

INFANT MORTALITY: The infant mortality rate was 110 deaths per 1000 live births per year. (UNICEF, 1978)

RURAL

INFANT MORTALITY: Children under one year old accounted for 16% of the general mortality rate. (Islam, 1977)

INFANT MORTALITY: Among a random sample of 502 infants who survived past the seventh day of life, 18 (3.5%) died before the age of one year. (Kabir, 1982)

INFANT MORTALITY—SULLA: The infant mortality rate in the Sulla region was 186 deaths per 1000 births. (ICED, 1977)

INFANT MORTALITY RATE—TEKNAF: The infant mortality rate in Teknaf thana, Chittagong district, during the 12 months beginning July 1, 1976, was 160 deaths per 1000 births, including a neonatal (first 28 days of life) rate of 89 and postneonatal rate of 71. (Islam et al., 1981)

BIRTH WEIGHTS: A study of 122 liveborn infants delivered at home in 1979 in the rural Matlab area found that 90% weighed less than 3000 grams at birth, 50% weighed less than 2500 grams, and 10% weighed less than 2000 grams. (WHO, 1980)

CAUSES OF NEONATAL DEATHS: The major causes of neonatal deaths were tetanus (31% of deaths), prematurity (22%), and congenital illnesses (12%). During the post-neonatal period, the most common causes were pneumonia (33%), malnutrition (18%), diarrheal diseases (10%), fever (9%), and measles (6%). Delivery complications of the mother and the newborn were found to be significant determinants of neonatal mortality. (Islam et al., 1981)

INFANT MORTALITY AND TETANUS: Tetanus accounted for 22% of the infant mortality and 35% of all neonatal deaths; in some areas, tetanus accounted for 43% of neonatal deaths. (Islam, 1977)

URBAN

VITAL STATISTICS: Record-keeping is difficult because of migration, residential mobility, and because many mothers do not deliver in their own communities, but those of friends or relatives with whom they stay temporarily. Among 2516 births at the Dhaka Medical College Hospital in 1979, only 182 could be followed for three years. Of the 182, there were 32 deaths (17.5%), of which 25 (13.7%; 78% of the deaths) were during the first month after birth. The authors of this study note, "We of course excluded from the frame cases which died within 7 days." (Kabir, 1982)

1.5 NUTRITION AND HEALTH STATUS, INFANTS 6-24 MONTHS

NATIONAL

MALNUTRITION RATE: In 1975-76, the Institute of Nutrition and Food Sciences of Dhaka University conducted a national survey and found that 86% of the children examined had moderate to severe malnutrition, as defined in terms of weight for age (Gomez classes II and III), a greater incidence of PEM than 25 previous surveys in Asia, Africa, and Latin America. (Brown, 1978)

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

MALNUTRITION: Among children under 5 years old in the National Nutrition Survey of 1975-76, 22.38% of the boys and 18.64% of the girls were normal; 4.76% and 6.82% respectively were wasted (weight for height less than 80% of reference median); 59.05% and 56.82% were stunted (height for age less than 90% of the reference median; and 13.81% and 17.72% were both wasted and stunted. (Women for Women, 1979)

MALNUTRITION AND INFECTION: Of 100 children aged 12 to 60 months admitted to the Nutrition Unit in Dhaka, 56 had marasmus; 14, kwashiorkor; 28, marasmus-kwashiorkor; and 2 had edema on the basis of primary renal disease. Seventy-three percent of the children had evidence of a major systemic infection; 49% had pneumonia; 40%, enteric infection; 30%, bacteriuria; 2%, bacteremia; and 1%, meningitis. Clinical evidence for pulmonary tuberculosis was present in 28% of the pneumonias. Rotavirus and shigellae were the most commonly identified pathogens. Escherichia coli was the predominant cause of urinary tract infections. (Nutrition Reviews, 1981)

CHILD DEATHS: Deaths of children under 5 years of age equaled 265 per 1000, or more than half of the country's deaths. (Brown, 1978)

CHILD MORTALITY RATE: The mortality rate of children age 1 to 4 years was 25 to 50 per 1000 population. (Brown, 1978)

CHILD MORTALITY RATE: In 1979, the mortality rate among children age 1 to 5 years was 19 deaths per 1000 children; in 1960 the rate had been 25 per 1000. (World Bank, 1981)

CHILD MORTALITY RATE: The mortality rate in 1977 among children age 1 to 4 years was 23 deaths per 1000. (World Bank, 1981)

CHILD MORTALITY RATE: The mortality rate of children age 1 to 4 years was 23 per 1000 per year. (UNICEF, 1978)

CAUSES OF CHILD DEATHS: The major causes of deaths among children age 1 to 4 years were: measles (30%), diarrhea and dysentery (28%), and fever (15%), according to data from Teknaf. Another study in Matlab found that gastrointestinal diseases accounted for 36% of deaths in this age group, fever for 21%, and respiratory diseases, 10%. (JGUAG, 1980)

AFFLUENT CHILDREN--WEIGHT AND HEIGHT: At the second nutrition seminar of Bangladesh, in 1977, it was reported that children of affluent families in Dhaka and Chittagong complied with "international" standards for height and weight for age; therefore, it was appropriate to use these standards for the country. (Brown, 1978)

STUNTING/HEIGHT FOR AGE: The 1975-76 national survey found that 74% of the children were stunted, below 90% of reference standards for weight for age. (Brown, 1978)

GROWTH RATES: Although the mean birth weight of the sample was 74% of the Harvard standard, the percent of standard at 1, 3, and 5 years of age were 67, 69, and 75% respectively. (Khan, 1980)

HEIGHT AND WEIGHT FOR AGE: The national nutrition survey of 1975-76 found that 12% of the children were both stunted (below 90% of standard reference height for age) and wasted (below 80% of reference standard weight for height). (Brown, 1978)

ANEMIA: 82% of children under 5 years old do not meet "minimum acceptable levels" for hemoglobin. (UNICEF, 1980)

VITAMIN A DEFICIENCY: Due to vitamin A deficiency, 17,000 children go blind every year. (UNICEF, 1980)

VITAMIN A DEFICIENCY: Approximately 50,000 children (age not specified) suffer from vitamin A deficiency each year. (UNICEF, 1978)

MAJOR HEALTH PROBLEMS: The ten major child health problems, which form the basis of the Pallishishu health worker training, are: tuberculosis, diarrhea, tetanus, measles, malaria, anemia, parasites, scabies, and diphtheria. (Brown, 1978)

MORBIDITY AND MORTALITY: The major causes of morbidity and mortality in children are: malnutrition, gastroenteritis (including diarrhea and dysentery), worm infestation, respiratory diseases (including tuberculosis), and accidents, including drownings and burns. (Brown, 1978)

MORBIDITY: Prevalent diseases which contribute to the high rate of mortality among children are tetanus and diphtheria, scabies, worm infestation, respiratory diseases (including whooping cough and pneumonia), and dental diseases. (UNICEF, 1978)

CAUSES OF ILLNESS: The major causes of morbidity and mortality in children were malnutrition, gastroenteritis, worm infestation, and respiratory disease. (Brown, 1978)

PARASITES: At least 80% of children have some type of worms. (Brown, 1978)

RURAL

MORTALITY: Among 502 infants who survived the first 7 days of life, 18 (3.5%) died during the first year, and 13 (2.5%) during the second and third years. (Kabir, 1982)

SEASON AND MALNUTRITION: Undernutrition and malnutrition are particularly noticeable prior to harvesting of the rice crop. Nutritional deficiencies in the form of night blindness and stomatitis are frequent. (ICED, 1977)

WEIGHT—SEASONAL CHANGES: The nutritional status of mothers and children varies markedly by season, as attested by the fluctuation in weight of 100 children aged 17 to 25 months and their non-pregnant mothers. Maternal weight was stable from March through September, then declined and only gradually recovered. The weight gain of children followed a similar pattern. (Chen et al., 1979)

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

DIARRHEA—SEASONALITY: Cholera showed a striking seasonal pattern with about 700 admissions in September in comparison to almost no cases in January and February. NAG diarrheas show a seasonal pattern, peaking in March, April, and May. (Chen et al., 1979)

DIARRHEA—SEASONALITY: Diarrheas due to rotavirus and enterotoxigenic E. coli show a seasonal pattern. The former attacks children 6 months to 2 years of age, peaking during the winter months. The latter, also common among children, has a probably spring peak. Evidence was too limited to examine the role of these infections on nutritional status. (Chen et al., 1979)

ENTEROPATHOGENS: Among 41 children aged 6 to 35 months admitted to the treatment unit of the International Centre for Diarrhoeal Disease Research (Matlab thana) for diarrhea treatment, one third had Vibrio cholerae, one third had rotavirus, and one in each of two groups had Shigellae. No enteropathogens were isolated from one-third of the children. It is likely that E. coli was responsible for many of the unidentified cases of child diarrhea. (Hoyle et al., 1980)

ANEMIA: The National Nutrition Survey (1975-76) found that 82% of the children age 0 to 4 years were anemic, with a mean hemoglobin value of 9.7 gm. per 100 ml. (INFS, 1982)

ANEMIA: Hemoglobin levels of children age 0 to 4 years were low; 54% of the children had hemoglobin levels below 10 gm. per 100 ml.; 28%, 10-10.9; 13%, 11-11.9; and 5%, 12 and above. The WHO minimum acceptable level from children age 6 months to 6 years is 11 gm. per 100 ml. (INFS, 1982)

CAUSES OF CHILD DEATH: In 1975, a famine year, the leading causes of death among children under 5 years old in Campaniganj were: malnutrition (31% of deaths); diarrhea (27%); pneumonia (7%); diphtheria, whooping cough, and tetanus (4%); measles (2%); tuberculosis (1%); and other, including neonatal deaths, (29%). (Islam, 1977)

CHILD MORTALITY: Children under 5 years old account for 26% of the general mortality rate. (Islam, 1977)

CHILD DEATHS: In 45.3% of the households studied, at least one child had died while under six years old. (Vemury, 1980)

SURVIVORSHIP: Children whose birth is followed in less than than 12 months by an infant death have a lower survivorship than those followed by a surviving infant. (Swenson, 1978)

2. DIETARY BELIEFS

2.1 DIETARY BELIEFS, GENERAL

NATIONAL

SOCIOECONOMIC STATUS AND FOOD CATEGORIES: For the most part, categorization of foods does not seem to be affected by income, education, occupational status, or urban/rural residence. But the poor expressed such beliefs more frequently during the survey and were more likely to follow these recommendations actively, especially in regard to hot/cold classifications. (Rizvi, 1979)

INTRAHOUSEHOLD FOOD DISTRIBUTION—GUESTS: Food is regarded as an important medium for showing warmth, and hospitality is stressed. A mother in charge of food distribution for the home will give up her share to a guest. (Rizvi, 1979)

RICE: Rice is considered the food; all others are side dishes. No other food can give the satisfaction of rice, which nourishes the soul as well as the body. Rice helps the brain to function, and no other food is as good for giving strength. Children are told that wasting or dropping rice while eating makes God unhappy, so that is a sin. (Rizvi, 1979)

HIGH-YIELDING VARIETIES OF RICE: High-yielding varieties of rice (HYV or IRRI) is considered tasteless, and local varieties are preferred, even five years after the introduction of IRRI rice. The poor often eat rice with only salt and chili peppers, so can be expected to be particular about its taste. Rich farmers, making profits on their rice crops, prefer to buy the more expensive traditional varieties. (Rizvi, 1979)

VEGETABLES: Few people of any class recognized a nutritional role for vegetables; they were regarded primarily as a way of making rice more palatable. Preferred vegetables were those with the lowest nutritional value: gourds, radishes, and amaranths. (Rashid, 1980)

FOOD CATEGORIES: Blood, strength, and energy are the key elements in the maintenance of good health. Some foods are believed to produce both blood and strength; others, only strength. The word "vitamin" is often used for nutritious and strength-giving foods by both literate and non-literate individuals. Foods are also categorized by hot/cold classifications; whether they are "nirdosh/nirrog" (fault- and disease-free); and medicinal. (Rizvi, 1979)

BLOOD-PRODUCING FOODS: There is no specific term for anemia, apart from the concept of insufficient blood in the body. Fish is the food most commonly cited for its blood-producing properties, but only types of fish which stay alive after caught in a little water, which suggests strength. Also, the fact that the fish can be kept alive enhances their freshness when eaten. Shrimp are considered no good because they have no blood, and are not given to sick individuals; however, shrimp are desired for their good taste. (Rizvi, 1979)

2.1 DIETARY BELIEFS, GENERAL (Cont.,)

STRENGTH-GIVING FOODS: The principal strength-giving food is ghee (clarified butter); others are large fish, fish heads, milk, and young chickens. Other protein foods such as beef, small fish, and eggs are not considered strength-giving. The word "vitamin" is used interchangeably with the local term "pushtikar" (nutritious), applied to strength-giving foods. (Rizvi, 1979)

RICE AND STRENGTH: Bangalis believe that one cannot be strong without eating rice. High-yielding varieties (e.g., IRRI) are believed to lack the strength-giving properties found in local varieties. Eating rice alone, however, is considered insufficient for the strength and energy needed for good health. Rice is not eaten during illness, and the resulting weakness is attributed to not eating rice, rather than directly to the effects of the illness. (Rizvi, 1979)

HOT AND COLL: Both foods and diseases are categorized as "hot" or "cold". Diseases of one extreme are treated with foods of the other. There is little variation among income groups or urban/rural differences in which foods are assigned to each group. (Rizvi, 1979)

"HOT" FOODS: Hot foods, to be avoided during hot illness such as diarrhea, include shrimp, "hilsa" (a local fish), beef, duck, "masur" (red lentils) (only among some urban residents; others considered it neutral), jackfruit, and lichees. (Rizvi, 1979)

"COLD" FOODS: "Cold" foods, to be avoided if one has a "cold" disease such as flu or asthma, include chicken, mutton, "boal" and "puti" (local fish), bananas, and all citrus fruits. Mangoes are "cool." Among dals, "khesari" and "mashkai" are considered cold; the former is blamed as the cause of body aches and pains, swellings, and aggravating rheumatic attacks and asthma. It contains a toxin, lathyrus sativus, which can lead to paralysis of the lower limbs if consumed in large quantities as a staple. (Rizvi, 1979)

NIRDOSH AND NIROG—FAULT- AND DISEASE-FREE FOODS: Foods in these categories are not viewed as causative agents for any disease or harm, nor for humoral (hot/cold) imbalances in the body, although they are generally considered to be "cool." They are not viewed as "pushtikar" (nutritious), nor as having medicinal properties. (Rizvi, 1979)

"NIRDOSH" FOODS: Most vegetables are nirdosh, including okra, cauliflower, green beans, lau (marrow), patol, jhinga, chichinga, and data. Excluded are pumpkin, eggplant, and all kinds of leafy greens except palong (spinach) and pui (a local leafy green). Among the dals (lentils), there is less consensus: masur (red lentils) are usually considered nirdosh, as are motor (another lentil), and mung dal. Among meats, mutton and chicken are nirdosh; no fish are referred to as nirdosh. (Rizvi, 1979)

RURAL

FOOD CLASSIFICATIONS: Properties by which foods were categorized by "community influentials" included: hot and cold, strength producing, blood giving, and digestibility. (Vemury, 1980)

HOT AND COLD FOODS: Foods usually classified as hot included fish, eggs, beef, khesari (a legume), and other animal protein foods. Mentioned less often (by less than 10%) were milk, duck, jackfruit, ghee, arum, wheat, and certain vegetables. Cold foods included papaya, banana, citrus fruits, whey, curd, pumpkin, and (less than 10%) some fish, rice, and vegetable, sagoo (a cereal), and chicken. (Vemury, 1980)

KHESARI HARMFUL: 9% of responding households believed that khesari (a legume) was harmful. (Vemury, 1980)

EGG HARMFUL: 12% of responding households believed that egg protein was harmful. (Vemury, 1980)

VEGETABLES—SULLA: Vegetables have traditionally been regarded as an inferior type of food and thus were not often grown nor consumed in the Sulla area. New vegetables such as broccoli, chinese cabbage, tomatoes, and cauliflower have been introduced with unknown success by the BRAC. (ICED, 1977)

SOURCES OF DIETARY ADVICE: 23% of women (3.8% of "community influentials") regarded themselves as their major source of advice on diet (e.g., they observed others); 35% (28%), their mothers; 30% (30%), mothers-in-law; 8.1% (36.4%), other older women; 1% (0), health workers; and 0-2% (0-1%), local healers, others, and not known. (Vemury, 1980)

BENEFICIAL FOODS--MENSTRUATION: Foods considered beneficial for girls during menstruation included only boiled milk, named by only 1.5% of all respondents. (Vemury, 1980)

HARMFUL FOODS--MENSTRUATION: Foods considered harmful for girls during menstruation included all fish (named by 6% of respondents), eggs (4%), all animal origin foods (3%), and certain fats and oils (4%). (Vemury, 1980)

BENEFICIAL FOODS--PUBERTY: Foods considered beneficial for girls at puberty included boiled milk (named by 6.3% of respondents), beef (2.3%), eggs (2.3%), and rice and rice pudding (4.8%). (Vemury, 1980)

HARMFUL FOODS--PUBERTY: Foods believed harmful for girls at puberty included meat (named by 7.5% of respondents), eggs (10.4%), fish (21.5%), certain fruits (1.8%), certain fats and oils (5.4%), and turmeric (3.7%). (Vemury, 1980)

BENEFICIAL FOODS--PRE-PUBERTY: Foods believed beneficial for girls who had not reached puberty included boiled milk (named by 8% of responding households), meat in general (6%), and eggs (5%). (Vemury, 1980)

HARMFUL FOODS--PRE-PUBERTY: Foods believed harmful for girls who had not reached puberty included boal, a type of fish, (4% of all responding households), and khesari, a legume (2.9%). (Vemury, 1980)

2.2 DIETARY BELIEFS, ABOUT PREGNANCY

NATIONAL

FOOD RESTRICTIONS: Although there is recognition that a pregnant woman needs more food, it is also believed that if she eats more there will be less space in which the baby can grow, and that a small baby is good because the mother will have an easier delivery. Village people and non-literate urban women visualized the food and the baby occupying the same general area in the mother's body. (Rizvi, 1979)

SHRIMP: Shrimp are not given to mothers after delivery because, having no blood, they cannot help the mother make new blood, as some other types of fish can. (Rizvi, 1979)

POSTPARTUM RESTRICTIONS: During the first 6 days postpartum, the mother is expected to avoid all types of animal foods, even those considered "hot." Although the wet/dry categorization is rarely found in native categorizations for food, at this time the mother must avoid plain boiled rice, a "wet" food, because it slows down the healing process. Water intake is also restricted, but boiled water is allowed. (Rizvi, 1979)

POSTPARTUM RESTRICTIONS: At 6 days postpartum, a special meal of rice, fish, and greens is prepared for the mother to celebrate the survival of mother and child, to reduce the mother's food restrictions, and to introduce the baby (through the mother's milk) to some of the foods it will eat. For the remainder of the first 40 days postpartum, the mother still should not eat beef, shrimp, small fish, most leafy greens, fruits, and yogurt. (Rizvi, 1979)

POSTPARTUM FOODS: After the sixth day postpartum, the mother is advised to eat "blood-producing" fish. Some greens are allowed, but they are generally discouraged because they are believed to provide only roughage, not food value. Frequent eating of rice is encouraged as well. (Rizvi, 1979)

POSTPARTUM SPICES RECOMMENDED: Several spices are considered to help the postpartum healing process, including turmeric, black cumin, garlic, ginger, and regono seed. Black cumin is also believed to increase the supply of breast milk. (Rizvi, 1979)

BEEF: Beef is restricted postpartum in spite of being a "hot" food because it is thought to cause sutika, a disease characterized by diarrhea, dizziness, dysentery, constipation, and weight loss. (Rizvi, 1979)

FOOD TABOOS: The few foods tabooed are mostly fish which are not regular items in the diet, and so have little impact on the mother's nutritional status. Pineapple is to be avoided in the first trimester, as it causes miscarriage, and fruits joined together, such as bananas, are avoided in order to prevent Siamese twins. (Rizvi, 1979)

FOOD CRAVINGS: The pregnant woman's desire for any particular food should be satisfied; otherwise, her child will become a greedy person. There are few food taboos, most of which are believed to prevent defects

and blemishes in the newborn. Some cravings (pica) are for non-food items such as clay, burnt charcoal, and uncooked rice. A woman's opportunity for recognition and fulfillment of her cravings is one of her few chances for recognition in a society where she usually holds an inferior position. Some foods craved will inhibit nausea, but there is little other evidence of physiological bases for them. (Rizvi, 1979)

RURAL

RELATIVE INTAKE: 62.0% of women (68.9% of "community influentials") believed that women should eat less than normal during pregnancy; 24.0% (26.3%), that they should eat as usual; 13.6% (4.8%), that they should eat more; and the remainder, 0.4% (0), did not know. (Vemury, 1980)

BENEFICIAL FOODS: Foods considered beneficial during pregnancy included boiled rice (named by 44% of respondents), meat in general (27%), chicken (2%), fish (21%), magur (6%), koi (3%), and eggs (17%). (Vemury, 1980)

HARMFUL FOODS: Foods considered harmful to pregnant women were meat (named by 3% of respondents), fish (5%), boal (12%), mregal (6%), some animal proteins (11%), pineapple (9%), and some other fruits (4%). (Vemury, 1980)

FORBIDDEN FOODS: Pregnant women are forbidden to eat mutton; duck; several local varieties of fish; shrimp; vegetables including squash, onions, and sweet pumpkin; fruits such as pineapple; and eggs. The reasons for the prohibitions include beliefs that the foods will harm the baby, cause miscarriage, or cause specific deformities in the child. (Bhatia et al., 1979)

2.3 DIETARY BELIEFS, ABOUT LACTATION

NATIONAL

ATTITUDES TOWARDS BREAST MILK: Breast milk is considered the ideal food for babies. Village women felt that "One drop of mother's milk is equal to ten drops of cow's milk." According to Ayurvedic (Hindu Indian) medicine, breast milk is the best food for promoting growth, nourishment, and long life. The Koran recommends that Moslem mothers breast feed a child for two years. Mothers also support breast feeding because it is believed to have contraceptive effects. (Rizvi, 1979)

INITIATION OF BREAST FEEDING: Most mothers (86%) began breast feeding on the third day postpartum. The delay was due to the belief that colostrum, not being milk, is not a fit food to give the baby. (Rizvi, 1979)

POSTPARTUM RESTRICTIONS: In contrast to pregnancy, the postpartum period of 40 to 45 days is very restricted. Women are considered especially vulnerable to a variety of diseases during this period, and illnesses are believed to be transmitted to the baby through breast milk. The process of birth is believed to increase the "coldness" of the body, making the mother susceptible to "cold" illnesses. The first six days after delivery are considered particularly critical to the survival of both mother and child and are therefore the most restricted. (Rizvi, 1979)

2.3 DIETARY BELIEFS, ABOUT LACTATION (Cont.)

RURAL

SPECIAL FOODS: Because many properties are thought to pass into breast milk, the mother is fed a special meal of five foods on the fifth day postpartum so that the child will have the blessings of a choice of five dishes all its life. (Bhatia et al., 1979)

DIETARY RESTRICTIONS: Restrictions on the mother's diet are strict, and become more so if the child has diarrhea, a cold, or a cough. Foods generally avoided include meat, eggs, fish, and occasionally milk. (Bhatia et al., 1979)

INCREASE INTAKE: 75.1% of mothers and 72.2% of "community influentials" believed a lactating woman should eat more than normal; 20.4% and 25.4% thought she should eat the same amount; and the remainder, 4.2% and 2.4%, did not know or thought she should eat less. (Vemury, 1980)

MILK BENEFICIAL: 26% of mothers surveyed believed that boiled milk was beneficial during the postpartum period. (Vemury, 1980)

POTATOES BENEFICIAL: Potatoes were believed beneficial during the postpartum period by 22% of responding women. (Vemury, 1980)

BENEFICIAL FOODS: Foods believed beneficial for lactating mothers included boiled milk (named by 37% of respondents), certain meats (20%), eggs (12%), shing (13%), magur (12%), and (less than 10% each), poultry, roi, pumpkin, fruits, and juices. (Vemury, 1980)

HARMFUL FOODS: Foods believed harmful for lactating mothers but each named by less than 10% of respondents included meat, fish, boal, hilsa, khesari, green leafy vegetables, certain other vegetables, chili peppers, and certain fruits. (Vemury, 1980)

HARMFUL FOODS: Foods believed harmful during the postpartum period included all meat (named by 26% of respondents), fish (30%), boal (15%), certain animal protein (15%), and (less than 10% each) beef, hilsa, rice, certain cereals, khesari, certain other legumes, chili peppers, and green leafy vegetables. (Vemury, 1980)

2.4 DIETARY BELIEFS, ABOUT BREAST MILK SUBSTITUTE (INCLUDING BOTTLE FEEDING)

NATIONAL

APPROPRIATE SUBSTITUTES: In following the principle of "like produces like," the types of supplemental feeding deemed acceptable for an infant under 12 months old (who may be given liquids but not solids) are foods which are similar to breast milk in appearance, rather than in composition. Therefore, the supplemental foods must be liquids and white in color. When fresh, canned, or powdered milk is not available, poor mothers may give mixtures of starchy products such as rice powder, barley, or arrowroot, or overdiluted milk powder. (Rizvi, 1979)

BOTTLE FEEDING: Mothers started bottle feeding their infants when the baby cried for extended periods. They held the belief that mother's milk

was inadequate or it was causing abdominal pain in the infant. (Quader, 1979)

RURAL

REASONS FOR SUPPLEMENTARY FEEDING: The first supplementary feeding, given at an average age of 3.3 months, was usually given because of an "inadequate supply of breast milk." (Rizvi, 1979)

LIQUIDS: Although there is a strong belief against giving solid foods before the age of 12 months, there is no such restriction on giving liquids. (Rizvi, 1979)

URBAN

ATTITUDES TOWARDS ARTIFICIAL FEEDING: Urban mothers said that they fed breast milk only because they could not afford powdered milk, not because they believed that breast milk was superior. Their confidence in breast milk and themselves has been eroded by advertising and the example set by the upper class, as well as the efforts of well-meaning relief organizations. (Rizvi, 1979)

2.5 DIETARY BELIEFS, ABOUT WEANING

NATIONAL

LATE INTRODUCTION OF FOODS: Rice is the first food given but is believed to cause "pot belly" (which is aesthetically undesirable) if given before the age of 12 months. (Rizvi, 1979)

WEANING AGE: Most mothers believed that the child is not ready to be weaned until certain physical signs appear, including: ability to walk, appearance of milk teeth, ability to name the food or part of the desired food, and sufficient degree of dexterity in feeding self. Therefore, children under two years old do not get any significant share of the family meals. (Rizvi, 1981)

SUITABLE FOODS: Fish, dal, and greens are considered unsuitable foods for young children, so the only common food left for them is rice. (Rizvi, 1979)

FOOD RESTRICTIONS: Several foods are considered inappropriate for young children. Fish are believed to cause worms, beef is believed to cause allergic reactions and stomach problems, and greens are believed to offer only roughage and no food value. (Rizvi, 1979)

RURAL

BENEFICIAL FOODS: Foods believed beneficial for children age 0 to 2 years included boiled milk (named by 50% of respondents); certain animal foods (17%); and (less than 10% each) all meat, all fish, rice and rice pudding, and bananas. (Vemury, 1980)

2.5 DIETARY BELIEFS, ABOUT WEANING (Cont.)

URBAN

REASONS FOR WEANING: High-income and highly educated urban mothers weaned early, before 12 months. Their reasons related to their desire for more free time and pleasure trips, but only secondarily to working schedules. Low-income mothers most frequently weaned because of a new pregnancy, because they believed that the milk of a pregnant woman, after the first trimester, is harmful for the baby. (Rizvi, 1979)

REASONS FOR WEANING: Among mothers of 500 poor urban infants, 221 had ceased breast feeding. The most common reason given was mother's pregnancy; the second most common was that her milk had "dried up." (Quader, 1979)

REASONS FOR WEANING: Reasons for weaning include pregnancy, illness in mother or baby (the milk of an ill mother is thought to be harmful to the baby), mother begins working out of home, mother does not want to spend time breast feeding and gives infant over to someone else who will bottle feed, and following doctor or health worker's advice based on lack of interest and/or poor knowledge. (Quader, 1979)

REASONS FOR WEANING: As their reasons for weaning infants from the breast, 20% of mothers cited that their breast milk dried up automatically; 7% said their breast milk stopped because of a new pregnancy; and 1.4% said the baby did not tolerate the milk, that it gave him diarrhea. (Quader, 1979)

2.6 DIETARY BELIEFS, ABOUT ILLNESS AND CURE

NATIONAL

MEDICINE SYSTEMS: Despite their Muslim heritage, most Bangali Muslims are not influenced by the Arabic (Unani) system of medicine, but are more strongly influenced by the Indian (Ayurvedic) system, which focuses on the four humors (hot/cold and wet/dry). (Rizvi, 1979)

BITTER FOODS—MEDICINES: Eating bitter-tasting vegetables is recommended to keep the blood clean and thus free oneself from diseases associated with "bad blood," such as skin infections and allergies. Bitter gourds are recommended to keep the skin smooth and shiny. Bitter vegetables are also believed useful in preventing and curing worms. Children are encouraged to eat them to avoid common infections, especially during the summer. An herbalist reported that bitter foods were strength-giving because by killing parasites they cleansed the blood, thus helping to restore health. (Rizvi, 1979)

DIARRHEA—CAUSES: Diarrhea in an infant is usually caused by problems with the mother's milk. If she has been affected by "mysterious air," she should stop breast feeding. Diarrhea may also be caused directly by the "evil eye"; antidotes are prescribed by local healers, usually older women. (Rizvi, 1979)

DIARRHEA: Diarrhea, considered a "hot" disease, is to be treated with a "cool" food such as barley water; "hot" foods, especially milk, are to be

avoided. It is also believed that diarrhea of young children can be prevented by not giving solid foods until the child can walk or can feed himself. (Rizvi, 1979)

DIARRHEA—TREATMENT: Diarrhea, being a "hot" disease, requires avoiding hot foods, such as milk, and consumption of cool foods, such as barley. If a child is on a diet of liquids (e.g., all children up to at least 12 months), he will be given only barley water with sugar. (Rizvi, 1979)

WORMS—CAUSES: Worms are believed to be caused by faulty eating habits, including eating fish, sweet foods, bananas, and very spicy hot food. (Rizvi, 1979)

WORMS—TREATMENT: Although traditional remedies for worms, including juices from pineapple leaves and certain wild greens, are used, the preferred treatment is approved methods of western medicine. (Rizvi, 1979)

RURAL

BLOOD SAMPLES: Women refused to give blood samples for testing because they believed that the blood was made from eating fish and milk, which they did not get much of. Anemia is known as "lack of blood." One woman believed that a blood test was needed only after childbirth. (Rizvi, 1979)

ATTITUDE TOWARDS GOVERNMENT HEALTH CARE: Many persons who were severely affected by parasites avoided the government health center because of the lack of attention and impersonal nature of the care provided. (Rizvi, 1979)

3. DIETARY PRACTICES

3.1 DIETARY PRACTICES, GENERAL

NATIONAL

BASIC DIET: Rice was the preferred food; about 600 grams per person were consumed per day, in three meals, if supplies permitted. It was usually cooked together with vegetable curry based on potatoes or beans, or with lentils. Wheat cakes were also eaten, and eggs and fish (of large varieties) when available. Meat (mutton, goat, and poultry) was rarely eaten. Oils were from mustard and soy. Shellfish and preserved meats were not eaten. Moslem and Hindu religious restrictions were strictly respected. (Licross, 1979)

BASIC DIET: Cereals form the basis of the diet, making up 68% of the total intake. Vegetables make up 16%; roots, 5%; pulses, 3%; fish, 2% (including 13% of intake of children age 1 to 3 years); and sweets, fruits, meats, and fats, 1% each or less, with the exception that milk made up 6% of the diets of pregnant and lactating women, and fish made up 4% of the diets of men aged 50 to 59 years and 8% of the diets of women aged 70 or over. These exceptions represent cultural recognition of the status of the favored individuals relative to the rest of the household. (Women for Women, 1979)

BASIC DIET: The Bangali diet is 75-80% rice; the balance is made up of fish, vegetables, greems, dal (legumes), and milk. (Rizvi, 1979)

DECREASING FOOD INTAKE: Comparison of food intake surveys of 1962-64 and of 1975-76 shows that average food intake decreased by 4%; in particular, animal food intake dropped 23%, wheat and sweet potatoes by 22%, pulses by 15%, and fish by 32%. (Women for Women, 1979)

RICE: Rice is the major household food resource. It accounts for 80% of the calories and 70% of dietary protein consumption. (Rizvi, 1981)

RICE PREPARATION: Rice is usually prepared by boiling. In northern Bangladesh, it is cooked until all the water has been absorbed. In most other parts of Bangladesh, excess cooking water is discarded. Rice is also used in preparing khichuri, a rice and lentil mixture made of rice cooked in milk (kheer), lentils, gur, and coconut. When rice is in short supply, it is also prepared as gruel (jau). sometimes boiling water and rice are combined in a pot and left near the stove to ferment for several days before being cooked for eating. (Rizvi, 1981)

RICE PREPARATION: Most rice is parboiled before being dehusked. Rice which has not been parboiled is considered lacking in strength and energy-giving properties. Indeed, parboiled rice is richer in vitamin B, particularly thiamin, but much of the effect is attributable to attitudes. (Rizvi, 1979)

RICE DISHES: In addition to plain boiling, rice was used in "Khichuri," a rice and lentil mixture flavored with coconut; "Kheer," rice cooked in milk, followed with gur and coconut; and "Jau," gruel, if the supply was limited. (Rizvi, 1981)

3.1 DIETARY PRACTICES, GENERAL (Cont.)

FERMENTED RICE: A large spoonful of boiling rice may be put in a separate pot, kept near the stove for several days for fermentation, then cooked for eating. (Rizvi, 1981)

RICE LOSSES: Because rice is harvested during the monsoon season, it is difficult or impossible to dry it properly and post-harvest losses are high. Increased production will not benefit the farmers if the crop cannot be preserved. (Hossain, 1980)

WHEAT: Wheat is an alternative staple, cheaper than rice because it is both received as aid and is bought by the government at a subsidized rate to meet periodic shortages of rice. Nevertheless, wheat is not accepted as a basic staple; day laborers paid in wheat will sell it and buy rice. (Rizvi, 1979)

OTHER FOODS: Foods such as lentils, greens, and vegetables are served as side-dishes. Fish is the major source of animal protein. Its availability is determined by the purchasing power of the family and seasonal fishing. (Rizvi, 1981)

SIDE DISHES: Side dishes are prepared with a variety of ground spices, and vegetables that have been cut and washed. These dishes are usually hot. In one instance, the sauce was prepared from discarded rice water mixed with onion, turmeric, and vegetables. (Rizvi, 1981)

DALS: Several varieties of dals (lentils) are consumed regularly, but per capita consumption has been decreasing because the price has been increasing. The price of dal increased ten times or more during the 1970s. (Rizvi, 1979)

VITAMIN A SOURCES: Commonly consumed vegetables high in vitamin A include leaves of the sajina, or drumstick (known in the Philippines as the malanguay), taro (Colocasia), and amaranthus (Lal sak). (Ahmad, 1979)

VEGETABLES: Although over 60 types of tropical and temperate vegetables were grown, per capita consumption of vegetables was one of the world's lowest, about 26 grams per capita daily, not including potatoes and sweet potatoes. (Rashid, 1980)

EUROPEAN VEGETABLES: There has been a trend to growing European vegetables during the winter months on land which otherwise would lie fallow. Cauliflower, radishes, and tomatoes are well established, and carrots and broccoli are spreading. (Clark, n.d.)

VEGETABLES: Few vegetables were available during the months of April, May, September, and October; what was available was of poor quality. (Rashid, 1980)

DRIED VEGETABLES: Drying of cauliflower, tomato puree, and carrots was shown to be feasible with simple technology, and the resulting products were acceptable to four testers: two housewives, a teacher, and a nurse. (Clark, n.d.)

SWEET POTATOES: Sweet potatoes were grown on 174,000 acres of land; annual production was 7.43 lakh tons. All the varieties currently grown were white-fleshed and therefore low in carotene (vitamin A). (Rashid, 1980)

FRUITS: Important quick-growing fruits included banana, papaya, pineapple, and melons. Bananas alone accounted for 42% of fruit production, and the latter three for another 15%. (Haque, 1980)

MAIZE: Maize was consumed mostly as green cobs, with 2% being used as flour, often added as an adulterant to wheat flour, which was more expensive. Consumption was very low, although some tribal people in the hill tracts of Chittagong and upper Mymensingh consume it relatively frequently. (Khan, n.d.)

ANIMAL PROTEIN: Access to animal protein, mostly fish, depended on purchasing power and occasionally on fishing. (Rizvi, 1981)

FOOD COSTS: The Institute of Nutrition in Dhaka has designed a model diet for the poor, but it would cost more than the entire income of the average family. (Rizvi, 1979)

MEALS: In a typical home, food is prepared twice a day, in the late morning and early evening, or early noon and evening. One meal—usually the late morning or noon meal—is obtained from the previous cooking. (Rizvi, 1981)

MEAL PATTERNS: The family meal had two sittings—one for children and adult males and the other for females and very young children who need their attention. The youngest children, age 6 to 18 months, did not participate in the family meal. (Rizvi, 1981)

MEAL PATTERNS: Traditionally, wives are expected to eat the residual food left by husbands on their plates. It is believed that eating the husband's leftovers gives higher longevity and ensures well-being of the husband. In a household, male members, including sons, eat first, and female members afterwards. (Women for Women, 1979)

WOMEN EAT LAST: Women eat meals only after serving the best of what is available to their husbands and children, especially boys. There is usually little protein-rich food left for them. (Women for Women, 1979)

PURDAH: The custom of purdah, or seclusion of women, is carried out to varying degrees, depending on social class and income. In the Hill Tracts and among the most destitute, the women must work out of doors, but the ideal is for women to make their contributions as inconspicuously as possible. Rural women from richer households who have a minimum of educational background are allowed some mobility and are most able to participate in community development, health, and nutrition activities. (Women for Women, 1979)

FOOD PRESERVATION: Sun drying was widely used to preserve fish, grain, lentils, and some vegetables. Pickling and curing by other chemical means were not practiced. Canning and freezing, the remaining means of

3.1 DIETARY PRACTICES, GENERAL (Cont.)

preserving foods, were economically and technologically not feasible on a large scale. (Clark, n.d.)

FOOD PREPARATION: Food preparation and feeding in Bangladesh is done by mothers, assisted by pre-teen or teen-age daughters. The girls do most of the cutting and washing and assist their mothers in serving the food. (Rizvi, 1981)

FOOD PREPARATION CONSTRAINTS—WATER: Scarcity of water is one of the two major constraints that women face in food preparation. The limited amount of water available for washing food and utensils increases the likelihood of bacterial contamination. Women sometimes prefer to use nearby surface water rather than water from hand pumps because of the distances involved in obtaining it, as well as its taste of iron. (Rizvi, 1981)

FOOD PREPARATION CONSTRAINTS—FUEL: Food preparation was constrained by lack of fuel and water. In homes where there were no young children to gather twigs and sticks, collection of fuel became too difficult because young wives were not allowed to go too far from the house. Because of the high price of fuel, women conserved by reducing the frequency of cooking. Rice husks may supplement fuel resources during the harvest season. (Rizvi, 1981)

FOOD PREPARATION: Food was prepared twice a day, either in the late morning and early evening, or early noon and evening. One meal, either for the late morning or noon meal, was used from the previous cooking. (Rizvi, 1981)

FOOD PREPARATION—HYGIENE: Sweeping floors before each meal and bathing before the noon meal were important rituals, performed regularly, but careful washing of utensils or hands was less important. (Rizvi, 1981)

CURRY PREPARATION: Cooking curry, a side dish, required grinding spices and cutting and washing vegetables. Curry was served with rice and a gravy which was usually spicy hot. The gravy may have been made with discarded rice water, onion, turmeric, and vegetables. (Rizvi, 1981)

FOOD PRODUCTION: During 1961-70 per capita food production increased 0.2%; in 1970-75, it increased 0.7%. (FAO, 1977)

AGRICULTURAL PRODUCTS: Bangladesh is a predominantly agricultural country. It is the world's third largest producer of rice. However, because of its large population, it is also heavily dependent on imported food. Other major crops are jute, tea, and tobacco. (JGUAG, 1980)

AGRICULTURAL PRODUCTION: Over 1970-77, agricultural production increased an average of 1.0 to 1.9% per year. (FAO, 1979)

AGRICULTURAL EMPLOYMENT: Agriculture employs 75% of the national workforce in rural areas. Non-agricultural employment is extremely low. (JGUAG, 1980)

AGRICULTURAL EMPLOYMENT: 74% of the labor force was working in agriculture in 1979, as were 87% in 1960. (World Bank, 1981)

LANDLESSNESS: About 51% of the rural population (8.5 million households, 35 million persons) are landless; 16% of the population holds 52% of the land, and the remaining 84% hold only 48%. (JGUAG, 1980)

FOOD SUPPLY: Per capita food supply had not increased since 1975. (UNICEF, 1980)

FOOD SUPPLY: In 1973-74, 94% of the rural population had access to less than 2100 calories per day and less than 45 gm. protein per day. (UNICEF, 1980)

NUTRIENT INTAKES: The average per person intakes for the population as a whole, according to the 1975-76 National Nutrition Survey, were: 2029 calories (90% of requirement), 56.8 gm. protein (125%), 296 mg. calcium (66%), 22.2 mg. iron (292%), 714 I.U. vitamin A (35%), 1.61 mg. thiamin (179%), 0.85 mg. riboflavin (63%), 21.50 mg. niacin (145%), and 9.03 mg. vitamin C (35%). (Women for Women, 1979)

DECREASING CALORIE INTAKE: Between the intake survey of 1962-62 and that of 1975-76, per capita calorie consumption dropped by 7%; the intake of the poor is now 1,720 per day, although the FAO recommended level is 2,150. 59% of households have deficient calorie intakes. (Women for Women, 1979)

CALORIE SUPPLY: The calorie supply in 1977 was 78% of that needed to meet FAO estimated requirements. (World Bank, 1981)

CALORIE AND PROTEIN SUPPLIES: In 1972-74, per capita supplies averaged 1949 calories (84% of requirement) and 43 grams of protein. 38% of the population (27,026,000) had calorie intakes below the critical limit. (FAO, 1977)

CALORIE AND PROTEIN INTAKES: Calorie intake was 93% of total requirement in 1975. Per capita protein intake was 58.5 grams. (World Bank, 1979)

DEFICIENT PROTEIN INTAKE: Only 70% of households are able to meet their protein needs; the average intake per person per day is 48 grams, but the FAO recommends 61.5 grams. (Women for Women, 1979)

DEFICIENT INTAKES: Average vitamin A intake is extremely low--730 I.U. per person per day. 89% of households are deficient. Riboflavin intake has increased in the past decade, but 85% of households are deficient. Vitamin C intake, also very low at an average of 9.5 mg., is deficient in 93 % of households. (Women for Women, 1979)

RURAL

SEASONALITY: Lean periods occur during September and October, a time of post-monsoon floods, during which the main deep-water rice crop is maturing as the floods withdraw or fall. During this time, people tend to be isolated, inactive, and ill as well as short of food. The demand

3.1 DIETARY PRACTICES, GENERAL (Cont.)

for labor is low and food prices are high, aggravating the hunger and sickness. (Chambers et al., 1979)

FOOD STOCKS AND LANDOWNING STATUS: Monthly food stocks for landowning and landless households both display bimodal peaks, but there are striking differences in the quantities of food. Landowning families reached a high of 13 maunds (1 maund approximately equals 38 kg.) after the aman harvest. The amount fell to below two maunds in October, but remained consistently higher than the stock position of the landless households except in October. (Chen et al., 1979)

SEASONAL MALNUTRITION--SULLA: Undernutrition and malnutrition were particularly noticeable in the Sulla project area prior to the harvesting of the boro, the only rice crop in much of the area. (Ahmed, 1977b)

SEASONALITY--MATLAB: Monthly surveys of food stocks in households show a bimodal pattern, peaking in May and December. The period of greatest scarcity appears to extend from August through October, when rice prices are highest, household food stocks are lowest, and demand for agricultural labor weakest. (Chen et al., 1979)

AGRICULTURE--MATLAB: Most of the agricultural work related to crops other than the monsoon aman rice crop, namely other rice crops, millet, wheat, jute, tubers, and vegetables, takes place during the second half of the monsoon season and in the immediate post-monsoon periods. (Chen et al., 1979)

RICE PRODUCTION--MATLAB: The monsoon aman rice crop accounts for nearly three fourths of the cereal production in Matlab thana. Land preparation, plowing, and broadcast planting work take place primarily from February through April. The harvest work is concentrated in November and December. (Chen et al., 1979)

FOODS EATEN: Rice was eaten in all households at least 14 times per week. Vegetables were eaten 7 times per week by half the households, and at least 4 times per week by the rest. Shag (green leafy vegetables) were eaten 7 times per week by 28%, and 4 times by 72%. Wheat was consumed 7 times by 24% of households, but seldom by most others. Milk was used seldom by half the households, twice a week by 24% and 7 times by 20%. Fish was eaten 2 to 4 times per week by 80%; dals 2 to 4 times per week by 88%. Beef, chicken, mutton, and eggs were eaten seldom. (Rizvi, 1979)

BASIC CROPS: Various types of rice, depending on the season, are the major crop; IRRI rice was introduced about 9 years ago. Other crops include pulses, mustard and jute, mangoes, jackfruit, and wild and cultivated tropical greens and vegetables. Fish are caught in the many rivers. (Rizvi, 1979)

RICE: Rice accounted for 80% of the calories and 70% of the protein consumption in the rural areas. (Rizvi, 1981)

HIGH-YIELDING RICE: Rice of high-yielding varieties (HYV or IRRI) was introduced in 1972. It displaced the traditional multiple cropping of

various types of rice depending on the seasons with a monoculture. Pulse production declined, reducing intake of this major protein source. The application of chemical fertilizers and insecticides also reduced the fish supply. (Rizvi, 1979)

LEGUMES: Lentils and khesari were the most commonly consumed legumes. Black gram, Bengal gram, and green gram were also used. Legumes of some types were consumed daily by 38.3% of households and by 31.6% of "community influentials"; 3-4 times per week by 21.4% and 46.4% respectively; and 1-2 times per week by 26.7% and 17.2% respectively. (Vemury, 1980)

ANIMAL PRODUCTS: The most commonly consumed animal foods were fish and shellfish (consumed by 91.4% of households), poultry, eggs, beef, lamb, and goat. Rarely or never consumed were dairy products, pork, camel, horse, and dog. "Community influentials" used eggs twice as often as other women. (Vemury, 1980)

FISH: More than 60% of respondents ate fish every day. (Vemury, 1980)

MILK: Milk is used in 73% of households, primarily in tea or coffee. (Vemury, 1980)

VEGETABLES: The most commonly consumed vegetables are brinjal (eggplant), radish, cucumber, gourds, pumpkin, beans, and green leafy vegetables. Rarely or never used are onion, garlic, green and yellow vegetables, and green or chili peppers. Most households have some vegetables daily. (Vemury, 1980)

FRUITS: Most commonly consumed fruits were bananas, mango, papaya, jackfruit, and guava. Rarely or never consumed were citrus fruits, peaches, apples, apricots, melon, and dates. Fruits are consumed daily by over half the households. (Vemury, 1980)

STARCHY ROOTS AND VEGETABLES: Starchy roots and vegetables were consumed daily by 49.3% of mothers and 47.4% of "community influentials"; 3-4 times per week by 20.9% and 46.9% respectively, and 1-2 times per week by 20.7% and 5.7%, respectively. (Vemury, 1980)

STARCHY ROOTS AND VEGETABLES: Potatoes were the root most commonly used by 77.4% of mothers and by 69.9% of "community influentials," and the second most common by 10.7% and 19.1%, respectively. Sweet potatoes were most common for 6.7% and 17.7%, and second most common for 29.3% and 32.1%. Arum (similar to cassava) was most common for 13.7% and 11.0%, and second for 45.0% of both groups. (Vemury, 1980)

FATS AND OILS: Mustard oil was used by over 90% of households. (Vemury, 1980)

MEALS: The major meal of the day, in the afternoon, is always freshly prepared; it includes boiled rice, and subsidiary dishes of fish, vegetables, or dal. Dinner is made up of leftovers from lunch. Breakfast in low-income households is rice left over from the previous day; the elite have hot rice with vegetables or dal. Food is prepared

3.1 DIETARY PRACTICES, GENERAL (Cont.)

once a day to save on fuel (firewood, dry twigs, and leaves). (Rizvi, 1979)

MEALS: Half of the households ate their meals together; of the remainder, half had male adults eating separately from women and children, and the remainder had other combinations of age and sex. Over 85% ate from separate plates rather than from a common pot. 82% of households ate three meals daily; 10.6% ate two meals. (Vemury, 1980)

MEAL PREFERENCE: Men are often given first choice of a meal, but others may be given the choicest portions, including the father-in-law (11.9% of households), mother-in-law (7.6%), and older male child (6.0%). (Vemury, 1980)

MEAL PATTERNS: A household most often consists of a man and his wife, children and in-laws; the children are dependent on the agricultural subsistence of the father, and do not establish households of their own until he dies and they inherit his land. (Women for Women, 1979)

INTRAHOUSEHOLD FOOD DISTRIBUTION—WOMEN: In an extended household where a young mother was in charge of food distribution, she would serve herself last; in extended households where the mother-in-law was in charge of distribution, the young mother was found to receive a larger share of subsidiary (non-rice) foods. (Rizvi, 1979)

INTRAHOUSEHOLD FOOD DISTRIBUTION--CHILDREN: Mothers are in charge of allocating food to young children, and do not distinguish between boys and girls. After that age, girls are taught to be patient and not to demand a larger share of anything. The disparity between girls' and boys' shares increases with age; a mother will get as little a share as her child, or less, while the father may get four times that amount. (Rizvi, 1979)

SNACKS: 30.0% of households consumed snacks; in 13.5%, 3 or 4 snacks were eaten daily. 22.4% of children received at least one snack per day. (Vemury, 1980)

FOOD EXPENDITURES: Among the households surveyed, the low-income households spent 99.43% of their income on food, and the high-income, 41.00%. Most of the low-income families were landless, and the higher income had land on which to grow some of their food. (Rizvi, 1979)

ACCESS TO FOOD: Landowning households grow their own rice and dal, but the many landless laborers cannot, although some vegetables are grown beside the house. For most of their food, the landless must depend on local markets, and whatever they offer. (Rizvi, 1979)

FOOD PRODUCTION: Most households grew their own vegetables, but few raised animals. Two-thirds grew rice. (Vemury, 1980)

FOOD PURCHASES: Nearly half the households studied marketed daily, apparently because of inadequate storage facilities and because laborers are paid daily. Food purchasing decisions were shared equally by husbands and wives. (Vemury, 1980)

FOOD PREFERENCES: 72.7% of households and 98.4% of "community influentials," said they would avoid some food if given a choice. Most commonly mentioned were wheat and bread (12.7%), khesari (13.0%), gourd (7.9%), green vegetables (6.6%), and fish and sea food (14.4%). (Vemury, 1980)

FOOD PREFERENCES: Milk, eggs, and fish were the types of foods most commonly preferred by households. The most common reasons given were good taste and good for health; prestige and ease of preparation were also cited. (Vemury, 1980)

FUEL: Fuel is scarce and expensive, so it constitutes a constraint on food consumption and expenditure for the poor. (Rizvi, 1979)

FOOD STORAGE: 85% of households stored dry staples, usually in pottery containers, sacks, and tin boxes; 60% stored perishables, primarily vegetables, usually in bamboo containers or buckets; 67% stored cooked food (leftovers), usually in cooking vessels, gourds, pottery, or jars; and 56.7% stored preserved foods, such as salted foods, usually in pottery containers. (Vemury, 1980)

FOOD PREPARATION: In most households, food was cooked two or three times daily. Bread was prepared daily in most households. (Vemury, 1980)

FOOD PREPARATION: 82.5% of women said they refrained from cooking during menstruation, saying they were unclean, that they needed more rest, or because of custom or the advice of elders. (Vemury, 1980)

RELIGIOUS FASTING: 91.5% of households and 64.3% of "community influentials," reported restricting foods for religious events. 89.1% and 60.8%, respectively, skipped complete meals. 70.1% and 11.0%, respectively, fasted once a year; 19.5% and 52.7% fasted weekly. (Vemury, 1980)

URBAN

FOODS USED: In Dhaka, all households ate rice for the two major meals of the day; rice was also the prevalent breakfast food in low-income households. 83% of households seldom used any meat, and 39% used fish twice a week or less. High-income households often used eggs daily, but low-income households, rarely. 75% of households seldom used milk. Dal was used every day by half the low-income households and three-fourths of the high-income. 77% of households used shag (green leafy vegetables) twice a week. Half the households used wheat daily. (Rizvi, 1979)

FOOD EXPENDITURES: Among households sampled, low income households spent 78% of their income on food, and high-income, 44%. (Rizvi, 1979)

DIETARY DIVERSITY: The wealthy in urban areas had varied diets, but the urban poor did not have diets which reflected the variety of foods theoretically available in urban areas. (Rizvi, 1979)

3.2 DIETARY PRACTICES, WOMEN

3.2.1 DIETARY PRACTICES, WOMEN, DURING PREGNANCY

NATIONAL

FOOD INTAKE: Most women eat more during pregnancy. Not only are there very few restrictions on what they may eat, cultural prescriptions call for satisfying any specific food cravings, feeding the expectant mother to keep her well. In addition, the rule that food intake should be restricted in order to limit the size of the baby is seldom observed at any income level. (Rizvi, 1979)

CALORIE AND PROTEIN DEFICIT: Estimated protein intake of pregnant women in the National Nutrition Survey was 65.9 grams per day; the requirement is 88.7 grams. Similarly, the calorie intake was 2340 per day, and the requirement, 2469. (JGUAG, 1980)

OBSERVANCE OF FOOD PROSCRIPTIONS: Although ideal, or normative, food behavior is generally agreed upon, actual practice may vary. Rural women and low-income urban mothers are most likely to observe restrictions on eating lentils, meats, and greens. The rural poor mothers were the least likely to observe the proscription against eating rice during the first two days postpartum. (Rizvi, 1979)

EFFECTS OF INCOME AND RESTRICTIONS: Although wealthy women can follow the prescriptions to eat more "blood-producing" foods (which are high in protein) and "strength-giving" foods, poor women cannot afford special foods. They are more likely to compensate by following more strictly the proscriptions against many foods following delivery. The poor mothers reason that if they cannot eat the foods which offer energy, it is all the more important to avoid foods considered harmful. (Rizvi, 1979)

NUTRIENT INTAKES: According to the National Nutrition Survey of 1975-76, the average intake of pregnant women was: 2340 calories (103% of requirement), 65.9 gm. protein (127%), 247 mg. calcium (24%), 23.4 mg. iron (104%), 873 I.U. vitamin A (35%), 1.89 mg. thiamin (236%), 0195 mg. riboflavin (79%), 25.36 mg. niacin (165%), and 8.81 mg. vitamin C (30%). (Women for Women, 1979)

RURAL

MEAL PREFERENCE: Pregnant women were given first preference at family meals in 28.9% of households. (Vemury, 1980)

RELIGIOUS RESTRICTIONS ON INTAKE: 91.5% of households reported restricting foods for religious reasons; 2.6% reported that pregnant women were exempt from these restrictions. (Vemury, 1980)

RESTRICTED INTAKE: Pregnant women are advised to eat moderately so that the baby does not grow too large and make the delivery too difficult. (Bhatia et al., 1979)

PROTEIN FOODS: Many protein foods are forbidden during pregnancy, but most of them are not available to the pregnant woman regardless, for economic reasons. The exception is fish; by forbidding so many types of fish, women are deprived of the one potential high-protein food which they might otherwise have eaten. (Bhatia et al., 1979)

POSTPARTUM FOODS: Food offered to the mother immediately postpartum include rice grains with powdered cumin seeds, puffed rice, honey, chappati, and hot rice with cumin seed powder. (Bhatia et al., 1979)

BREAST FEEDING AND PREGNANCY: Of the breast feeding women who became pregnant, over 50% continued to breast feed through the sixth month of pregnancy. (Huffman et al., 1980a)

3.2.2 DIETARY PRACTICES, WOMEN, DURING LACTATION

NATIONAL

CALORIE AND PROTEIN DEFICIT: The average daily protein intake of lactating women in the National Nutrition Survey was 68.2 grams; the requirement is 88.7 grams. Calorie intake averaged 2447 per day, although the requirement is 2734 per day. (JGUAG, 1980)

NUTRIENT INTAKE: The average lactating woman's intake, according to the 1975-76 National Nutrition Survey, was 2447 calories (97% of requirement), 68.2 gm. protein (96%), 330 mg. calcium (%), 26.5 mg. iron (89%), 933 I.U. vitamin A (235%), 1.98 mg. thiamin (244%), 1.03 mg. riboflavin (84%), 26.40 mg. niacin (158%), and 11.91 mg. vitamin C (40%). (Women for Women, 1979)

RURAL

MEAL PREFERENCE: Lactating women were given first preference at family meals in 20.9% of households surveyed, but in only 7.7% of the households of "community influentials." (Vemury, 1980)

RELIGIOUS RESTRICTIONS: 91.5% of households (64.3% of "community influentials") restricted foods for religious reasons. 5.1% (5.3%) exempted lactating women from these restrictions. (Vemury, 1980)

POSTPARTUM DIET: On the fifth day postpartum, the mother is given a meal of five foods: chicken or fish curry, brinjal chutney, fried banana, pulses, and eggs. It is believed that this may bring the child the blessings of a choice of five or more dishes all its life. (Bhatia et al., 1979)

PREVALENCE OF BREAST FEEDING: Of the mothers surveyed, 99.9% had breast fed. (Vemury, 1980)

3.3 DIETARY PRACTICES, INFANTS 0-24 MONTHS

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

NATIONAL

PREVALENCE: Ninety-eight percent of women interviewed breast fed. About three fourths reported breast feeding for two or more years. There was no significant difference between different age group mothers in duration of breast feeding, nor between educational or religious groups. (International Statistical Institute, 1979)

INITIATION OF BREAST FEEDING: Most mothers (86%) began breast feeding on the third day postpartum. The delay was due to the belief that colostrum, not being milk, is not a fit food to give the baby. (Rizvi, 1979)

DURATION: Most infants are breast fed for at least two full years. The average duration was 31 months in the rural sample, and 23 months in the urban. (Rizvi, 1979)

DURATION: Infants were traditionally breast fed until 2 years of age. (Quader, 1979)

DURATION: Urban women tend to breast feed for slightly shorter durations on the average than rural women. (International Statistical Institute, 1979)

REASONS FOR NOT BREAST FEEDING: Among 16 mothers who had never breast fed, reasons given included mother's illness (10 mothers), baby's illness (2), insufficient milk, "milk does not suit," lack of mother's time, and "baby habituated with feeder bottle" (1 each). (Kabir, 1982)

REASONS FOR DISCONTINUING: Among 107 mothers who had ceased breast feeding their most recent child, reasons included illness of mother or child, 26%; next child born, 11%; insufficient breast milk, 25%; baby "grown up," 28%; baby dislikes milk, or milk not suited to baby, 5%; mother does not want to breast feed, or has no time, 3%; and baby dependent on feeder or other food, 2%. (Kabir, 1982)

RURAL

INITIATION: Regular breast feeding does not begin until the third day postpartum. Until then, the child is given honey mixed with mustard oil and occasionally warm water. (Bhatia et al., 1979)

INCIDENCE: Among 471 mothers, 469 had at least initiated breast feeding with their infants. (Kabir, 1982)

PREVALENCE: In rural areas, traditionally infants are breast fed exclusively from birth until age 6 to 8 months, when other foods are introduced. (Quader, 1979)

PREVALENCE: 98% of mothers with live infants were still breast feeding them at age one year; 91% were still breast feeding at two years; and over 75% at 2 1/2 years. (Huffman et al., 1980a)

FOODS FOR NEWBORNS: In 95.5% of households, foods were given to newborns. They included honey (76.7%); sugar water (10.0%); fats and oils, usually mustard oil; warm water; and milk. (Vemury, 1980)

FREQUENCY OF FEEDINGS: For both treatment and control groups in the diarrhea study, the mean frequency of breast feeding was 11 episodes over a 24-hour period. (Hoyle et al., 1980)

BREAST MILK INTAKE: There was no difference in caloric intake from breast milk between healthy children and ill children, and between diarrhea groups with and without dietary education. The difference was that breast milk contributed 41% of all calories for healthy children, and 62% and 81% respectively for all children with diarrhea, who received fewer calories from other foods. (Hoyle et al., 1980)

BREAST FEEDING AND LANDOWNING STATUS: Landless mothers in the study weighed less, but spent more time breast feeding than landowning mothers. The numbers, however, are too limited for definite conclusions. (Chen et al., 1979)

DURATION: Breast feeding is usually prolonged, generally until the next pregnancy. One study of 200 mothers found that only 4 terminated lactation spontaneously, in the absence of another pregnancy, and this was done when the children were 3 1/2 to 4 years old. (Bhatia et al., 1979)

DURATION: Among rural mothers, 99.58% initiated breast feeding and continued for at least 6 months; 98.73% breast fed for 1 to 1 1/2 years; 94.27%, 1 1/2 to 2 years; 79.41%, 2 to 2 1/2 years; 38.85%, 2 1/2 to 3 years; and 11.25%, over 3 years. (Kabir, 1982)

DURATION: The mean duration of breast feeding was 28 months. (Kabir, 1982)

DURATION: All mothers breast fed their infants at birth; 98% at 12 months; 85% at 2 years; 58% at 3 years; 10% up to 4 years; and 5% up to 5 years. (Khan, 1980)

REASONS FOR WEANING: The main reason for stopping breast feeding in the first year of life was infant death; in the second year, the main reason given was pregnancy. Insufficient milk was given as the reason by 18% of the women who stopped for reasons other than infant death; among these women, almost 60% were pregnant at the time they stopped. (Huffman et al., 1980a)

URBAN

INCIDENCE: Among 150 mothers interviewed, 89% had breast fed; 11% had not initiated breast feeding. (Kabir, 1982)

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

DURATION: The mean duration of breast feeding among 150 mothers interviewed was 17 months. The mean duration among mothers with no education was 29 months; primary education, 16 months; secondary education, 19 months; and above secondary, 12 months. (Kabir, 1982)

DURATION: Among urban mothers, 70% had breast fed for at least 6 months to one year; 58% for 1 to 1 1/2 years; 45%, 1 1/2 to 2 years; 24%, 2 to 2 1/2 years, 22%, 2 1/2 to 3 years; and 7% for over 3 years. (Kabir, 1982)

DURATION: Breast feeding among urban women tended to last a shorter time than among rural women. (International Statistical Institute, 1975)

DURATION: In a population of 500 poor urban infants, 221 ceased breast feeding at 0-6 months, 177 ceased at 6 months-1 year, and the rest ceased after 1 year. (Quader, 1979)

DURATION: Among 500 cases at Dhaka Children's Hospital, all were breast fed at birth. 44% were weaned from the breast before 6 months of age, 35% at 6 to 12 months, and 20% after 12 months. (Quader, 1979)

DURATION: Among urban low-income women, 98% breast fed their infants at birth; 90% for one year; 63% for 2 years; 15% for 3 years; and 1% for 4 years. Among urban elite women, only 78% breast fed at birth; 25% for one year, 4% for 2 years, and none after 30 months. (Khan, 1980)

DURATION: Half the urban low-income children were breast fed for at least 24 months, but only 25% of the children of high-income mothers were breast fed that long. All the mothers with little education breast fed for at least 24 months, but all of the mothers with a high level of education weaned before 12 months. (Rizvi, 1979)

3.3.2 DIETARY PRACTICES, INFANT 0-24 MONTHS, WEANING

NATIONAL

LATE INTRODUCTION OF SOLIDS: Solids are introduced late, often not until well into the second year, because foods will not be introduced until the child has reached certain levels of physical development, e.g., milk teeth or naming foods. (Rizvi, 1981)

FIRST FOOD: The first food given is usually rice. The mean age at introduction of rice was 15 months in both the rural and urban samples. One child in the sample was reportedly not given rice until the age of 42 months. (Rizvi, 1979)

INTRODUCTION OF RICE: By 3 months of age, 3% of babies were being given rice; by 9 months, 17%; 15 months, 33%; 21 months, 54%; 27 months, 83%; 33 months, 90%; and 39 months, 92%. Most babies not given rice were said to dislike it. (Kabir, 1982)

INADEQUATE INTAKE: The requirements for children age 9 to 11 months are about 1000 calories per day and 20 grams of protein. Children at this age usually receive only breast milk, with an average of 20 grams of rice. Declining breast milk production by undernourished mothers and

inadequate supplementation lead to severely inadequate intakes of both calories and protein. (Rizvi, 1979)

MEALS: Young children, age 6 to 18 months, do not participate in the family meals. (Rizvi, 1981)

NUTRIENT INTAKES: According to the National Nutrition Survey of 1975-76, the average intake of children aged 1 to 3 years was 630 calories (46% of requirement), 18.1 grams protein (68%), 127 mg. calcium (32%), 7.6 mg. iron (101%), 253 I.U. vitamin A (30%), 0.50 mg. thiamin (93%), 0.31 mg. riboflavin (38%), 6.40 mg. niacin (71%), and 2.53 mg. vitamin C (13%)> (Women for Women, 1979)

RURAL

WEANING METHODS: 36% of mothers weaned by introducing new foods gradually; 36% by applying bitter substances to the breast; 11% by introducing new foods abruptly; and the remainder by other methods. (Vemury, 1980)

REASONS FOR WEANING: In practice, mothers' reasons for weaning included: new pregnancy, 60%; Muslim teaching (that children should be breast fed for two years), 10%; other reasons, 1%; and not known, 8%. (Vemury, 1980)

SUPPLEMENTAL MILK: 3% of rural mothers gave supplemental cow's milk from birth; a maximum of 26% of rural children were given any cow's milk between the ages of 1 and 24 months; none was given after 4 years. (Khan, 1980)

LATE SUPPLEMENTATION: Supplementary foods are usually not given before the child is 10 to 11 months old. The food given then is usually a thin gruel of rice. (Bhatia et al., 1979)

SUPPLEMENTARY FEEDING: The mean age at introduction of foods other than breast milk was 3.3 months (standard deviation 2.67 months). (Rizvi, 1979)

AGE AT INTRODUCTION OF FOODS: The average age at introduction of foods was 7.14 months. 28% of infants received foods before three months of age, 32% at 4 to 6 months, 12% at 7 to 9 months, 14% at 10 to 12 months, 6% at 13 to 24 months, 1.5% at 25 to 36 months, and 1% not known. (Vemury, 1980)

SUPPLEMENTAL RICE: At the age of 3 months, 11% of rural children had been given liquid or semiliquid rice or wheat preparations; this increased to 15% at 6 months and 25% at 10 months. (Khan, 1980)

FIRST FOOD: The first food given, rice was introduced to most children after 1 year of age in all income categories. (Rizvi, 1979)

WEANING FOOD; Locally prepared weaning food typically contained the following ingredients: rice, dal (musor), pumpkin, sucrose (sugar), oil, and water. (Hoyle et al., 1980)

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

SUPPLEMENTAL FOOD INTAKE: The lower overall caloric intake among children with diarrhea was due to reduced consumption of supplemental foods. Healthy control group children consumed 86.3 cal/kg. of supplemental foods in comparison to 33.3 cal/kg for diarrhea children without education, and 12.3 cal/kg for diarrhea children whose mothers had received intensive health education. Fluid caloric intake constituted a significant part of total consumption. However, even when fluid consumption was added to supplemental foods, children with diarrhea still consumed significantly less than healthy children. (Hoyle et al., 1980)

BANANA: In poor rural areas where mothers cannot afford animal milks, infants were fed on the cheaper varieties of banana, with the seeds removed. (Haque, 1980)

VEGETABLES: Before 15 months of age, none of the rural children had been given vegetables; by age 2 years, 59% had received them, and it was not until age 5 years that all children had eaten them. (Khan, 1980)

FISH, MEAT, AND EGGS: Fish, meat, and eggs are rarely given to young children. By the age of 1 year, only 1% of the children had been given any of them, although this increased to 99% by age 4.5 years. (Khan, 1980)

ADULT DIET: The adult diet was given to 4% of rural children at 9 months, 19% at one year, and all children by 27 months. (Khan, 1980)

ADULT FOODS: The average age at introduction to adult foods is 25 months. 27% of children receive adult foods before 12 months, 33% at 13 to 24 months, 31% at 25 to 36 months, and the remainder, later or not known. (Vemury, 1980)

URBAN

BOTTLE FEEDING: In urban areas the bottle is fast replacing the breast with deleterious results for the infants due to poor environmental sanitation. Mothers were abandoning breast feeding efforts due to: propaganda encouraging use of prepared formulas, onset of gastroenteritis in infants, and "drying up of mother's milk." (Quader, 1979)

SUPPLEMENTARY FEEDING: The mean age at introduction of foods (usually liquids) other than breast milk was 3.82 months (standard deviation 4.05 months). (Rizvi, 1979)

SUPPLEMENTAL MILK: Among urban poor mothers, 21% gave their infants supplemental milk at birth, increasing to 45% at 6 months and 53% at one year; this was gradually withdrawn by 4 years of age. In contrast, 60% of the urban elites supplied additional milk from birth, which increased to 94% at 6 months and 97% by the 18th month. By the age of 5 years, 91% of the elites were still giving milk in addition to other foods. (Khan, 1980)

SUPPLEMENTAL RICE: At the age of 3 months, 6% of the urban poor children and 12% of the elite were being given liquid or semiliquid rice or wheat

preparations; this increased at 6 months to 27% and 39% respectively. The highest rate was 30% of the poor children at 10 months and 40% of the elites at 9 months. (Khan, 1980)

VEGETABLES: By 15 months of age, 17% of poor children and 70% of elites had been given vegetables. At age 2 years, this had increased to 49% and 72% respectively. Although 100% of the elite children had been given vegetables by age 3 years, the poor reached that level at 5 years. (Khan, 1980)

FISH, MEAT, AND EGGS: Fish, meat, and/or eggs were given to 20% of the poor children by one year of age and 100% by 2 years. Urban elite children had all received these foods by 6 months of age. (Khan, 1980)

ADULT DIET: The adult diet was given to 29% of the urban poor children and 95% of the elites by the age of 9 months. At 1 year, this had increased to 63% and 100% respectively. All the urban elites were given the adult diet by age 10 months; all poor, by 24 months. (Khan, 1980)

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

RURAL

MEALS: Among children under six years old, 3.3% had one meal daily; 9.4% had two meals; 54.7% had three; 13.9% had four; and 18.4% had an unknown number. (Vemury, 1980)

RELIGIOUS RESTRICTION: 91.5% of households (64.3% of "community influentials") restricted foods for religious reasons; 13.9% (14.8%) exempted children from this restriction. (Vemury, 1980)

3.4 DIETARY PRACTICES, HEALTH AND MEDICINE

NATIONAL

INTAKE AND DIARRHEA: The average intake of children with diarrhea was reduced by 30% in calories and 35% in protein. (Rizvi, 1979)

INDIGENOUS MEDICAL PRACTITIONERS: Local medical practitioners include 10,000 homeopathic practitioners; 2,500 Unani; 2,500 Ayurvedic practitioners; an unknown number of village dais, both trained and untrained; village medicine men, called compounders, some of whom work as preventive and others as curative practitioners; the Vaid, individuals who practice Kaviraj, some of whom use costly treatments; and the village witch doctors known as Ujha. (Brown, 1978)

TRADITIONAL BIRTH ATTENDANTS: With aid from UNICEF, a training program for 21,000 TBAs has begun. The training will enable TBAs who practice privately at the village level to carry out safe deliveries, to recognize conditions which require referral, and to understand basic concepts of maternal and child health. (JGUAG, 1980)

UNATTENDED BIRTHS: 66% of births were unattended, 33% were attended by traditional birth attendants, and 1% were professionally attended. (Brown, 1978)

3.4 DIETARY PRACTICES, HEALTH AND MEDICINE (Cont.)

MEDICAL RESOURCES: In 1976 there were 11,350 people per physician, and 4,430 people per hospital bed. (World Bank, 1979)

RURAL

HOT/COLD: 78.1% of households were aware of a hot/cold system of food beliefs, but 68% observed it only when sick. (Vemury, 1980)

FOODS FOR DIARRHEA AND VOMITTING: If a child has diarrhea or is vomiting, mothers will give barley, sago, fruits, or glucose solutions to help cure the condition, partially because these are "cold" foods. They will avoid giving rice, beef, goat, and lamb, which are "hot" foods and may make the illness worse. (Vemury, 1980)

FOODS FOR FEVER: During a fever, children are given milk, milk products, wheat, and other cereals to cure the illness and make them feel better. Rice, fats, and oils are withheld because they are believed to make the illness worse; they are "cold" foods. (Vemury, 1980)

PURGING: 69% of mothers purged their children: 17% at birth, 18% during fever, 9% during diarrhea, 49% during constipation, and 27% for reasons not known. (Vemury, 1980)

HEALTH CARE SYSTEM: The rural health complex has two components: a rural health center at the thana level and subcenters at the union level, and a 25-bed hospital at the thana level. (Djukanovic and Mach, 1975)

HEALTH WORKERS: Auxiliaries, or basic health workers, are educated to matriculation level and given special training. Each is in charge of no more than 4,000 people and is supervised. Basic health workers make regularly scheduled home visits in a predetermined area. They visit each family at least once a month. During home visits they administer vaccinations, and provide health education on environmental sanitation, water purification, family health, and family planning. They also collect blood and sputum samples in suspected cases of malaria or tuberculosis, administer appropriate drugs in confirmed cases, participate in health programs, and maintain family health and family planning cards. They are supervised by an assistant health inspector, who is in turn supervised by a medical officer or medical assistant in charge of the subcenter. Each subcenter also has a maternal and child health clinic with family planning services. (Djukanovic and Mach, 1975)

4. NUTRITION STATUS CORRELATIONS

NATIONAL

BREAST FEEDING AND HEALTH: Infants who were exclusively breast fed enjoyed general good health. (Quader, 1979)

DURATION AND FERTILITY: Prolonged lactation was the norm. Only 2% of women in the World Fertility Survey reported no breast feeding; three-fourths of the women reported durations of at least 2 years. It was concluded that lactation acts as a constraint on fertility. ((International Statistical Institute, 1975)

BREAST FEEDING AND FERTILITY: It is unlikely that variations in fertility can be explained on the basis of breast feeding alone, because of the apparent uniformity of breast feeding customs in the country. (International Statistical Institute, 1979)

CHILD NUTRITION STATUS CORRELATES: Significant predictors of a child's nutritional status are family income, mother's education, religion, birth order, the season after infancy, and sex (except in the first six months of life). (Kielmann et al., 1980)

MALNUTRITION AND SEX: Fewer male children than female children over six months of age showed signs of malnutrition. (Kielmann et al., 1980)

MALNUTRITION AND INCOME: Parents with a monthly income greater than 275 Takas had proportionately fewer children over 6 months of age below 70% of the Harvard median than parents with incomes less than or equal to 275 Takas, particularly in the seasons November-January and May-July. (Kielmann et al., 1980)

MALNUTRITION AND PARENTS' EDUCATION: Parents with more education had fewer children over 6 months of age below 70% of the Harvard median than parents with little or no education. (Kielmann et al., 1980)

MALNUTRITION AND MORTALITY: Twenty-one percent of the 107 children aged 12 to 60 months admitted to the Nutrition Unit in Dhaka died during hospitalization. Deaths were equally distributed among anthropometric and clinical categories of nutritional classification, although the non-survivors tended to be younger than the survivors. The fatality rate in the 2 to 6 month age group was 56%. (Nutrition Reviews, 1981)

NUTRITION STATUS AND RELIGION: Religion influences nutritional status. Hindu children were nutritionally less well off than Muslim children. (Kielmann et al., 1980)

MOTHER'S WEIGHT AND CHILD'S WEIGHT: Comparison of weights of children of mothers in the high and low weight groups (medium group excluded) showed that the infants of the heavier mothers weighed more at birth and maintained higher weights up to age 5 years; this difference was statistically significant at age 3 years. Both mother and child weights are probably associated with economic wellbeing as well. (Khan, 1980)

4. NUTRITION STATUS CORRELATIONS (Cont.)

DIETARY DIVERSITY CORRELATES: Dietary diversity (the number of different foods eaten, an indicator of nutritional adequacy) was significantly (at .01 level) correlated with income ($R=.783$), education ($R=.615$), and urban residence ($R=.412$). No significant correlation was found with structure or type of household; or occupation, size, or number of working adults. (Rizvi, 1979)

RURAL

BREAST FEEDING AND RELIGION: Mean duration of breast feeding was 28.32 months among Muslim mothers and 28.08 months among Hindus. (Kabir, 1982)

BREAST FEEDING AND MOTHER'S EDUCATION: Duration of breast feeding was negatively correlated with mother's education. All mothers with little or no education breast fed for at least two full years, but 2 of the 5 highly educated mothers weaned before 12 months. (Rizvi, 1979)

EDUCATION AND INTAKE: After a controlled study on education in diarrhea treatment, calorie consumption was found to be 129.9 calories per kilogram for controls, 60.9 cal/kg for children with diarrhea whose mothers had received education, and 75.0 cal/kg for children with diarrhea whose mothers received no education. The difference between the two groups with diarrhea is not significant, but the control children's intake was significantly greater than either, at the level of $p<0.05$. (Hoyle et al., 1980)

FOOD INTAKE AND LAND HOLDING: In rural areas, food intake is directly related to land holding. The landless and marginal farmers are, respectively, 14% and 10% deficient in calorie intake. (JGUAG, 1980)

INFANT MORTALITY AND RISK FACTORS: Factors significantly related to higher rates of infant mortality were: delivery complications of the mother or neonate, mothers below the age of 20 years, or increasing size of family. The lowest infant mortality rate was found among children of mothers age 25 to 29 years. (Islam, 1977)

ANEMIA AND PARASITE INFESTATION: In areas using surface water rather than tubewells, parasite loads were high (average, 8436 eggs per gm. of feces), and the relationship of anemia to intakes of vitamin C, iron, and protein was "irregular." Individual ascaris load and hemoglobin levels were significantly, negatively correlated. Therefore, the parasite load is apparently interfering with absorption to such an extent that nutrient intake is not related to hemoglobin status. (INFS, 1982)

SAFE WATER AND HEMOGLOBIN STATUS: A comparison of populations using water from tubewells or from other surces (rivers, ponds, etc.) found that the population in tubewell areas had a significantly lower rate of severe anemia, although the rate of anemia in general was about the same. The percent of pregnant and lactating mothers with hemoglobin levels above 12 gm. % was twice as high in tubewell areas. However, in the tubewell areas, intake of animal protein and vitamin A also were higher. In tubewell areas, parasite infestation rates and individuals loads were low, and nutrient intake bore the expected relationships to hemoglobin levels. (INFS, 1982)

NUTRITION AND BIRTH INTERVAL : Maternal nutrition status has only a slight effect on the length of post-partum amenorrhea. It would account for less than 10% of the length of the average birth interval and would therefore not result in differences in the number of births. (Huffman et al., 1978)

BIRTH INTERVAL AND SURVIVORSHIP: The survivorship of children whose births were followed by a subsequent pregnancy within 12 months was significantly lower at each age period (12, 24, and 36 months) than the survivorship of children followed in more than 12 months by a subsequent pregnancy, whether or not the pregnancy resulted in a live birth. (Swenson, 1978)

MATERNAL WEIGHT AND LANDOWNING STATUS: The degree of variation in weight was greater among the landless than among the landowning mothers. The differences in weight between these two groups was statistically significant at $p < .001$. (Chen et al., 1979)

WEIGHT AND MENARCHE: Weight was positively correlated with menstrual status. Age is also correlated with menstrual status but less strongly. Ninety-eight percent of girls whose weights were 40 kg (88 lbs.) or greater had reached menarche, compared to only 1% of those weighing less than 30 kg. (66 lbs.). (Chowdhury et al., 1977)

MENARCHE AND RELIGION: Muslim and Hindu women showed similar patterns with respect to their menstrual status by age. (Chowdhury et al., 1977)

URBAN

BREAST FEEDING AND INCOME: Duration of breast feeding was longest (21 months) among women in the lowest income range (up to 1000 rupees) and shortest (9 months) in the highest range (over 4500). (Kabir, 1982)

BREAST FEEDING AND OCCUPATION: The mean duration of breast feeding was 17.52 months among women who worked as housewives, and 13.20 months among those employed in service occupations. (Kabir, 1982)

BREAST FEEDING AND RELIGION: Mean duration of breast feeding was 16 months among Muslim mothers and 22 months among Hindus. (Kabir, 1982)

BREAST FEEDING AND SEX: The mean duration of breast feeding was 16 months for boys and 18 months for girls. (Kabir, 1982)

5. NUTRITION AND HEALTH POLICIES AND PROGRAMS

5.1 NUTRITION AND HEALTH POLICIES AND PROGRAMS, POLICIES

NATIONAL

NUTRITION PLANNING: The objective of nutrition planning efforts in Bangladesh is to improve the nutritional status of the lowest income segment of the population, through the following measures: a partial reorientation of existing agricultural services; establishment of a Nutrition Unit within the Ministry of Agriculture to project the impact of production practices, policies, and programs on nutritional status; provision of benefits to low income groups through the use of sorghum in modified ration shops, and the incorporation of nutrition education within the mother's club network, and in health center staff functions. (USAID, 1979)

NUTRITION PLANNING: Current emphasis in Nutrition Planning is on the re-orientation of other programs and systems rather than implementation of new projects and use of additional resources. Nutrition components are being incorporated into sectoral programs of the Ministries of Agriculture, Food, Social Welfare, and Health. (USAID, 1979)

NUTRITION POLICY FORMULATION: With aid from UNICEF, the National Nutrition Council Sub-Committee on a draft national food and nutrition policy has obtained similar documents from other countries and sponsored a study tour of the members. A draft is now available for NNC review. Policy formulation is also being assisted by development of a surveillance system in line with UNICEF/FAO/WHO guidelines. (JGUAG, 1980)

PLANNING FOR CHILDREN: The Government and UNICEF cooperated in the formulation of a Plan of Operations for Services for Children for the first two years (1980-82) of the Second Five-Year Plan. In particular, the government requested UNICEF assistance for the expansion of programs in health, drinking water and sanitation, nutrition, formal and non-formal education, and rural social services. In addition UNICEF assisted in the new area of urban services for women and children in six cities. (JGUAG, 1980)

RECOMMENDATION OF NATIONAL BREAST FEEDING STRATEGY: In January 1982, a meeting convened by the Director-General of Health Services, including government officials and representatives of a nongovernmental community health research organization, recommended that a national workshop be co-sponsored by the Ministry of Health and the Bangladesh Pediatric Association, with participation from appropriate nongovernmental organizations and the infant food industry, and support from WHO and UNICEF, in order to formulate a national strategy for the protection of breast feeding and to make recommendations for the application of the International Code of Marketing of Breast-Milk Substitutes. (WHO, 1982)

FOOD PRODUCTION STRATEGY: To achieve its goal of foodgrain self-sufficiency by 1985, the government has focused its efforts on increasing agricultural production through increased use of high-yielding varieties of food grains, and on expanding employment opportunities in the rural

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

areas. Small farmers have been encouraged to adopt new seeds, and the government has provided the necessary inputs by producing and distributing the seeds. Improvements are also being made in fertilizer and food grain storage, expanding credit to small farmers, and improving the procurement, distribution, and monitoring of pesticides and equipment. (USDA, 1978)

SECOND FIVE-YEAR PLAN—BASIC GOALS: The basic goals of the Second Five Year Plan (1980-1985) are to 1) increase food production, 2) reduce poverty, 3) complete work on reconstruction, 4) increase the rate of GDP, 5) expand output of essential consumption items, 6) minimize inflation, 7) increase per capita income, 8) reduce dependence on foreign aid, 9) reduce population growth rate, and 10) improve delivery of social services. (JGUAG, 1980)

SECOND FIVE-YEAR PLAN—BASIC OBJECTIVES: The major objectives of the Second Five-Year Plan (1980-1985) are to: 1) reduce poverty, 2) provide a significant part of the basic human needs such as cereals, cloth, minimum medical care, and drinking water, 3) increase greater employment opportunities, 4) make significant progress towards universal literacy through compulsory primary education and adult education with wider provision of vocational and elementary technical education, 5) reduce the rate of population growth, 6) achieve a far more self-reliant economy with greater mobilization of domestic resources, 7) achieve a high degree of capacity utilization, 8) provide greater incentive to the private sector, 9) move towards greater social justice and a higher level of egalitarian distribution of income and opportunities, and 10) establish a high degree of efficiency and integrity in the public service. (JGUAG, 1980)

FIVE-YEAR PLAN—NUTRITION POLICY: Under the Second Five-Year Plan (1980-1985) national food and nutrition policy will be formulated and/or revised, and National Nutrition Programme guidelines will be established. This will include the establishment of a National Nutrition Surveillance System to gather the information that is necessary for the formulation of nutrition policies and programs. (JGUAG, 1980)

FIVE YEAR PLAN—NUTRITION OBJECTIVES: Two of the objectives of the current Five-Year Plan (1980-1985) are to reduce the prevalence of Grade III malnutrition in children under five from 18% to 12% and to reduce the incidence of night blindness among children under 14 years of age from 5.1% to 2.5% by June 1985. (JGUAG, 1980)

FIVE-YEAR PLAN--NUTRITION STRATEGIES: Some strategies designed to mitigate the problems of Grade III malnutrition and night blindness in the Second Five-Year Plan include: development of a National Nutrition Surveillance System; formation of a policy formulation and program co-ordination body; strengthening of institutional capabilities in planning, programming, training, research, evaluation and monitoring, and surveillance in the field of nutrition; expansion of nutrition education and training activities; optimum utilization of available food; increased emphasis on production and consumption of nutritious foods; development of low cost supplementary food; distribution of vitamin A capsules; iron supplementation; effective interlinkage between health-related projects;

and linkage of income-generation activities with area development projects. Elaborate measures will also be undertaken to promote community involvement and participation in the projects. UNICEF assistance will be provided for some program activities. (JGUAG, 1980)

FIVE-YEAR PLAN--NUTRITION ACTIVITIES: Activities of the Second Five-Year Plan (1980-1985) will include Nutrition Advocacy and Awareness activities for people at the village level, opinion-leaders, policy-makers, planners, and administration to make them more aware of aspects of the nutritional status of the population. Major activities will include publication of newspaper and periodical articles and advertisements, radio and television feature programs on nutrition, slide/sound presentations, production of feature films, and organization of folk-art performances on nutrition problems and their solutions. The Ministries of Information and Broadcasting, Health and Population Control, Education, Agriculture, Local Government, Rural Development and Cooperatives, Manpower Development and Social Welfare, and Fisheries and Livestock, as well as universities, non-government organizations and folk-art groups, will be responsible for implementation of these activities. UNICEF will also assist with this program. (JGUAG, 1980)

HEALTH POLICY: The objectives of Bangladesh's health policy are as follows: to create a health infrastructure in the rural areas; to integrate family planning and health programs at the grass roots level; to provide a health care program for mothers and infants, to reduce maternal and infant mortality; to ensure control and eradication of communicable diseases; to provide health services for industrial workers; to improve the quality of existing hospital facilities; to create adequate undergraduate and post-graduate teaching facilities for medical, auxiliary, nursing, and midwifery personnel; to ensure the availability of life-saving drugs; and to ensure intersectoral cooperation and coordination in improving environmental sanitation, housing, and potable water supply for every citizen, at home and at work. (Djukanovic and Mach, 1975)

HEALTH POLICY: Moves are being made to shift the health care system from curative to preventive services. The major development has been the recent shift of emphasis from an urban-based, institution-oriented approach to health care, to a rural-based field-service approach at the thana level. More emphasis is also being given to child health and to training of paramedics for rural areas. (JGUAG, 1980)

TWO-YEAR (HEALTH) PLAN: The Two-Year Plan (1978-80) aimed at: (1) the build-up of health infrastructure at the rural level, (2) strengthening of health manpower development, especially the middle and field level workers, (3) control and eradication of major communicable diseases, (4) expansion of hospital and clinic facilities, (5) increased pharmaceutical production, and (6) the encouragement and development of traditional systems of medicine in the country. (Brown, 1978)

2-YEAR PLAN OBJECTIVES: The six objectives of the government's 2-year Approach Plan of 1978-80 were: (1) establishment of health infrastructure in each thana, (2) develop health manpower and strengthen training for mid-level and field-level workers, (3) control and eradication of main

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

contagious diseases, (4) extension of hospital and clinical facilities, (5) establishment of pharmaceutical production units for production of essential drugs, serum, and vaccines, as well as their proper storage and distribution, and (6) encourage traditional medicine. (UNICEF, 1978)

PROPOSED UNICEF AID: UNICEF, under the 2-Year Approach Plan of 1978-80, was to provide drugs for under-five clinics; train health workers; produce audiovisual educational tools; provide secretarial and transport aid; develop nutrition surveillance methodology; produce 2 tons of weaning food per day to distribute through several systems; identify zones and establish a system of salt iodization; help substitute less toxic varieties of dal; assess breast feeding knowledge, attitudes, and practices and suggest responses; develop rehabilitation programs for vitamin A deficiency; and identify factors responsible for anemia. (UNICEF, 1978)

HEALTH BUDGET: 90% of the Ministry of Health manpower budget is directed toward medical colleges. (Brown, 1978)

DISTRIBUTION OF HEALTH SERVICES AND BUDGET: 70% of the Ministry of Health's budget is directed towards urban hospital services, but over 90% of the population live in rural areas. (Brown, 1978)

DISTRIBUTION OF GOVERNMENT HEALTH BENEFITS: 90% of government spending on health benefits 6% of the population, mostly the wealthy. (Islam, 1977)

HEALTH FACILITIES: The Five-Year Plan issued in 1975 recognized that "the existing health facilities in Bangladesh are inadequate in both quality and quantity. To make the situation worse, whatever little we have is so badly distributed that the services are enjoyed by only a privileged few." The Plan then adopted a policy which "would involve comparatively small expenditure of resources and less demand on highly trained personnel to build up a health service which will cut down preventive morbidity to a minimum and provide moderately satisfactory medical care to the sick." (Women for Women, 1979)

MINISTRY OF WOMEN'S AFFAIRS: The Government of Bangladesh has begun to plan for the needs of women and children through the new Ministry of Women's Affairs. (JGUAG, 1980)

LAND USE POLICY: The maximum permitted landholding is 33.3 acres. Families holding less than 8.25 acres are exempted from paying any land tax. State-acquired land is to be given to cultivators having no land or less than 1.5 acres. Nevertheless, the proportion of landless and marginal landholders has risen from 18% in 1961 to 37% in 1974. (Rizvi, 1979)

5.2 NUTRITION AND HEALTH POLICIES AND PROGRAMS, PROGRAMS

NATIONAL

NUTRITION KNOWLEDGE EXCHANGE: A Nutrition Knowledge Exchange will be part of the Nutrition Programme of the Second Five-Year Plan 1980-1985.

Efforts will be made to promote exchange of information within the country, and with neighboring countries. Research studies will also be carried out, and national seminars will be organized. UNICEF will also assist with this program. (JGUAG, 1980)

NUTRITION EDUCATION: Nutrition education activities under the Second Five-Year Plan (1980-1985) are designed to alleviate problems of malnutrition by training housewives and mothers to identify the right types of food, prepare and feed properly, observe food economies, and prevent pre-cooking losses. Educational efforts will also be directed at weaning and supplementary feeding practices in late infancy and early childhood. (JGUAG, 1980)

NUTRITION EDUCATION—WEANING: Under the second Five-Year Plan (1980-1985) education and demonstration of supplementary and weaning foods from locally available foodstuffs will be provided. The program is expected to cover about 8,000 rural women in 100 villages, in 20 Unions, surrounding each of the 20 Village Development Projects. The demonstration will include distribution of about 45,000 packets of supplementary and weaning food prepared on the spot with locally available ingredients and 50,000 copies of project materials on supplementary and weaning food preparation and breast feeding. (JGUAG, 1980)

NUTRITION RESEARCH: Research on nutritional anemia will be carried out under the Second Five-Year Plan in conjunction with the ongoing project "Research on Anemia and Vitamin A, Riboflavin and Vitamin C." The aim of the research is to identify factors responsible for malabsorption of ingested iron, and how it could be reduced by using local foodstuffs. (JGUAG, 1980)

HERBAL MEDICINE RESEARCH: Certain plants and other herbs are known to have substances active against infections and worm infestation. Research will be carried out under the Second Five-Year Plan (1980-1985) by the Bangladesh Medical Council to determine their chemical structures and side effects on animal and human subjects. (JGUAG, 1980)

GOITER PROGRAM: Goiter is a serious medical problem, and controlling it is a high priority in the Nutrition Programme of the Second Five-Year Plan. Lipiodol injections will be used as a short-term solution. (JGUAG, 1980)

GOITER INTERVENTION: Control of goiter through lipiodol injections under the Second Five-Year Plan (1980-1985) is expected to reach 150,000 children and young people, particularly females, in the goiter-prone zones in the districts of Rangpur, Dinajpur, and Jamalpur. A study of iodine uptake is expected to cover 3,000 treated males and females. Anthropometry and the incidence of deafness and muteness will also be studied in goiter-prone areas. Educational materials will be distributed, and radio announcements on the usefulness of lipiodol and iodized salt will be made. (JGUAG, 1980)

VITAMIN A SUPPLEMENTATION: To combat blindness due to vitamin A deficiency, UNICEF provides each year 30 million high-potency vitamin A capsules for distribution by local health workers to children under 6

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

years old. Capsules are also given to pregnant and lactating mothers and children with night blindness; coverage during the 7th and 8th rounds was 63% and 66% respectively. (JGUAG, 1980)

VITAMIN A INTERVENTIONS: Efforts at controlling vitamin A deficiency under the Second Five-Year Plan (1980-1985) include distribution of high-potency capsules, nutrition education, and horticultural activities designed to increase the availability of vitamin A from other sources. (JGUAG, 1980)

AGRICULTURAL RESEARCH: The Bangladesh Agricultural Research Council (BARC) is assessing local and imported varieties of legumes and vegetables for fertility, productivity, and acceptability. Herbs are being assessed for availability and medicinal value. Technological innovations are assessed for relevance and applicability. The work does not seem to address nutritive values of crops (with the exception of one legume study), nor the acceptability of new varieties. (Agricultural Research Council, 1980)

AGRICULTURAL ACTIVITIES: Under the Second Five-Year Plan, increased attention will be placed on improving the per-acre yield of oilseeds and pulses, through seed improvement and stock selection, because the per capita intake of fats and oils is low, and decreased by 48% between 1962 and 1976. UNICEF assistance will be provided for research designed to identify different indigenous varieties of oilseeds and pulses. Educational materials will be distributed, and a workshop organized. These activities will be implemented by the Directorate of Agriculture under the Ministry of Agriculture and Forestry, and by Bangladesh Agricultural University, under the Ministry of Education. (JGUAG, 1980)

FRUIT AND VEGETABLE PROMOTION: In order to enhance village vegetable and fruit gardens, one of the programs under the Second Five-Year Plan (1980-1985) will focus on acquainting the population, especially mothers and children, with locally available nutritious vegetables and fruits. Production of five selected fruits and ten selected winter and summer vegetables will be promoted in the rural areas. Nurseries will be established in order to make seeds and seedlings easily available at the local level. Manually Operated Shallow Tubewells for Irrigation (MOSTI) will also be provided. Participating agencies include the Bangladesh Agricultural Development Corporation, the Horticulture Development Board, the Ministry of Education, and the Ministry of Local Government, Rural Development and Co-operatives. (JGUAG, 1980)

FISH PRODUCTION: Fish is the main source of animal protein for the population, but production and consumption have been declining over the last decade. A program aimed at increasing production of fish (local carps and tilapia) from 200 kgs. to 1,000 kgs. per acre per year through the development of village fish ponds will be implemented under the Second Five-Year Plan (1980-1985), in order to increase consumption from 7.9 grams to 25 grams per person per day by 1985, in selected areas. At present there is a shortage of extension workers trained in fish culture. Through the program, village youths will be trained as Junior Fish Culturists, and Junior Fish Culturist Clubs will be organized. This program will be implemented by the Ministry of Fisheries and Livestock,

the Ministry of Local Government, Rural Development and Co-operatives, and the Ministry of Youth Development. (JGUAG, 1980)

WOMEN AND FISH PRODUCTION: Women in rural areas traditionally assist their husbands with agricultural work within the homesteads, but because of social taboos and the "purdah" system, they rarely go outside their homes for work. There are vast unutilized pond resources adjacent to homes in the country that women might be profitably trained to utilize in order to produce fish for family consumption. Assistance for this program has come from the World Bank, the Asian Development Bank, and DANIDA. FAO also provides consultancy services. (JGUAG, 1980)

CARE PL-480 WORK: The CARE Food-for-Work project aims to generate income for landless, unemployed rural poor and to improve infrastructure in rural areas. Annually, 1,500,000 persons are employed, and Title II PL-480 food is distributed as a wage for work on public works projects. The average worker is employed about 30 days per construction season. This program is implemented with the assistance of the Ministry of Relief and Rehabilitation and LGRD. (CARE, 1980)

FOOD FOR WORK: The food for work program, assisted by the World Food Programme and other international and governmental agencies, provides employment and food to millions of rural unemployed. Under this program, flood control, irrigation, construction and repair of embankments, reclamation of derelict water areas, and repair and construction of village roads are executed to increase food output, improve communication, and raise general living conditions in rural areas. (JGUAG, 1980)

WOMEN AND FOOD FOR WORK: Not only destitute women, who often work for wages, but also married, widowed, and even unmarried women of the village households had participated in Food for Work activities. (Women for Women, 1979)

PL-480 ALLOTMENT: For fiscal year 1982, the approved quantity of food for Bangladesh was 75,000 metric tons of wheat in bulk, worth \$13.7 million, to be distributed by CARE through its food-for-work program to about 8.6 million recipients. (USDA, 1981)

PL-480 ALLOTMENT: In Fiscal Year 1977, Bangladesh was allotted PL-480 Title II food worth \$63.8 million, including (in metric tons): wheat, 275; rice, 75; and vegetable oil, 20. (USDA, 1978)

PL-480 RECIPIENTS: In fiscal year 1977, 8,323,000 persons received PL-480 foods through programs run by CARE and the World Food Program in maternal and child feeding and food-for-work. (USDA, 1978)

USAID--HELEN KELLER INTERNATIONAL XEROPHTHALMIA STUDY: Helen Keller International will implement a study funded in part by USAID to determine the prevalence of xerophthalmia among children age birth to 6 years, and will also attempt to identify associated risk factors by investigating dietary and breast feeding habits. (USAID, 1982)

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

USAID AND SALVATION ARMY: The Salvation Army Rural health project (no. 388-0045) provides under-five and ante-natal clinics, a nutrition rehabilitation/day care center, and outreach female field workers. SAWSO administers the project, which received \$94,000 in this, its third and final year. (USAID, 1982)

UNICEF AID: Bangladesh is UNICEF's second largest operation, receiving US \$20 million per year, 10% of UNICEF's resources. (UNICEF, 1980)

UNICEF NUTRITION AID: Areas in which UNICEF has aided the government in nutrition-related areas include: 1) nutrition advocacy and awareness; 2) nutrition policy formulation; 3) optimum utilization of available food; 4) increased food production; 5) nutrition intervention for specific nutritional deficiencies; and 6) action and applied research. (JGUAG, 1980)

UNICEF NUTRITION EDUCATION AND TRAINING: With UNICEF assistance, an inter-institutional training program began in 1977. 3,500 workers from the Ministries of Rural Development, Agriculture, Social Welfare, and Health have been trained, as have been political leaders, labor leaders, and workers from nongovernmental agencies. Teaching aids for the courses have been developed. (JGUAG, 1980)

UNICEF GOITER CONTROL AID: UNICEF assists the government in goiter control by providing "Lipiodol" iodine in oil for injections and a pilot salt iodization plant has begun test production. (JGUAG, 1980)

UNICEF VEGETABLE GARDENING PROGRAM: UNICEF has assisted in the "Village Vegetable Garden Programme," through which selected varieties of seeds, procured from the Bangladesh Agricultural Development Corporation, are distributed through 50,000 outlets in winter and 20,000 in summer. Distribution points include schools, cooperatives, and development programs. The program also provides some nutrition education and manually operated shallow tubewells for irrigation. (JGUAG, 1980)

UNICEF FISH FARMS: UNICEF and the government of Bangladesh, Directorate of Fisheries, have cooperated in the development of 25 fish farms and the training of fishery workers. (UNICEF, 1978)

UNICEF POULTRY PROJECT: UNICEF has assisted the Directorate of Livestock Services in developing 50 poultry breeding centers, a poultry vaccination system, and training village extension workers. (UNICEF, 1978)

NIJERA KORI: This program distributes local foods to pregnant and lactating women and their families, selected by class, and distributes a lentil and rice weaning food. 75% of funds are private. (Austin et al., 1978)

NIJERA KORI: This program conducts group activities and demonstrations at the project site, covering weaning, hygiene and sanitation, balanced diet, pregnancy and lactation, kitchen gardens, and weight charts. (Austin et al., 1978)

VULNERABLE GROUP FEEDING PROGRAM: This program distributes a wide variety of local, imported, and PL-480 foods for on-site consumption and for take-home, to pregnant and lactating women and children age 6 months to 10 years, selected by class, risk, and nutrition status. This program is administered by the World Food Program, and received funding from U.N. (85%), voluntary agencies (8%), and national sources (7%), and reported 502,000 participants. (Austin et al., 1978)

VULNERABLE GROUP FEEDING PROGRAM: This program conducts nutrition groups, demonstrations, and individual activities for families of food supplement recipients, at health facilities and camps. Topics include hygiene and sanitation, balanced diet, pregnancy and lactation, kitchen gardens, food preparation, and weight charts. This program reports 502,000 participants. (Austin et al., 1978)

SWANIRVAR MOVEMENT: The Swanirvar Movement aims at inducing every family, village, union, thana, sub-division, and district to become self-sufficient economically and socially. The initial aim is to achieve self-sufficiency in food by increasing farm production and reducing population growth. (JGUAG, 1980)

NO MEDICAL TRAINING IN NUTRITION: There is no course provided in nutrition or in biochemistry in any of the eight medical colleges in the country. (Brown, 1978)

MEDICAL TRAINING—NUTRITION: There are eight medical colleges, one post-graduate medical institution, and 22 nursing schools, but very little MCH or nutrition is being taught in them. (Brown, 1978)

HEALTH PROGRAMS: Maternal and child health care facilities nationally are to be established and maintained from the family planning budget. Family Welfare Visitors, one of the field branches of the Directorate General of Population Control and Family Planning, are in charge of the facilities. However, there are very few trained Family Welfare Visitors and facilities in the family planning program, so available services are still limited. (Ahmed, 1977a)

HEALTH CARE—EXTERNAL ASSISTANCE: The World Bank has provided funding for the establishment of 70 health centers in the Jessore and Tangail districts. USAID has provided funding for the establishment of a nutrition unit in the Ministry of Agriculture, for the production of nutrition information materials. (USAID, 1979)

HEALTH SERVICES SYSTEM: The health services system is centralized, and the nation is divided into 19 service districts, each with a population of about 4 million. Although development of primary health care service is a high priority, most of the private health sector serves the urban populations. Traditional healers provide most of the care in rural areas. Laboratory facilities are rudimentary, except for the Research Laboratory in Dhaka. (Licross, 1979)

MEDICAL SERVICES: There have been a number of vertically-oriented programs, usually oriented to specific diseases, including malaria and

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

smallpox. Services were usually delivered at the Thana Health Center level, and generally not influenced by medical doctors. (Brown, 1978)

HEALTH MANPOWER: There are 10,000 medical doctors and another 500 in postgraduate training. There are 1700 trained nurses, with another 200 in postgraduate training. Current paraprofessionals include: 300 medical assistants, 2200 "compounders," 650 laboratory technicians, 185 radiographers, 1125 sanitary inspectors, and 18,000 multi-purpose health workers. All of these numbers are short of the goals set as targets in the 1973-78 Five Year Plan. (Brown, 1978)

HOSPITAL BEDS: In 1971, there were 9,300 hospital beds: by 1973 this number had increased to 12,300 with a marked increase noted in the number of hospital beds in Dhaka. 85% of the beds are private. By 1974, there were 15,750 beds. 14% of the beds and 85% of the population were in rural areas. In 1970, Dhaka, with 2% of the population, had 20% of the hospital beds. (Brown, 1978)

MEDICAL TRAINING: The medical training system approximates that found in developed countries such as the United Kingdom, and therefore the physician is capable of serving only a small fraction of the population, with strict orientation toward hospital and urban bases, and the curative practice of medicine with little or no attention toward preventive and social medicine. (Brown, 1978)

PHYSICIANS: Medical training in diagnosis is lacking, as is methodology of patient examination. Students have difficulty when asked to describe a case and may cope by overprescribing drugs in order to "cover" themselves. (Brown, 1978)

PHYSICIAN TRAINING: At Gonoshostha-Kendra (g-K), medical students receive one month of community medicine, including ten days in a rural development program, a part of which is a series of four rural health centers. This program reaches 100,000 people, but they do not represent the most vulnerable. (Brown, 1978)

PEDIATRICIANS: At the eight medical colleges, only two-thirds of the pediatric posts are filled. About 15% of the pediatricians have emigrated since 1975; the estimates of all doctors and nurses leaving the country are much greater. Between 500 and 800 government doctors' posts remain unfilled, despite the fact that there are nearly 1000 medical graduates yearly. (Brown, 1978)

NURSES: Nurses' training is directed toward hospital-based employment. Only 9 of the 22 nursing schools have affiliated children's wards. (Brown, 1978)

PARAMEDICAL TRAINING: Training manuals for paraprofessional training are very complicated, based on the production of a "mini-medical" course that includes anatomy, physiology, and other high-powered and generally unrelated subjects. (Brown, 1978)

PARAMEDICAL TRAINING: The CARE/MEDICO project assisted with the training of paramedicals through the Ministry of Health. (Brown, 1978)

MEDICAL ASSISTANTS: Medical assistant training programs, including those supported by WHO, are located in towns and prepare graduates to work in sophisticated urban areas, not in community care. 98% of trainees are male. (Islam, 1977)

RURAL

BANGLADESH RURAL ADVANCEMENT COMMITTEE (BRAC): In 1972 the Bangladesh Rural Advancement Committee (BRAC), an indigenous voluntary organization, was founded. A major goal was to provide preventive and curative health care and family planning services at an affordable cost. (ICED, 1977)

BRAC ACTIVITIES: Among the activities designed by BRAC to contribute to the improvement of the social and economic status of women are mother and child care clubs, skill training for women, women's cooperatives, women staff development, and the women's project in Jamalpur. Special lessons for women included in a functional education program include food processing and preservation, nutritious cooking, pregnancy and family planning, nutrition surveys, and breast feeding. Topics for both men and women include: nutrition, surveys of family planning and nutrition status in the community, pregnant mothers' health, evils of early marriage, and child care. (Ahmed, 1977b)

BRAC--EARLY ACTIVITIES: During the initial phases of the BRAC, when its aim was primarily disaster relief, doctors trained a group of villagers in the techniques of taking care of cholera and severe diarrhea cases. A child feeding program was also undertaken with UNICEF assistance. About 15,000 children from poor families were given rations of corn-soya milk supplements, to help avert the dangers of malnutrition. (Ahmed, 1977b)

BRAC--HEALTH PLAN: The health and family planning program component of the BRAC program was founded on the concept of low-cost preventive and curative service delivered by community-based auxiliaries. A health insurance plan was a feature of this effort. (ICED, 1977)

BRAC--NUTRITION EDUCATION AND LITERACY TRAINING: A literacy drive was launched as part of BRAC. Interest quickly waned because initial lessons had little relevance for the lives of the people being taught. A new attempt was launched following an assessment of learners' needs and interests, and the development of new materials and methods. The new content topics were more reflective of villagers' concerns and problems. These included: animal husbandry and poultry, fisheries and pisciculture, cooperatives, nutrition, hygiene and public health, family planning, child care, and cottage industries. The new program received a more enthusiastic response. (Ahmed, 1977b)

SULLA PROJECT ACTIVITIES: Mother and Child Care Clubs arose in 1975 in Sulla and later in Jamalpur as an effort to overcome some of the numerous health and nutrition problems observed in these groups in the project areas. The clubs were organized by the paramedics in their respective villages. The groups meet in the village gonokendra or a suitable home. Health problems and preventive and curative measures are discussed. Services such as blood pressure checks, iron and vitamin supplements for pregnant mothers, weighing of children, and updating "Road to Health"

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

cards are also provided. In mid-1976, 73 such clubs were functioning in the Sulla Project area. Another 15 clubs have been organized in the Jamalpur area. Attendance at club sessions ranges from 10 to 20 mothers plus their children. (Ahmed, 1977b)

SULLA PROJECT--HEALTH CARE: During the second phase of the Sulla project (1973-1976) there was a preponderance of adult males being treated by paramedics, even though disease pattern and mortality rates indicated that women and children were also in need of medical services. Women were evidently reluctant to come to paramedics--mostly young unmarried men--for treatment of pediatric and obstetric-gynecological problems. Subsequent changes in organization and staffing patterns included training of a cadre of auxiliary women health workers under the supervision of paramedics. (Ahmed, 1977b)

SULLA PROJECT--HEALTH PROBLEMS: Health problems found in the Sulla Project area were similar to those found throughout rural Bangladesh. In general they are caused by the absence of basic hygiene and sanitation, compounded by malnutrition. Preventable and communicable diseases are common. (Ahmed, 1977b)

SULLA PROJECT--HEALTH PROBLEMS: According to Bangladesh Rural Advancement Committee Service statistics and observations of health workers, gastrointestinal diseases, internal parasites, and respiratory infections account for about 60% of the total morbidity in the area. Ear, eye, throat, and skin infections account for another 15% of the diseases. Night blindness and stomatitis are frequent. Tuberculosis is also prevalent, but the incidence of malaria has decreased, and small pox seems to have been virtually eliminated as a result of an internationally assisted government campaign. (Ahmed, 1977b)

SULLA PROJECT--HEALTH PROBLEMS; The incidence of diseases treated by paramedics in the Sulla project area between July and September 1976, as reported in BRAC service records, are as follows: diarrhea, 10.4%; dysentery, 18.2%; worms, 22%; hyperacidity, 3.0%; common cold, 0.5%; acute bronchitis, 4.4%; pneumonia, 2.8%; ear, eye, and throat conditions, 6.6%; skin infections, 8.0%; rheumatism, 8.3%; and others, 16.8%. (Ahmed, 1977b)

BRAC--JAMALPUR PROJECT: The Jamalpur Project of BRAC evolved from an education component of a UNICEF sponsored "food-for-work" scheme for destitute women into a special women's project. The objectives of the project were to make village women conscious of the causes of their problems and help them seek solutions, to control population growth through family planning, to encourage savings and cooperative economic activities by women, to educate village women in hygiene and nutrition, to encourage village women to use fallow land, to initiate women's organizations in the villages, and to educate village women. (Ahmed, 1977b)

JAMALPUR PROJECT: The Jamalpur Project was an agro-demonstration project begun by UNICEF in 1974, in the wake of severe flooding, crop damage, and famine conditions. The project was designed to help destitute women by employing them in "food-for-food" production activities, beginning in

February 1975. Women were involved in producing drought-resistant crops in sandy river-beds, over a period of four months. They were paid in kind with wheat supplied by the World Food Program. A similar but expanded "food-for-work" program was launched on twenty-seven sites in January 1976. UNICEF also recruited and trained 54 young local boys as Project Agricultural Demonstrators. A family planning and child care clinic was also started. The major drawback of the program was its heavy cost. (Ahmed, 1977a)

JURAIN PROJECT: The Jurain nutrition project was conceived by the President of the Diabetic Association of Bangladesh. It began with a pilot study in Jurain, a suburb of Dhaka, in 1968. It is based entirely on local self-help. During the pilot study, baseline data were collected for the study area, health education was attempted, and the community was encouraged to increase its consumption of vegetables, fruit, fish, poultry, eggs, milk, and wheat. A farming center, a women's center, a health center (with emphasis on the needs of women and children), and a youth center were also set up. The project achieved significant results and demonstrated that it is possible to obtain local support for health activities within the community. (Djukanovic and Mach, 1975)

SAVAR PROJECT ACTIVITIES: The Savar Project was organized in 1972, in rural Savar thana by a group of Bangladesh health workers during the struggle for independence. It is a service/training program with emphasis on preventive activities such as immunization and family planning services. They also teach handicrafts and improved agricultural methods to members of the community to help them increase their income. The project, which has a full-time health education extension officer and two teaching assistants, relies in part on insurance subscriptions from the population for support. (Djukanovic and Mach, 1975)

SAVAR PROJECT—NUTRITION EDUCATION: Nutritional advice provided by Savar Project paramedics focuses on children, pregnant and lactating women, and convalescing patients. They encourage mothers to give infants and children solid food, instead of relying solely on milk; encourage breast feeding; and attempt to overcome the belief that diarrhea and fever patients should be kept on liquid or near-liquid diets. (Ahmed, 1977a)

SAVAR—HEALTH PROBLEMS: The basic health-related problems of the area are diarrhea, dysentery, fever and cold, scabies, and anemia, any or all of which may be compounded by malnutrition. (Ahmed, 1977a)

GOPALPUR PROJECT—MOTHERS' CLUBS: A pilot project is underway in Gopalpur thana, Tangail district, to incorporate nutrition and preventive health measures into Mothers' Clubs sponsored by the Ministry of Social Welfare. It was the first project in Bangladesh to initiate monthly weighings to identify nutritionally vulnerable children. Plans have also been made to use this project as the basis for training and demonstration activities. (USAID, 1979)

FOOD TRAINING PROGRAM: The Pilot Experimental Training Courses for Rural Women in Home Processing and Preservation of Fruits and Vegetables began in 1981 in Tangail and Chithagong Districts. Each course initially lasted for one week. The participants were small groups of highly

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

motivated women who were fruit and vegetable growers. The goals were to explore possibilities of setting up small businesses for women entrepreneurs, to strengthen traditional methods and skills with scientific knowledge, to create employment for women, to identify institutions and experts that could support rural projects, and to develop a curriculum and educational materials for future expansion of the project. The emphasis of the project was on training women to use and maintain solar drying equipment and to conserve fuel through the use of improved chulas (stoves). The project is still too recent and has not yet been evaluated. (Rizvi, 1981)

HEALTH PROGRAMS—COMPANIGANJ: One successful private health project is Companiganj, which was recently transferred to the Government. Groups of female Family Welfare Workers (formerly lady health visitors) were trained; there were over 150 who had received six months of rural field training through Companiganj. (Brown, 1978)

COMPANIGANJ HEALTH PROJECT: This project conducted demonstrations and individual nutrition education for mothers, fathers, and other relatives of food recipients, at health facilities, villages, and homes. Programs were conducted weekly, during health visits, and covered weaning, illness, hygiene and sanitation, pregnancy and lactation, and weight charts. (Austin et al., 1978)

COMPANIGANJ HEALTH PROJECT: This project supplied local foods and PL-480 wheat and chick peas to pregnant women and preschoolers age 0 to 3 years to take home. Participants were selected on the basis of risk and nutrition status. (Austin et al., 1978)

COMPANIGANJ WEANING FOODS: The Companiganj Health Project provided "Pushtikor," a weaning food made of 75% wheat and 25% chickpea, to rural families from 1973-1978. Some funding was obtained through the United Nations (50%) and the community (25%). (Austin et al., 1978)

MOHAKHALI PILOT PROGRAM: This program, run by the Mohakhali Health Complex in Dhaka, distributes local rice, pulses, vegetables, fish protein concentrate, and oil to families of preschoolers age to six years, selected by nutrition status. It also conducts radio, television, and group education activities at the health facility for parents of recipients of supplementary foods, and occasionally for the community. Topics include weaning, hygiene and sanitation, balanced diet, pregnancy and lactation, food preparation, and weight charts. Funding is 50% national and 50% U.N. (Austin et al., 1978)

GROWTH AND DEVELOPMENT PROJECT: This project distributes local and imported milk powder, soya milk, rice, fish, eggs, and weaning foods (Dano/Horlicks) to families of children age 0-7 years selected by risk and nutrition status. (Austin et al., 1978)

FORTIFIED WHEAT AND HEALTH CARE: Flour of 70% wheat and 25% chick peas was sold at half the price of wheat to families using a health center in Companiganj. Families were given ration cards and could purchase amounts equal to one third of the calorie needs of their children under 3 years old. Mortality was reduced for the 25% of the population who participated. (Islam, 1977)

CHRISTIAN HEALTH CARE PROJECT: From 1976 to 1979, this project conducted group, individual, and demonstration nutrition education activities covering illness, hygiene, balanced diet, pregnancy and lactation, kitchen gardens (including a demonstration garden), food preparation and storage, and weight charts. Support was 60% voluntary and 40% private. (Austin et al., 1978)

RURAL HEALTH PROGRAMS: Good comprehensive rural health delivery systems exist; most are demonstration programs which apparently function well with staff who have a 9th or 10th grade education supplemented with additional health and nutrition training. (Brown, 1978)

HEALTH CENTERS: Rural Health Centers, planned to serve 150,000 to 250,000 people, reach only 10,000 to 20,000 people. Distance from the center is a major impediment to its use; the proportion of the community using the center decreases 50% for each additional 1/2 mile. (Islam, 1977)

MEDICAL EDUCATION: Medical education has changed little since 1948. Little attention is paid to problems of malnutrition and diarrhea, either in the classroom or as cases, perhaps because these cases are humiliating or do not present a diagnostic challenge. Students are trained to meet the needs of the wealthy and are not taught about the "tropical diseases" of the poor. (Islam, 1977)

MEDICAL ASSISTANTS: There are four schools training medical assistants with an intake of 100 students for each school and a training period of three years. The five-year target is to develop 10 training centers with about 80 students in each. Medical assistants work at the Union and Sub-Center levels, especially in outpatient departments at the health centers. (Brown, 1978)

TRAINING FOR LOCAL HEALTH PERSONNEL: The government scheme plans to provide short courses (six days) for village dais (midwives), and follow-up training workshops to train traditional birth attendants. (Brown, 1978)

BAREFOOT DOCTORS: Village "barefoot doctors," the pallichikitshak, have been started in training. They will be kept in government service for one year; after that, they will enter into private practice in their villages. (Brown, 1978)

PALLISHISHU CLINICS: At the Pallishishu clinics observed, basic equipment was available but unused, and the clinic seemed to function through cursory examinations by the doctor, a matter of asking the chief complaint and writing a prescription. The trained volunteers seemed only to function as assistants to the National Doctor, providing (inadequate) patient records, collecting the minimal fees, and giving out the medications that had been prescribed. Overuse of medication was apparent. No health or nutrition education was conducted, despite wall posters about health. The whole approach of prevention was not even touched on. No immunizations were offered. (Brown, 1978)

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

HEALTH WORKERS: By 1978, 575 workers had been trained as village volunteers under the Pallishishu system. (Brown, 1978)

MALE HEALTH WORKERS: Rural health services are disproportionately delivered by males, because of cultural restrictions on female workers from moving far from their own houses and village bases. (Brown, 1978)

PALLISHISHU MEDICAL RECORDS: Medical records kept at the Pallishishu clinics reflect the stated complaints of the patients and the results of cursory examinations. They in no way reflect the true morbidity pattern of the villages. Misdiagnoses occur as a result of the cursory nature of the system: a child being treated for worms was observed to have an advanced case of vitamin D deficiency rickets. (Brown, 1978)

URBAN

NUTRITION UNIT: The Dhaka Nutrition Unit conducts nutrition education activities for groups and individuals and conducts demonstrations, for mothers and schools, at health facilities, reaching 5,500 per month. Topics include weaning, hygiene and sanitation, balanced diet, pregnancy and lactation, kitchen gardens, and weight charts. (Austin et al., 1978)

CHILDREN'S NUTRITION UNIT: The Children's Nutrition Unit distributes local and imported rice, beets, wheat, vegetables, and fish for on-site consumption by pregnant and lactating women and preschoolers age 6 months to 8 years. Selection is based on class, risk, and nutrition status. They also distribute fortified sorghum grits supplied by the World Food Program. Support is 10% U.N. and 90% voluntary organizations. (Austin et al., 1978)

"RURAL" HOSPITALS: The consultant observed newspaper coverage of the construction of a new "rural" hospital; it was located in one of the major cities. Hospitals draw patients from a radius of no more than 7 to 10 miles. (Brown, 1978)

6. COMMENTARIES

NATIONAL

NEED FOR COORDINATION: Voluntary and international agencies, including AID and the World Bank, offer large sums of money and impose large new projects, which will serve to create new opportunities in the construction of new physical plants, but which tend to undermine seriously the problem of health service delivery in rural areas. Most are not concerned with long-range management and maintenance costs. (Brown, 1978)

PREVENTION: Nearly all the nutrition-related problems affecting mothers and children could be remedied through education, rural health workers, immunizations, and improved hygiene and sanitation. (Brown, 1978)

CAUSES OF MALNUTRITION: Malnutrition is thought to be caused in part by lack of food availability, poor maternal education, and social dislocation. (Nutrition Reviews, 1981)

CAUSES OF MALNUTRITION: The poor nutritional status of the population is not due entirely to lack of resources. Inadequate utilization and uneven distribution of the available resources also exacerbate the pressures on available resources. (JGUAG, 1980)

CAUSES OF MALNUTRITION: The underlying causes of chronic malnutrition in Bangladesh are: shortages of food grains, maldistribution of food in the region, lack of price control and frequent price fluctuations' effects on production, and lack of knowledge of how to get the maximum benefit out of available foods. (Women for Women, 1979)

MALNUTRITION AND INCOME: The poor intake of fish, milk, dal, eggs, and vegetables, and lack of complexity in the diet are caused by poor income and not because of lack of knowledge about nutritive elements of food or cultural beliefs related to food use. (Rizvi, 1979)

CAUSES OF MALNUTRITION: The primary cause of malnutrition is economic deprivation; cultural factors are secondary. It is economic factors which limit intake both in quantity and in quality (e.g., low intake of high-protein foods). Another secondary factor is education, but this is so strongly correlated with income that its effects cannot be differentiated in most cases. (Rizvi, 1979)

MALNUTRITION RISK FACTORS: The only group strongly affected primarily by cultural rather than other ecological factors is the transitional (age 6 months to 2 years) group, during which time many of the available foods are withheld because of fear of diarrhea, worm infestation, and digestive disorders. (Rizvi, 1979)

CAUSES OF POOR NUTRITION STATUS: The poor nutritional status of the population is not entirely due to lack of resources. It is also due to the inadequate utilization and uneven distribution of available resources. (JGUAG, 1980)

6. COMMENTARIES (Cont.)

ENVIRONMENTAL FACTORS AND FOOD USE: A dynamic relationship exists among cultural beliefs, values, and the economic status of the household; the effect of such a relationship on food use is far from being uniform. Differences in environmental factors, such as income, education, and rural/urban location have little or no effect on the food beliefs associated with health and disease. However, the effect of environmental factors, especially income and education, becomes significant at the level of behavior—the actual food use pattern. (Rizvi, 1979)

BREAST FEEDING EDUCATION NEEDED: Mothers, especially in rural areas, will breast feed if not taught otherwise; it is the natural way for them to feed their babies. Education regarding breast feeding is needed for health workers, who discourage mothers, especially in urban areas. Paramedical staff and village midwives should also be trained about the importance of breast feeding and the goodness of breast milk. Mass media should be used. (Quader, 1979)

BREAST MILK AND SUPPLEMENTS: Because of the poor nutritional status of most mothers, which adversely affects both quality and quantity of breast milk, Bangladeshi infants must receive supplemental foods as early as 3 months of age, rather than the 6 months which may be appropriate for the children of well-nourished mothers. (Khan, 1980)

WEANING AND EDUCATION: Since children in the high risk, or transitional, age group suffer caloric deprivation due to cultural factors, such as late introduction of solid foods, we need to focus on nutrition education which will promote the use of weaning food. Existing practices can be built upon, such as the custom of preparing "Kanji" by removing rice from the family pot before serving. (Rizvi, 1981)

WOMEN'S PROBLEMS: The most serious problems of mothers and children and the high rates of mortality and morbidity as a whole result from various interrelated conditions: malnutrition, infection, closely spaced and too-frequent pregnancies, and the lack of health care and other social services against a background of severely poor social and economic conditions. (Women for Women, 1979)

WOMEN'S NEEDS: The Women for Women Research and Study Group, reporting at the request of the Women's Development Programme of UNICEF, Dhaka, concluded that: nutrition education should be imparted compulsorily from the primary school level; interim measures such as the development of incentives to spur production and consumption of vitamin-rich food supplements are badly needed; primary health care and nutrition programs' success would depend to a great extent on health education for women; and that proper health education of all women is of vital importance. (Women for Women, 1979)

FEEDING PROGRAMS: The feeding programs carried out by foreign voluntary agencies succeeded in saving a few lives from starvation, but were not able to improve the nutrition of mothers and children. On the contrary, they have undermined the confidence of mothers in the high nutritive value of breast milk and also have led them to believe that foods showing pictures of healthy babies might have a magical effect on their children's health. (Rizvi, 1979)

FOOD FOR WORK: At every step, a share of the grain is used for "essential requirements." By the time the allotment has passed through the levels of the thana, union, village, and sadars to the workers, a large part of the grain is used up. Many women working for FFW must accept whatever is offered--often only half of their entitlements. (Women for Women, 1979)

IODIZATION: INFS studies of salt marketing in areas affected by goiter indicate that all the salt produced in Chittagong, Patiya, Narayanganj, and Chanpur would have to be iodized in order to be certain that iodized salt would reach the affected areas. (Ahmad, 1979)

VITAMIN A SUPPLEMENTS: Because of lack of skilled personnel and motivated parents, programs relying on semiannual administration of large doses of vitamin A cannot succeed without the assistance of mass media and other means of communication on the gravity of the problem and means of its eradication. Adaptation of food habits would be a better solution than treating vitamin A as a drug. (Ahmad, 1979)

VITAMIN A SOURCES: Although vitamin A capsules are distributed to combat deficiency, there is no shortage of vitamin A rich leafy green vegetables, and nutrition education might be a useful adjunct to the distribution program. (JGUAG, 1980)

TO INCREASE VEGETABLE CONSUMPTION: To increase production and consumption of vegetables, motivation and technological support are needed. Motivation may be supplied through a mass media campaign addressing consciousness of the nutritive value of foods; the necessity to change food habits; and nutritional self-sufficiency versus food self-sufficiency. Applied nutrition should be taught in schools, incorporated into existing subjects. Technological aids should include research on vegetables now used, including carotene-rich sweet potatoes; increasing yield; adaptability of varieties; vegetables to be available during the months when they are usually scarce; and inexpensive methods of preserving vegetables. (Rashid, 1980)

ORAL REHYDRATION: Deaths from diarrhea can be reduced 50% through oral rehydration given at home. (Islam, 1977)

HEALTH SERVICES: The hospital and curative, urban bias of the health care system is pervasive. There is a lack of attention to the critical demographic problems. There is no realistic plan for developing activities that can be directed to the village level. WHO is convinced that vertical systems are inappropriate and that there must be strong primary health care services, particularly in MCH and nutrition. But if MCH, nutrition, and family planning were taken out of the broad based health services as they are now organized, there would be serious overlapping in both planning and utilization of staff, dual lines of command, and confusion in the programming of all staff. (Brown, 1978)

HEALTH SERVICES: The government's plans for health services are redundant. Maternal and Child Centers are being built at the union level (average population of a union area: 20,000), but Health is also constructing subcenters at the union level which have under-five clinics. (Islam, 1977)

6. COMMENTARIES (Cont.)

RURAL

EDUCATIONAL INTERVENTION: The Nutrition Appropriate Technology Task Analysis case study of Bangladesh concluded that nutritional deficiency in the transitional age group (6 months to 2 years) is not due to lack of resources and is amenable to educational efforts. (Rizvi, 1981)

CAUSES OF MALNUTRITION: Most rural children of the disadvantaged segments of the population develop PEM, leading to marasmus and kwashiorkor. This is due to lack of knowledge about supplementary and weaning foods, their preparation with locally available foodstuffs, and their importance for children from the age of six months. (JGUAG, 1980)

CAUSES OF ANEMIA: In areas with safe water, the major cause of anemia is nutritional deficiency, particularly of micronutrients; but in areas where surface water is used, the parasite load is the determining factor, for it severely inhibits absorption and utilization of nutrients. (INFS, 1982)

LABOR DEMANDS: From March through December 1976, mothers were confined to bed for about 22% of the days they were ill, but the percentage fell to less than half of that during the month of January, the month of intense post-harvest activity. One possible explanation is that even people who are ill are found to participate in the harvest activities because of the demand for labor at that time of the year. (Chen et al., 1979)

MATERNAL NUTRITION AND FERTILITY: Recent studies have shown that maternal nutrition status does not significantly affect the duration of postpartum infertility, so feeding programs for lactating women are therefore unlikely to result in increased fertility, as previously expected, as long as the mothers rather than the infants are consuming the supplements. (Huffman et al., 1980a)

TRADITIONAL BIRTH ATTENDANTS: Traditional birth attendants, now responsible for the vast majority of deliveries, represent a major resource of potential medical personnel. The WHO also recognizes the potential of utilizing this resource, incorporating them into an overall health strategy. To accomplish this would require training in medical principles such as hygiene and physiology, eradicating misconceptions found to be harmful, and encouraging current beneficial practices, such as prolonged breast feeding. (Bhatia et al., 1979)

HEALTH CARE: Reduction in child mortality requires paraprofessionals at the village and union level to administer and supervise treatment for diarrhea, pneumonia, and tuberculosis. (Islam, 1977)

URBAN

CONTINUITY OF BELIEFS: Urbanism cannot be considered an independent variable in Bangladesh because there is a continuity of beliefs and behaviors between rural and urban areas. (Rizvi, 1979)

BIBLIOGRAPHY

Agricultural Research Council

- 1980 Annual Report 1979-80. Dhaka: Bangladesh Agricultural Research Council.

The Bangladesh Agricultural Research Council (BARC) was created to coordinate the country's human, physical, and financial resources to address priority farm problems. It will plan, promote, support, coordinate, monitor, and evaluate agricultural research. Both food and cash crops are studied.

Ahmad, K.

- 1979 On Nutritional Policy and Programs in Bangladesh. Paper presented at the Third Bangladesh Nutrition Seminar, March 22-24.

The author presents summaries of successful nutrition surveillance and intervention programs in Indonesia and the Philippines and describes the lessons that may be applied in solving Bangladesh nutrition problems. He recommends specific policies and interventions, including nutrition education activities; a weighing program for young children; gardening; institutional rehabilitation of severely malnourished children; fish and poultry culture; women's associations; review of land use, waste and water programs, programs to deliver iodine, vitamin A, immunizations, and deworming, and creation of employment and other income-generating opportunities.

Ahmed, M.

- 1977a The Savar Project: Meeting the rural health crisis in Bangladesh. A Project to Help Practitioners Help the Rural Poor, Case Study No. 1. Essex, Conn. USA: International Council for Educational Development.

This report provides a summary of the origins and activities of the Savar Project, an attempt to solve the basic health care service problem in a rural area 20 miles northwest of Dhaka. It includes information on health care and development approaches; major project activities, which include health care, family planning, agriculture and nutrition, women's vocational training and education; and the Jamalpur project. In another chapter, the impact of project activities is assessed. Finally, finances and costs are detailed, and conclusions drawn. There are also appendices on the Jamalpur Project and national health and family planning programs.

Ahmed, M.

- 1977b BRAC: Building Human Infrastructures to Serve the Rural Poor. A Project to Help Practitioners Help the Rural Poor, Case Study No. 2. Essex, Conn.: International Council for Educational Development.

The purpose of this study was to review and analyze the rural development activities of the Bangladesh Rural Advancement Committee,

BIBLIOGRAPHY (Cont.)

in order to draw some lessons and conclusions about questions that arise in the course of designing and implementing programs to serve the rural poor. The questions that prompted the study were: how can individual and fragmented activities be integrated into a concerted development process aimed at improving the life of rural families; how can the "top-down" approach to rural development be reversed, in order to stimulate participation in the process by rural people; how can education best be used to improve the performance of development programs to enhance integration and community participation; how to reach the underprivileged segments of rural communities; and how voluntary organizations can best demonstrate new approaches for large public programs. The report includes some background on the BRAC and an overview of its activities, including functional education, health and family planning, agricultural development, programs for women, recruitment and training of staff, development of institutional structures, costs and finances, and conclusions.

Austin, J.E., Mahin, M., Pyle, D., and Zeitlin, M.

- 1978 Annotated Directory of Nutrition Programs in Developing Countries. Cambridge, MA: Harvard Institute for International Development, June.

This directory of project descriptions was compiled to facilitate communication among nutrition program personnel and to provide a reference source for those interested in descriptive data concerning nutrition programming in developing countries. A mail survey sponsored by a U.S.A.I.D. grant provided the basic information; the 201 respondents for 66 countries tended to be mostly private, voluntary organizations running relatively small projects; larger scale, government-run programs are underrepresented. Data requested for each project include: health services provided, to whom and how many at what types of sites; supplementary foods, how distributed and to whom, and what the the foods are; weaning foods and fortified foods; agricultural programs; selection basis for recipients; cost per recipient; source of support; type of evaluation data available; and degree of community involvement.

Bhatia, S., Chakraborty, J., and Faruque, A. S. G.

- 1979 Indigenous birth practices in rural Bangladesh and their implications for a maternal and child health programme. Scientific Report No. 26. Dhaka, Bangladesh: International Centre for Diarrhoeal Disease Research. July, 1979.

Original data

Method: Interviews with village health workers and pregnant women, gathered to investigate the traditional practices associated with pregnancy, childbirth, and the postpartum period before embarking on a village-based health program

Sample: 80 female village health workers, 80 pregnant women, and about 60 deliveries and postpartum reports

Location: 70 villages in Matlab Thana, Comilla district, about 45 km. south-east of Dhaka, in the field station area of the ICDDR,B.

Although the information presented is largely anecdotal, it is a valuable basis for beginning to design a health service and training program which will utilize local personnel and recognize the role of local beliefs and practices. The paper presents a theoretical background, two delivery case studies, descriptions of local food beliefs and practices related to maternal and child health, discusses the limitations on the role of rural health centers in supporting childbirth, discusses birth practices in other cultures, and presents specific recommendations regarding training local health workers.

Brown, R. E.

- 1978 Report Consultation Visit: Bangladesh Nov. 27-Dec. 12. New York, N.Y.: CARE.

This consultation was conducted to examine ways in which CARE could assist in the training of paramedical rural health workers in Bangladesh. Dr. Brown includes an extensive description of the background of the problem as well as his findings and recommendations.

CARE

- 1980 Resume: CARE Projects, Fiscal Year 1980.

This report describes the proposed and ongoing CARE projects in many countries, giving project numbers and projected activity and staffing levels, but no budget information.

Chambers, R., Longhurst, R., Bradley, D., and Feachem, R.

- 1979 Seasonal Dimensions to Rural Poverty: Analysis and Practical Implications. Brighton, England: Institute of Development Studies at the University of Sussex, February.

This paper reports on a conference on seasonal dimensions to rural poverty in several developing nations. Presentations include specialized papers on climate, tropical diseases, and nutrition and women, as well as multidisciplinary case studies. Generally, the worst times of year are the wet seasons, typically marked by a concurrence of food shortages, high demands for agricultural labor, and high rates of infectious diseases. Including seasonal analysis in rural planning suggests priorities for research, and indicate practical policy measures for health, family, agriculture, and government planning and administration.

Chen, L. C., Alauddin Chowdhury, A. K. M., and Huffman, S. L.

- 1979 Seasonal dimensions of energy protein malnutrition in rural Bangladesh: The role of agriculture, dietary practices, and infection. Ecology of Food and Nutrition 8:175-187.

Original data

Method: A longitudinal study was devised to study the determinants of nutritional well-being and the interaction of these determinants in

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the context of seasonal variations in agricultural practices, dietary intakes and illness, with emphasis on how these factors affected the nutritional status of preschool children. Female field workers visited women and children in their baris at monthly intervals to collect nutritional, reproductive, health, and socioeconomic information. They also measured suckling frequency and duration over an 8-hour daytime period over a 1 to 1.5 year period, or until the respondent became pregnant again.

Sample: 200 woman-child pairs, parity 2-4. The mothers were aged 20 to 34 years and were Muslim. The children were 17 to 25 months of age
Location: 50 rural villages in Matlab Thana, Comilla District, Bangladesh

Maternal and child nutritional status showed seasonal variations associated with low levels of family food availability. These variations were more pronounced among the landless than among landowning families.

Chowdhury, A. K. M. A., Huffman, S. L., and Curlin, G. T.

1977 Malnutrition, menarche, and marriage in rural Bangladesh. Social Biology 24(4):316-25. Winter.

Original data

Method: A study was conducted to assess the impact of nutritional status on age at menarche, and the association between age at menarche and age at marriage. Initial interview data was obtained from a prospective study of menarche conducted by the Cholera Research Laboratory, Matlab. Retrospective information on marital and menarcheal status and age and date of menarche was obtained by local female field assistants. Height, weight, and arm circumference were also measured. Interviews were repeated at monthly intervals for girls who had not yet reached menarche, to provide prospective data.

Sample: 1,155 girls aged 10 through 20.

Location: Matlab, rural Bangladesh.

Researchers concluded that the average age at menarche had increased in rural Bangladesh. This increase is probably associated with malnutrition caused by war, post-war inflation, floods, and famines during the period 1971-1975. Body weight was the factor most closely associated with the age of menarche. Menarche also shows seasonal variation, with a peak in winter. It is possible that the observed increase in the age at marriage is associated with the increased age at menarche.

Clark, C. S.

n.d. Technical Feasibility and Acceptability of Sun Dried Vegetables in Bangladesh. Dhaka: Appropriate Technology Cell, Bangladesh Agricultural Research Council; AATC Bulletin No. 3.

This paper describes a nine-week trial of the feasibility of sun-drying winter vegetables using a solar cabinet dryer and a test of the acceptability of the resulting products. Cauliflower, carrots,

and tomato puree were all successful and acceptable. No consideration was given to packaging, pricing, or distribution of the products. The equipment and procedures used are described, and references are listed which describe equipment design and procedures for other dried vegetable products.

Djukanovic, V. and Mach, E. P. (eds.)

- 1975 Alternative approaches to meeting basic health needs in developing countries. Geneva: World Health Organization.

Realization that conventional health services and approaches had failed to make any significant impact on the health problems of developing nations, WHO and UNICEF decided to carry out a study of some of these approaches in order to analyze their shortcomings and develop effective policies and approaches to health care. Information was gathered from a variety of agencies at the international, regional, country, and field staff levels. Case studies of several promising programs were also carried out, including the Savar Project and the Jurain Nutrition Project in Bangladesh. Some aspects of conventional health services are identified as factors involved in the failure of the present system. In all cases where programs were successful, the government had given a high priority to health in its national development program and had, in most instances, shown a willingness to undertake substantial changes in approach, rather than to look for solutions within the existing system. Enterprise and leadership on the part of the community are important factors, and external aid also plays an important role. The authors concluded that far-reaching changes in the system, affecting the distribution of power, the pattern of political decision-making, the attitude and commitment of health professionals and administrators, and people's awareness of what they are entitled to, are required.

FAO

- 1979 The State of Food and Agriculture 1978. Rome: Food and Agriculture Organization of the United Nations, FAO Agriculture Series No. 9.

This document presents FAO data on food and agricultural production, food prices, food aid, fisheries, forestry, international trade and investment. The section on problems and strategies in developing regions addresses specific production goals and constraints. Most data are presented aggregated on a regional or economic basis.

FAO

- 1977 The Fourth World Food Survey. Rome: Food and Agriculture Organization of the United Nations. FAO Statistics Series No. 11; FAO Food and Nutrition Series No. 10.

This survey, part of the FAO's continuous work in assessing the world food situation, is based on the best data available. Most data presented in this report are aggregated by continent or by development categories. National data are given for agriculture and food

BIBLIOGRAPHY (Cont.)

production and for calorie and protein supplies per capita. Calculations are made of the per capita calorie requirement for each nation and for the "critical limit" of calorie intake (set at 1.2 times the estimated Basal Metabolic Rate) below which an individual is nearly certain to be calorie deficient.

Haque, M. A.

- 1980 Opportunities for Quick Growing Fruit in Bangladesh, Specially in the Homestead of Rural Areas.

The author discusses common fruits, their agriculture, and obstacles to improved production. Production and nutritive values are presented, as well as a table of harvest periods and recommendations for improved production.

Hossain, M. A.

- 1980 Solar Drying of Paddy During the Monsoon in Bangladesh. Presented at the Meeting on Appropriate Technology in the Fields of Solar Drying of Paddy during the Monsoon and Improvement in the Pumping efficiency of the manually operated Shallow Tubewells, BUET, Dhaka, November 1.

The author discusses problems arising from the need to harvest and dry paddy rice during monsoon season, when open-air drying is difficult or impossible. He gives guidelines for development of a practical, appropriate, and acceptable solar drying system.

Hoyle, B., Yunus, M., and Chen, L. C.

- 1980 Breast-feeding and food intake among children with acute diarrheal disease. American Journal of Clinical Nutrition 33:2365-2371.

Original data

Method: Children presenting to the Matlab treatment unit were divided into three groups. Fifteen received routine care for diarrhea, including oral rehydration. The mothers of the next 15 received intensive dietary education. The third group was composed of 11 healthy control children who were free of major complications and whose exact birth date was known. The study was designed to measure the reduction in food intake during diarrhea and to determine means of promoting such intake.

Sample: 41 children aged 6 to 35 months.

Location: International Centre for Diarrhoeal Disease Research, Matlab Thana, Bangladesh.

The protein and calorie intakes of children with diarrhea were significantly lower than those of healthy children. There was no significant difference between education and non-education groups with diarrhea. Furthermore, there was no significant difference in calorie intake from breast milk between healthy and ill children and between diarrhea groups with and without dietary education. The difference was that breast milk provided a proportionately larger share of calories in children with diarrhea because of their reduced consumption of food supplements.

Huffman, S. L., Chowdhury, A. K. M. A., Chakraborty, J., and Simpson, N. K.

1980a Breast-feeding patterns in rural Bangladesh. American Journal of Clinical Nutrition 33(1):144-154.

Original data

Method: Cross-sectional, semipropective, and longitudinal survey based on the vital registration systems of the ICDDR,B. A subsample of 200 breast feeding women were visited and interviewed at monthly intervals by female assistants who collected information on diet, morbidity, and maternal activities as well as anthropometric measures. Women were studied for 1.5 years or until they became pregnant or stopped breast feeding.

Sample: 1419 women, parity 2 to 4, age 20 to 34, who gave birth to live infants between February and September 1974

Location: All 86 villages of Matlab Thana, a rural area 40 miles south of Dhaka.

The data presented are part of a larger investigation of the association between maternal nutrition status, breast feeding patterns, and postpartum amenorrhea. This report gives details about breast feeding patterns and beliefs and offers recommendations concerning supplementary feeding programs and ways to preserve the high rate of breast feeding.

Huffman, S. L., Chowdhury, A. K. M. A., and Sykes, Z. M.

1980b Lactation and fertility in rural Bangladesh. Population Studies 337-347.

Original data

Method: A study was conducted to determine the role of nutritional status on levels of fertility among non-contracepting women. The vital registration system of the Cholera Research Laboratory was used to obtain a sample of registered births. The study was conducted in three phases. During the first phase, only women who had given birth between February and September 1974 were interviewed. During the second phase, women whose infants were still alive, who were breast feeding, not pregnant, and not using contraception were interviewed. The third phase involved reinterviewing women who had reported being amenorrheic in the second phase, to determine their individual durations of post-partum amenorrhea. Corrections were made in the data to account for relatively small proportions of inconsistency in women's responses. All interviews were conducted by female interviewers.

Sample: Phase I: 2,500 women in 86 villages who gave birth between February and September 1974. Phase II: 2,000 eligible women from Phase I, interviewed between November 1975 and January 1976. Phase III: re-interview of phase II women who reported amenorrhea, to determine the length of postpartum amenorrhea. About 1,000 women were interviewed between August and September 1976.

Location: 86 villages in Matlab Thana, a rural area about 40 miles south of Dhaka.

BIBLIOGRAPHY (Cont.)

Seasonal variation appears to have a significant impact on the length of post-partum amenorrhea, and the time of year in which menses are resumed. The average duration of post-partum amenorrhea was longer for women who gave birth in February than for those who gave birth in September. Most women resumed menses between September and December. Nutrition, however, has only a slight effect on the length of post partum amenorrhea; it accounts for less than 10% of the length of the average birth interval. Factors associated with the harvest, such as changes in the infant's diet which may lead to decreased breast feeding, or the occupational activities of women during the harvest season, may be in part responsible for this trend.

Huffman, S. L., Chowdhury, A. K. M. A., and Mosley, W. H.

- 1978 Postpartum Amenorrhea: How is it Affected by Maternal Nutritional Status? Science 200:1155-57.

Original data

Method: Heights, weights, and arm circumferences of women and their children were measured. Information on menstrual status, supplementation of the infant diet, and maternal and infant morbidity were also collected.

Sample: 2048 breast feeding women 13 to 21 months postpartum.

Location: "Rural" Bangladesh, probably near the ICDDR,B, Dhaka.

Data were gathered to test hypotheses regarding the effects of body fat stores on postpartum amenorrhea. Data were analyzed to determine whether there was a threshold weight for height below which all women would be amenorrheic. Older women were found to be more likely to be amenorrheic 18 to 20 months postpartum; richer women and those feeding their infants were more likely to have resumed menstruating than others. With all variables present, maternal nutrition status explained less than 1% of the total variance. Current maternal and infant morbidity and infant anthropometric status were not associated with the probability of amenorrhea. The determining difference may actually be breast feeding patterns.

INFS (Institute of Nutrition and Food Science)

- 1982 Studies on the Etiology of Anaemia in Bangladesh: Effects of Helminths and Safe Water. Dhaka: University of Dhaka, Institute of Nutrition and Food Science, July.

Original data

Method: Field teams including a physician, nutritionist, two or three dietary investigators, and two medical technologists visited households and conducted clinical examinations, collected blood and stool samples, analyzed local water, and administered a questionnaire to the head of the household or the "house-wife." The questionnaire included items on socioeconomic status, environmental conditions of the household including their methods for disposing of excreta, and a 24-hour recall of the household's dietary intake.

Sample: 1677 individuals; 1106 in tubewell areas and 571 in non-tubewell areas.

Location: Eight villages in the Dhaka district, 6 with tubewells and two without.

The role of helminths with special reference to safe water was investigated from several aspects: 1) prevalence of anemia and frequency distribution of hemoglobin values in 2 communities, one with safe water from tubewells and the other depending on sources such as rivers, ponds, and "kaccha" wells; 2) the impact of potable water on frequency and intensity of worm infestation in these two communities and how it related to incidence and severity of anemia; 3) the relationship of environmental factors, especially those relating disposal of human excreta with anemia; 4) socioeconomic factors of the families under study; and 5) dietary intake factors and precise interrelationships between incidence of anemia and intake of micronutrients at the household level.

Islam, K.

- 1977 Alternative Organizational Schemes for Primary Health Care with Special Reference to Bangladesh. Gono Sasthaya Kendra, Dhaka, July.

The author summarizes research and surveys relating to health, nutrition, and family planning and critiques the current health care system. He presents a detailed proposal for revitalization and restructuring of the health care system, including staff training, facilities needed, and the fee system.

Islam, M. S.; Rahaman, M. M.; Aziz, K. M. S.; Rahman, M.; Munshi, M. H.,; and Patwari, Y.

- 1981 Infant Mortality in Rural Bangladesh: An analysis of Causes During Neonatal and Postnatal Period. Dhaka: International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B); Scientific Report No. 44, April 1981.

Original data

Method: Longitudinal monitoring of population through demographic surveillance system; matching of birth and death certificates; data collected by field worker visiting household every 7 to 10 days. Physicians verified death reports for verification of final diagnosis. Sample: 1351 infants born between July 1, 1976 and June 30, 1977, in a rural population of about 25,000
Location: Teknaf Thana, Chittagong District

This report consists primarily of tables showing compilations of data related to infant deaths as recorded by the Teknaf Dysentery Project. Tables show causes of death by neonatal and postnatal period, death as associated with complications of the mother or newborn and by age of mother and family size. The report also includes a description of the methodology, definitions, results, and discussion, and a list of ICDDR,B publications.

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JGUAG (Joint Government-UNICEF Advisory Group)

- 1980 Master Plan of Operations for a Programme of Services for Children and Mothers in Bangladesh, June 1980-June 1982. Dhaka: Government of the People's Republic of Bangladesh and United Nations Children's Fund, July.

The JGUAG formulated this document for the second Government-UNICEF Country Programme based on the policies, priorities, and objectives of the Government's Second Five-year Plan (1980-1985). First, the document the broad scope of the national Plan, and reviews the history of UNICEF programs. Second it outlines a plan for UNICEF assistance for women and children. Objectives, strategies, and project activities are described for the areas of health and family planning, water and environmental sanitation, education and social services, nutrition, area development, and other developmental activities. This document, formulated by the Joint Government-UNICEF Advisory Group addresses two interrelated plans. First it outlines the scope of the Government's Second Five-Year Plan (1980-1985), including major plan objectives, policies, and strategies, particularly aspects that are related to social development. Then, a plan for UNICEF assistance for women and children (1980-1982) is outlined, including strategies and activities for health and family planning, water and environmental sanitation, education and social services, nutrition, area development, and developmental activities to meet the basic needs of approximately 40 million children under the age of 14.

Kabir, M. H.

- 1982 Seminar Topic: Some socio-economic determinants of breastfeeding and infant mortality in urban and rural areas of Bangladesh. Dhaka: Centre for Population Management and Research (CPMR), Institute of Business Administration (IBA), University of Dhaka.

Original data

Sample: Infants born between January and December 1979: 502 born at the Savar Gano Swasthya Kendra who were from the unions of Pathalia and Damsona; and 182 urban infants born at Dhaka Medical College Hospital. The rural sample was selected at random from all births to women from the two unions, but the urban sample represented all cases which could be followed from birth, although there were 2516 births at the hospital during the year.

Location: Dhaka and the relatively rural unions of Pathalia and Damsona, near Dhaka.

The basic objective of this study was to determine possible socio-economic correlates of breast feeding practices in urban and rural areas in order to determine ways to prevent further decreases in the incidence and prevalence of breast feeding. Despite initial intentions to study mortality data, the figures gathered were clearly inconsistent with existing data and expectations, and so were discarded. Data on study children who died were also excluded from the figures reported on breast feeding because of their potential to distort the "real picture." The results of the study are presented here exclusively in tabular form, with no discussion of the findings.

Khan, M.

- 1980 Infant feeding practices in rural Meheran, Comilla, Bangladesh. American Journal of Clinical Nutrition 33:2356-2364.

Original data

Method: Rural sample-longitudinal study; collection of dietary data and anthropometric measurements done monthly during the first year and quarterly thereafter. Urban-cross-sectional survey, household visits conducted by field teams. Data collected 1974-1977.

Sample: Rural--401 children; urban--98 poor (lowest class government employees and those living on daily labor wage) and 95 elite (top class of government and university employees).

Location: Rural: Meheran village, Comilla district; Urban: Dhaka.

This survey was conducted to assess the prevalence of breast feeding and other infant practices. Breast feeding is still nearly universal among all but urban elites. This practice should be encouraged, but supplementation with appropriate foods at suitable ages is also necessary. Malnutrition is prevalent among infants despite breast feeding because malnourished mothers produce milk of inadequate quality and quantity; therefore, their infants should receive supplements at an early age (3 months) compared to infants of well-nourished mothers.

Khan, S. H.

- n.d. Marketing and utilization of Maize with special reference to Bangladesh.

The author, head of the Plant Breeding Division of the Bangladesh Agricultural Research Institute, discusses all possible uses of maize, including human and animal feeding, alcohol and pharmaceutical production, export, and industrial uses, including paper board industry, industrial chemicals, and maize oil as a by-product of starch extraction.

Kielman, A., Ajello, C., and Kielman, N.

- 1980 Evaluation of Nutrition Intervention Projects. Final Report of the Documentation Coordinator, TA/PPU/EUI. Washington, DC: USAID, Technical Assistance.

This report summarizes the conclusions of a study undertaken to evaluate nutrition interventions in order to provide guidelines for future nutrition programs. Six interventions were selected and evaluated according to predetermined criteria. Information on each study was collected by examining published and unpublished project materials, site visits were made to clarify remaining questions, and the project was evaluated with or without the aid of secondary analysis of the data. One of the interventions selected for evaluation was a UNICEF project designed to study the effect of a subsidized food supplement on growth and mortality of preschool children in a famine situation in Companiganj Thana, Noakhali

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District, Bangladesh. After reviewing this and other interventions, the authors concluded that nutrition interventions can have a significant beneficial effect on the health of children 0-4 years of age, but the methodological framework in which these interventions are studied needs to be improved. To this end, they provide a list of questions that can be asked by those designing nutrition intervention projects.

Licross (Licross/Voltags Steering Committee for Disasters)

- 1979 Medico-Nutritional Information on Disaster Prone Countries and Glossary of Common Illnesses. Brussels: International Research Center on Disasters Epidemiology, Unit of Epidemiology, School of Public Health, University of Louvain. September.

This series of over 100 1- or 2-page "country fact sheets" was prepared by the Steering Committee to aid in prompt and appropriate responses to disasters; the accompanying glossary was designed to aid non-medical administrators. Each section describes a country's diet, nutritional deficiencies, medical supplies, health services, capacity for handling refrigerated drugs, and common illnesses. Regional and rural-urban distinctions are included where possible.

Nutrition Reviews

- 1981 Interaction of Infection and Nutrition in children: Two Studies from Bangladesh. Nutrition Reviews: 39(11):394-396.

This article reviews the findings of studies concerned with the incidence of protein energy malnutrition in conjunction with infections in Bangladesh. The author believes that the "malnutrition-infection complex" deserves more attention on part of nutritional scientists in order to devise more effective solutions.

Quader, M. A.

- 1979 Country Report--Bangladesh. Workshop on Breast Feeding, Bangkok Nov. 17 and 18.

Subtitled, "Current status of breast feeding and measures taken to improve breast feeding practices in Bangladesh," this presentation includes the author's observations on reasons for discontinuing breast feeding and reports on a study of 500 infants seen in Dhaka Children's Hospital. The study methodology and sample selection are not described. He concludes with recommendations of measures to be taken to improve breast feeding.

Rashid, M. M.

- 1980 Constraints in Vegetable Growing Around Homesteads in Rural Areas. Paper presented at the Workshop on "UNICEF Assistance to Bangladesh during 1980-81 and 1981-82" organized by UNICEF April 21-26, 1980 at Bangladesh Agricultural University Campus, Mymensingh.

The author presents his expert views on current vegetable production and consumption, both inadequate, and remedies for this situation. Both motivational and technological issues are addressed.

Rizvi, N.

- 1981 Nutrition Appropriate Technology Task (Bangladesh) Analysis: A Case Study in Bangladesh. In International Nutrition Communication Service (INCS) First Asian Household Appropriate Technology Conference, Colombo, Sri Lanka July 12-17, 1981. Sponsored by: Ministry of Colombo Hospitals and Family Health; International Union of Nutritional Sciences (IUNS); United States Agency for International Development (USAID); United Nations Children's Fund (UNICEF); International Nutrition Communication Service (INCS): Newton, MA: INCS.

This paper aims to analyze mothers' tasks in rural Bangladesh for identifying resources and strategies which can be utilized effectively for making home-made weaning foods and encouraging their use for young children. The constraints, both cultural and resource-related, are also noted because failure to recognize such constraints will make nutrition education inadequate; in addition, education will also run the risk of being rejected. Dr. Rizvi presents a description and analysis of food resources, preparation, feeding, and cultural constraints.

The conference at which this paper was presented arose out of the conviction that world problems of malnutrition cannot be solved by more medical research and hospital services. A broader solution is advocated--one that takes into consideration the important role that women play in solving this problem, and the disproportionate share of the burden of malnutrition that is borne by them and by their children. Representatives from nine Asian countries, including Bangladesh, participated in the conference, and projects were presented that develop, promote, or utilize appropriate technologies in the home to improve nutrition. The report includes a summary overview of each project, including the Pilot Experimental Training Course for Rural Women in Home Processing and Preservation of Fruits and Vegetables being undertaken in Bangladesh, along with technical papers from each country, including a Nutrition Appropriate Technology Task Analysis for Bangladesh, and the recommendations of the Technology Exchange Groups.

Rizvi, N.

- 1979 Rural and Urban Food Behavior in Bangladesh: An Anthropological Perspective to the Problem of Malnutrition. Doctoral dissertation, University of California, Los Angeles.

Original data

Method: Household interviews to collect demographic and economic data. Participant observation and informal interviews. Hemoglobin and stool analyses.

Sample: Rural: 25 households, selected to represent all village neighborhoods and landholding patterns. Urban sample of 32

BIBLIOGRAPHY (Cont.)

households, selected to represent the same income range as the rural sample and to have come to the city from the same general area.
Location: Baliadi, a village about 35 miles north of Dhaka.

Interventions which rely on food distribution or nutrition education overlook the effects of the larger economic and ideological factors which affect food use. This investigation attempts to define and examine the interrelationships among food behavior, environment, and culture. Sections include theoretical discussions, findings, with special attention to cultural aspects, and analysis of inter- and intra-household distribution. The author concludes that the prevalent inadequate caloric intake is principally the result of economic deprivation, exacerbated by cultural influences.

Swenson, I.

- 1978 Early Childhood Survivorship Related to the Subsequent Interpregnancy Interval and Outcome of the Subsequent Pregnancy, Journal of Tropical Pediatrics and Environmental Child Health 24(3):103-106.

Original data

Method: Study of birth records and interviews with mothers to determine intergestational periods; pregnancies of less than three months' duration were not recorded.

Sample: 17,066 live births that occurred in 1966 to 1970 that met study conditions: alive at the end of the first year of life; could have reached three years of age by the end of study follow-up; life span of child was longer than subsequent interval; and all were first pregnancies of a closed interval. Resulting sample included 1776 short-interval infants (less than 12-month interpregnancy interval) and 15,209 long-interval.

Location: Cholera Research Laboratory in Matlab Thana, specifically the 132 villages of Matlab known as the Old Trial Area.

UNICEF

- 1980 Fourth Workshop for UNICEF District Representatives on Rural Development and Nutrition, Held at Bangladesh Academy for Rural Development (BARD), Comilla, 25-29 June, 1979: Conclusions and Recommendations. Dhaka: UNICEF, March.

This report contains an overview of malnutrition and related factors in Bangladesh, as presented by UNICEF and workshop participants. Extensive discussion of related factors including income levels and distribution-social context of malnutrition and vulnerable groups. Extensive discussion of proposed and recommended actions for improving nutrition status, particularly through nutrition education, with program details.

UNICEF

- 1978 UNICEF Assistance for Health, Nutrition & Family Programmes of The Government of Bangladesh. Prepared for UNICEF District Representatives' Conference 29th April - 4th May, 1978.

This discussion paper describes nutrition status and problems of women and children in Bangladesh and details proposed interventions for cooperative implementation by UNICEF and the government of Bangladesh, including health and agriculture interventions. An outline gives details of plans for programs in health, family planning, applied nutrition, and nutrition education.

USAID (U.S. Agency for International Development, American Embassy, Dhaka)

1982 Telegram Re: Review of breastfeeding, weaning, and maternal nutrition programs. Dhaka, April.

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

USAID (U.S. Agency for International Development)

1979 Preliminary Overview of Nutrition Planning Activities in Selected Developing Countries. Washington, D.C.

This brief synopsis of nutrition planning activities in Bangladesh includes a description of the objectives and scope of planning efforts, a list of the specific sectoral components of the current approach, a few remarks on the organizational structure within which nutrition planning in Bangladesh takes place, including legal and personnel aspects, budget, and multisectoral linkages. It concludes with a few comments on the use of modified ration shops, a pilot mother's club project in Gopaldur Thana, and specification of amounts and kinds of external assistance for health and nutrition related activities.

USDA (U.S. Department of Agriculture)

1981 Fiscal Year 1982 Public Law Title II, ISC Approved Quantities, Voluntary Agencies/WPF/Government-to-Government. Washington, D.C.: Food for Peace, Program Operation Division, A.I.D., State Department, October.

This report is a computer printout showing the countries expected to receive Title II PL-480 foods in fiscal 1982, with the program sponsor, program category, recipients, and commodities (by weight and dollar value) approved for distribution by various voluntary agencies.

USDA (U.S. Department of Agriculture)

1978 Food for Peace 1977 Annual Report on Public Law 480. Washington, D.C.: U.S.D.A., July 10.

This report describes the PL-480 Title I (Sales) and Title II (Donation) activities for fiscal year 1977, giving activity summaries and highlights, and tables showing the commodities, countries, recipient categories, and sponsors of food distribution program.

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Vemury, M.

- 1980 Environmental and Social influence on food consumption patterns in Six Developing Countries. New York: CARE, September 1980. Funded by the Office of Nutrition, Agency for International Development, under Grant TA-G-1470.

Original data

Method: Household interview using precoded questionnaire in local language.

Sample: Random sample of 700 mothers, 80% of whom had children under six years old, and 210 "community influentials," teachers, informal leaders, or other respected individuals.

Location: 35 thanas in 4 regions: Dhaka, Chittagong, Khulna, and Rajshahi.

The data presented, primarily in tabular form, describe the beliefs and practices affecting the nutrition status of vulnerable groups in rural areas of six countries. Information is presented on general food consumption, foods considered beneficial or harmful to various vulnerable groups, food preparation and hygiene beliefs and practices, socioeconomic characteristics, and food classification systems.

WHO (World Health Organization)

- 1982 Infant and Young Child Feeding: Progress Report by the Director-General. Geneva: WHO, Thirty-Fifth World Health Assembly, Provisional Agenda Item No. 24, 30 March 1982.

This report contains the Director-General's report to the Health Assembly on steps taken in the promotion of breast feeding and improved infant and young child feeding since the presentation of the first progress report on this topic to the previous World Health Assembly, in May 1981. This report focuses on the theme of appropriate marketing and distribution of breast milk substitutes, including country-specific summaries of actions taken.

WHO (World Health Organization)

- 1980 The incidence of Low Birth Weight: A Critical Review of Available Information. World Health Statistics Quarterly 33(3): 197-224. (Division of Family Health, World Organization, Geneva.)

This review article, in French and English, summarizes studies of low birth weight incidence and causes in discussion and tabular form. Additional tables present data on total live births and low birth weight rates in specific countries and on regional bases. Extensive bibliography.

Women for Women Research and Study Group

- 1979 The Situation of Women in Bangladesh. Dhaka: UNICEF Women's Development Programme.

This comprehensive study of the demographic, social, economic, and legal status of women in Bangladesh was undertaken at the request of UNICEF with the underlying assumption that a better understanding of women's situation would shed more light on children's own situation. Most of the information is secondary data, but two case studies are included, which describe UNICEF-sponsored "Action-oriented Research Project(s) on Women in Rural Development." Other sections cover the education and health of women, women in the economic sphere, sociological patterns, law, policies and programs, and a summary of the issues and recommended actions.

World Bank

- 1981 World Development Report, 1981. Washington, D.C.: International Bank for Reconstruction and Development/The World Bank.

This document is the fourth in an annual series assessing key development issues; the focus of this year's work was the international context of development. Chapters are devoted to trade, energy, finance, human development, and countries' experiences in managing adjustment. Annexes provide tables of country-specific development indicators, in population, economics, labor, and government budgets. The per capita supply of calories was computed from the net food supplies available from domestic production, imports less exports, and changes in stock; net supplies exclude animal feed, seeds, quantities used in food processing, and losses in distribution. FAO requirements are based on physiological needs for normal activity and health, considering environmental temperature, body weights, age and sex distribution of the population, and allowing 10% for waste at the household level. The World Bank notes that this document should not be quoted as representing the views of the Bank, nor does the Bank accept responsibility for the accuracy or completeness of the report.

World Bank

- 1979 Bangladesh: Current Trends and Development Issues. Washington, D.C.: South Asia Regional Office, The World Bank.

The report was prepared as a background document for the meeting of the Bangladesh Aid Group in January 1979. It gives relatively large emphasis to short-run development, but also discusses longer-term issues. The report is based on the findings of a mission that visited Bangladesh in June 1978. It includes current development and prospects in agriculture, public finance, and the external sector (FY 78 - FY 80); management of the overall development effort; issues in agricultural development; industry's contribution to economic development; and issues in public sector resource mobilization. Annexes present data on price support and subsidies and price elasticities of demand for jute.

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World Fertility Survey

- 1979 World Fertility Survey: The Bangladesh Fertility Survey, 1975: As Summary of Findings. Voorburg, Netherlands: International Statistical Institute.

Original data

Method: A survey was undertaken in 1975 to measure the levels and trend of fertility, to study fertility differentials, to collect data on knowledge and use of contraception, and to develop national capabilities for carrying out demographic surveys. Three questionnaires were employed. The first one listed all members of the household, with details on residence, marital status, age, sex, and education. The second was a questionnaire for women, divided into 11 sections. It also included questions about fertility regulation, economics, abortion, and factors other than contraception affecting fertility. The third questionnaire asked about accessibility of various facilities, cropping patterns, and other environmental characteristics.

Sample: 6,513 ever-married women aged less than fifty years old.

Location: national sample

The findings suggest that fertility, although high, fell in the early 1970s, probably precipitated by war and natural disasters. Contraceptive practice is still uncommon, but knowledge of it is already widespread. Family size preferences of many women appear to be lower than their actual fertility. Age at marriage also appears to be increasing, as it has in other Asian countries.

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