Maternal and Infant Nutrition Reviews

EGYPT

an International Nutrition Communication Service publication
MATERNAL AND INFANT NUTRITION REVIEWS

EGYPT

A Guide to the Literature

Compiled by
Ron Israel - Senior Editor
Joanne Nestor - Editor and Reviewer
Ellen Blumenstiel and Steve Wirtz - Reviewers

An International Nutrition Communication Service (INCS) publication

INCS Advisory Board: Derrick B. Jelliffe, E. F. Patrice Jelliffe, Richard K. Manoff,
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INTRODUCTION

This monograph reviews the available literature on maternal and infant nutritional status, beliefs, and practices in Egypt. It also lists current government, USAID, international agency, and Private Voluntary Organization nutrition-related programs and policies.

This is not an all-inclusive listing but it should provide enough information to enable the health/nutrition planner (our primary target audience) to ascertain quickly what is known (and what needs to be studied) about this subject. The information is chronicled according to a Maternal and Infant Nutrition Review (MINR) system outlined on page 2.

Pages 3 to 5 contain geographic tables that reveal the extent to which various regions and specific localities have been surveyed. Page 6 presents the highlights of our findings. Pages 7 to 28 contain the data categorized according to the MINR classification system with boldface titles within each category to describe specific listings.

Pages 29 to 41 contain an annotated bibliography with each entry described in terms of type of study (original data or literature review), methodology, sample characteristics, and location.

Ron Israel
INCS Project Manager
MATERNAL AND INFANT NUTRITION REVIEWS

CLASSIFICATION SYSTEM

1. Target Group Nutrition and Health Status
   1.1 Women, Pregnant
   1.2 Women, Lactating
   1.3 Infants 0-6 Months
   1.4 Infants 6-24 Months

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3. Dietary Practices
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   6.2 Non-government (Including International Agencies)
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URBAN AND RURAL GOVERNORATES OF EGYPT

Adapted from M.I.T. - Cairo University Monograph #3
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8 Rural Governorates of Upper Egypt:

9 Rural Governorates of Lower Egypt:

Urban Governorates:

Frontier Governorates:

*See Table 2 for details of localities, if available.
TABLE 2

Localities Studied

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Note: The remainder of the "Locality" studies from Table 1 did not report the areas studied in detail, referring only to "urban Alexandria" or "an MCH Center in Cairo." These have been listed in Table 1 only.
REVIEW "HIGHLIGHTS"

Maternal Nutrition and Health Status: a high national maternal mortality rate; a high incidence of anemia among pregnant and lactating women, rural and urban; a lack of information about status indicators (e.g., age, weight, height, caloric intake, protein, etc.).

Infant Nutrition and Health Status (0-6 months): a high mortality rate, especially in the rural areas; the importance of diarrheal disease as a cause of death; significant incidence of low weight for age, particularly on a national level.

Infant (6-24 months) Nutrition and Health Status: high incidence of malnutrition in national, rural and urban studies, peaking during the second year of life; a high percentage of children with PCM under 1 year of age were never breastfed; urban infant mortality rate generally exceeds rural.

Dietary Beliefs: extremely supportive environment for breastfeeding, particularly in rural areas; mixed beliefs about the value of colustrum; skepticism about value of hospitals and health services.

Dietary Practices: seasonality is an important factor influencing food consumption patterns; trend toward exclusive breastfeeding in rural areas; trend toward mixed feeding and away from bottle feeding in cities, among larger families and women under 20 and over 45.

Weaning Foods and Procedures: most common reason for weaning and supplementation was insufficient breastmilk; little information about infant diet after weaning.

Nutrition Status Correlations: correlation between literacy and bottle feeding and between income and infant mortality; a negative correlation between income and breastfeeding; significance of the "doya" as an opinion leader; positive correlation between pure water and electrification and reduction of infant mortality in urban areas; seasonality is an important factor in determining rates of severe malnutrition.

Nutrition and Health Problems: lack of equipment for nutritional surveillance in rural areas; ambitious Westinghouse Health Systems project to strengthen rural health systems; lack of supportive services, such as transportation and communication impedes effectiveness of health service delivery system; lack of effective planning and monitoring and evaluation of supplementary feeding programs; job satisfaction appears to be a key variable in assessing performance of feeding program administrators; lack of a national nutrition policy; lack of a formal nutrition education component in the health delivery system; Government's 5 year plan (78-82) puts a high priority on improving maternal and child nutritional status.
1. TARGET GROUP NUTRITION AND HEALTH STATUS

1.1 MATERNAL, PREGNANT

(national)

MORTALITY: The maternal mortality rate is 9 deaths per 1000 births. (Furnia, 1975)

ANEMIA: 22.1% of pregnant women were found to be iron deficient. (Arab Republic of Egypt, 1979)

GOITER: Prevalence of goiter ranged from 1% to 22%, depending on season and location, ranged up to 26% at oases and 29% in Nubia. Incidence was higher among females, and peaked between 10 and 19 years. (Goiter is often caused by iodine deficiency and may cause cretinism, a form of mental retardation, in children of affected women.) (Patwardhan, 1972)

SCURVY: Absence of medical literature on scurvy in Egypt was interpreted as evidence that scurvy occurs only rarely, probably because of the variety of fresh vegetables consumed. (Patwardhan, 1972)

(rural)

RIBOFLAVIN: 28% of poor women surveyed at a rural MCH center had riboflavin deficiency. (Fattah, 1977)

(urban)

ANEMIA: Over 90% of pregnant women had hemoglobin levels below 10 grams per 100 ml; 54% had levels below 8.4%. (Patwardhan, 1972)

ANEMIA: Women tested on admission for delivery had average hemoglobin values of 11.02 grams per 100 ml; 34% were above 12 grams per 100 ml (the standard) and an equal number were below 10 grams per 100 ml. (Patwardhan, 1972)

ANEMIA: Increasing parity was found to have a negative effect on hemoglobin status. (Patwardhan, 1972)

LACTATION: Incidence of pregnancy during lactation was 57% among 120 mothers who had breastfed 290 children. (Kamal, 1969)

1.2 MATERNAL, LACTATING

(national)

ANEMIA: 25.3% of lactating women were found to be iron deficient. (Arab Republic of Egypt, 1979)

(urban)

ANEMIA: Over 80% of nursing women had hemoglobin levels under 10 grams per 100 ml; 11% had levels under 8.4. (Patwardhan, 1972)
1.3 INFANTS (0-6 MONTHS)

(national)

MORTALITY: The Egyptian infant mortality rate was 116/1000 live births. (National Academy of Sciences, 1979)

CAUSES OF DEATH: WHO attributed the high rate of infant mortality (118/1000) to gastrointestinal disease (in summer), respiratory disease (in winter) and poor nutrition associated with excessively long breast feeding. (Furnia, 1975)

DIARRHEA: Diarrheal disease including acute gastroenteritis was identified as one of the most important health problems in Egypt. Diarrhea accounted for more than half of the infant deaths in rural areas during the sixties. (Furnia, 1975)

DIARRHEA: 49% of all infant deaths during 1965, 1970, and 1972 were attributed to diarrheal disease. (Murad, 1977)

UNDERWEIGHT: 45% of children 0-6 months of age in 130 clinics were under normal weight. (Khalia, 1979)

UNDERWEIGHT: 67% of children 0-3 months of age, and 48% of children 4-6 months were below weight for age in a sample drawn from MCH center users in two rural Giza villages, and two high density areas of Cairo. (Kamel, 1979)

VITAMINS: Pellagra (deficiency of niacin) was found among the general population of Egypt, but was uncommon among children and extremely rare among infants. (Patwardhan, 1972)

(rural)

MORTALITY: The rural infant mortality rate was 170/1000. (El Rafie, 1979)

MORTALITY: Postnatal mortality was approximately 90 deaths/1000 live births with 50 due to diarrheal disease; 20 to lower respiratory tract infection and 20 to other causes. (Ministry of Health, 1979)

(urban)

WEIGHT: Mean weights of infants age 3 months were equivalent to Harvard standards. (Shukry, 1973)

UNDERWEIGHT: Infants of 17 malnourished mothers were significantly lower in weight and serum albumin than infants of 24 healthy mothers. Arm circumference and height were also lower but not significantly so. (Hanafy, 1972)

ANEMIA: At birth, hemoglobin levels ranged from 15.5 to 18.5 grams per 100 ml; well above the standard of 11 gm/ml. (Patwardhan, 1972)
1.4 INFANTS (6-24 MONTHS)

(national)

MALNUTRITION: 50.5% of the children were normal, 38.6% were Gomez Class one, 8.4% were Gomez Class two, and 2.5% were Gomez Class three in the first national nutrition survey of the 6-11 month age group. (Arab Republic of Egypt, 1979)

PCM: Kwashiorkor (protein deficiency) was found by two studies to affect boys and girls equally. Nearly all cases were between 1 and 3 years of age. Incidence peaked in the summer, and only a small number of cases occurred in winter. (Patwardhan, 1972)

PCM AND INTAKE: Children under 1 year who had protein-calorie malnutrition were consuming 20-25% of the recommended allowance of calories and 25-38% of the recommended allowance for protein. Children over one year who had protein-calorie malnutrition were consuming 10% of the recommended calorie intake; 20% of protein; 3-6% iron; 6-17% vitamin A; 2-25% of thiamine; 12-50% riboflavin; and 20-50% of niacin. (Fattah, 1974)

PCM AND OTHER ILLNESS: Among infants with PCM, 68% were suffering from infectious diseases, 65% had gastrointestinal problems, and 18% had recently had measles. (Fattah, 1974)

UNDERWEIGHT: Only 25% of children 7-11 months of age and 16% of children past 11 months had adequate weight compared to standards in a sample drawn from MCH center users in two rural villages in Giza Governorate, and two high density areas of Cairo. (Kamel, 1979)

ILLNESS: 16.7% of children in the first National Nutrition Survey had been ill at least once in the seven days preceding the survey. (Arab Republic of Egypt, 1979)

ANEMIA: 57.3% of children 6-11 months and 59.4% age 12-23 months were anemic, having hemoglobins under 11 grams/100 ml. (Arab Republic of Egypt, 1979)

VITAMIN A: Serum levels of vitamin A were often inadequate in children, who had related visual problems (xerophthalmia, keratomalacia). (Patwardhan, 1972)

(rural)

CHANGES IN MORTALITY: Mortality rates among rural children 0-4 years have dropped significantly since 1963. (Nasser, 1978)

STUNTED GROWTH: 4.7% of children surveyed in the frontier areas were found to be severely stunted (less than 85% of standard height for age). 19.8% were found to be moderately stunted (less than 90% of standard height for age). (Aly, 1979)
MORTALITY: Second year mortality was estimated to be 100/1000 children with 70 due to diarrheal diseases, 10 due to lower respiratory tract infections, and 20 due to other causes. (Ministry of Health, 1979)

UNDERWEIGHT: 2-3 year olds had the highest prevalence of underweight for age among children in the rural village of Bargil. (El Rafie, 1979)

UNDERWEIGHT: Weight-for-height measurements show that 6% of the children are acutely malnourished (under 80% of standard). Obesity was a problem for 14% of the children. (El Lozy, 1980)

UNDERWEIGHT: 71% of children over 6 months of age did not have adequate weight compared to standards in 130 MCH clinics in lower and upper Egypt. (Khalia, 1979)

UNDERWEIGHT: 73.7% of rural infants under 3 months achieved 91% of expected weight for age; by the second year of life only 20% of the children fell in this category. (Shukry, 1972)

DETERIORATION IN STATUS: Children's nutrition status was poorer in August-September 1980 than in Spring of 1978. Among children age 6 to 11 months, the percentage of children exhibiting acute undernutrition (below 85% of weight for height) increased from 3% to 6% in Lower Egypt and from 2% to 29% in Upper Egypt. Among children age 12-23 months, the rate increased from 1% to 11% in Lower Egypt and 8% to 22% in Upper Egypt. (Arab Republic of Egypt, 1980)

ACUTE UNDERNUTRITION: Using the Gomez classification of acute undernutrition, infants suffering from second or third degree undernutrition (less than 75% or 60% of weight for age) made up 15% of all infants age 6 to 11 months in Lower Egypt and 43% in Upper Egypt. Among infants age 12 to 23 months, rates were 26% and 36%. (Arab Republic of Egypt, 1980)

ACUTE UNDERNUTRITION: Only 40% of children were considered normal in weight-for-age using the Gomez classification. Five percent revealed third-degree malnutrition. (El Lozy, 1980)

ACUTE UNDERNUTRITION: The incidence of third-degree malnutrition (Gomez) was higher in boys and for both sexes reached its peak during the second year of life. (El Lozy, 1980)

ACUTE AND CHRONIC UNDERNUTRITION: 5% of infants age 6 to 23 months in Lower Egypt were both wasted and stunted; and 1% of infants in Upper Egypt. (Arab Republic of Egypt, 1980)

CHRONIC UNDERNUTRITION: Chronic malnutrition, defined as height less than 90% of the reference median for age, increased slightly between 1978 and 1980. Among children age 6 to 11 months the incidence changed from 4% to 7% in Lower Egypt and from 17% to 19% in Upper Egypt. Among those age 12-23 months, from 22% to 24% in Lower Egypt and from 41% to 34% in Upper Egypt. (Arab Republic of Egypt, 1980)
NUTRITION STATUS AND BREASTFEEDING: 77% of breastfed infants had normal nutrition status. (El Rafie, 1979)

DIARRHEA: Rates of diarrhea increased between spring 1978 and July-August 1980. Among infants age 6 to 11 months, rates increased from 17% to 32% in Lower Egypt and from 19% to 29% in Upper Egypt. Among infants age 12 to 23 months, rates rose from 14% to 22% and from 14% to 26%. (Arab Republic of Egypt, 1980)

EFFECTS OF DIARRHEA: The mean weight for height and for age of children who had recently had diarrhea was lower than that of children who had not, at the time of the 1980 survey, but there was no significant difference at the time of the 1978 survey. (Arab Republic of Egypt, 1980)

ANEMIA: Among infants age 6 to 23 months, 56% had mean hemoglobin values below 11gm/ml in 1980; versus 65% in 1978. (Arab Republic of Egypt, 1980)

RICKETS: Active rickets was found in 22.1% and 28.1% of children under 3 years in 2 rural villages. (Shukry, 1972)

VITAMIN D: Among 1146 children ages 6-71 months surveyed, only one exhibited two or more of the six signs of vitamin D deficiency; a single sign is not sufficient to diagnose deficiency. (Arab Republic of Egypt, 1980)

ANGULAR STOMATITIS: The incidence of angular stomatitis among children 6-71 months of age increased from 4.0% to 10.3% in Lower Egypt and from 2.8% to 3.2% in Upper Egypt, between 1978 and 1980. (Arab Republic of Egypt, 1980)

PARASITES: 51% of rural children examined had one or more parasitic infections; most common was ascaris infection, found in 39.5%. (Shukry, 1972)

MALNUTRITION: 67% of children below school age were found to be malnourished in a sample of children from two high density urban areas of Cairo, El Assul, and Ein El Sira. (Kamel, 1979)

PROTEIN-CALORIE MALNUTRITION (PCM): 81.6% of children 1 year old showed some degree of PCM (in terms of weight for age). At two years, 56% showed some degree of PCM, i.e., 44% met the standards of weight for age. (Shukry, 1973)

PCM: A study of 98 children two years old found two cases of edema, an indicator of protein deficiency. (Shukry, 1973)

UNDERWEIGHT: Mean weights of infants decreased relative to Harvard standards. Although equal at 3 months, infants at 12 months mean weights were 7.7 kg vs. standard 9.9 kg; at 24 months, mean was 10.3 kg vs. standard of 12.4 kg. (The increasing gap illustrates that the growth rate
falls short of those of well-fed children during the weaning period.) (Shukry, 1973)

BREASTFEEDING: The average weights of breast fed children were better than those who were bottle fed among a small sample of infants of poor urban women in Cairo. After six months, the average height and weight of children fell below standards regardless of the method of feeding. (Lebshtein, 1976)

DIARRHEA: Among 1 year olds 51.7% were reported to have a history of diarrhea, and 24.4% of 2 year olds reported a history of diarrhea. (Shukry, 1973)

ANEMIA: Hemoglobin levels in infants up to 24 months averaged 8.5 grams per 100 ml; levels below 11 grams are considered anemic for this age. (Patwardhan, 1972)

ANEMIA: In the first year of life, 43-68% of infants had hemoglobin levels between 5.6 and 8.5 grams per 100 ml. (Patwardhan, 1972)

RICKETS: Rickets incidence among 29 children age 0-3 months was 3.6%; among 38 age 6 months, 7.9%; among 27 age 9 months, 7.4%; among 114 age 1 year, 28.1%; and among 98 age 2 years, 16.3%. (Shukry, 1973)

RICKETS: A study of 1143 children to age 2 in Cairo found clinical rickets in 13%; a study of 300 children age 4 months to 4 years found rickets in 27%. (Patwardhan, 1972)

MEASLES: 35% of children 6 months of age, 62.3% of 1 year olds, and 81.6% of 2 year olds had had measles. (Shukry, 1973)

2. DIETARY BELIEFS

2.1 GENERAL

(national)

PORK TABOO: Pork is regarded as unclean by the Koran. (Furnia, 1975)

BREAD: Among the Fellahin it is a sign of prestige to eat daily baked peasant bread. (Vermury, 1978)

2.2 DIETARY BELIEFS ABOUT PREGNANCY

2.3 DIETARY BELIEFS ABOUT LACTATION

2.3.1 FOR THE MOTHER

(national)

BREASTFEEDING DURATION: Islamic Law states that a woman should breastfeed her child for 2 years. (Furnia, 1975)
BREASTFEEDING DURATION: Women in the Governorates of Damieta and Quena believe that every mother should have enough milk to nurse a baby for two years. If a mother is unable to nurse, the women believe the baby's father should hire a wet nurse. (Hassouna, 1975)

MILK QUANTITY: Kasba, "that which is held back," prevents the flow of milk. Kasba is caused by eating particular foods or seeing particular scenes. For example, eggplant and raw milk are believed to hold back the flow of breast milk. To counteract kasba a mother should wash her breast with the milk of a mother who is breastfeeding successfully. (Hassouna, 1975)

MILK QUANTITY: Factors believed to interfere with lactation are a woman wearing gold or diamonds in presence of an unadorned lactating woman or the husband, clean shaven, entering the room where the mother is nursing. Both have counter actions to restore lactation. (Ragheb, 1979)

MILK QUANTITY: Of 88 women surveyed 17% had heard that hot or spicy foods stop or decrease lactation. 47% believed that seeing raw meat would stop lactation. This can be reversed by mother going to slaughterhouse and walking across a stream of blood. (Ragheb, 1979)

MILK QUANTITY: Many women believed that encounters with a person going through a crisis rite (mushahra) decreased milk flow. Several methods were mentioned to restore milk flow. (Ragheb, 1979)

MILK QUANTITY: An abundant flow of milk is related to compassion. It is believed that women who are hard hearted usually don't have an abundant flow of milk. (Hassouna, 1975)

MILK QUANTITY AND FATIGUE: 28 of 88 women (32%) believed over work and fatigue decrease flow of milk. (Ragheb, 1979)

MILK QUANTITY AND EMOTIONS: 20 of 88 women (23%) felt strong emotions interfered with production of breast milk. (Ragheb, 1979)

MILK QUANTITY AND CONTRACEPTIVES: 12 of 88 women (14%) believed that using oral contraceptives stopped lactation. (Ragheb, 1979)

FAILURE OF MILK SECRETION: Failure of milk secretion is believed due to the evil eye, entrance to mother's room by one who carries raw meat, liver or eggplant, or the husband cutting his hair during the puerperium. To ward off the evil eye, the mother must carry the same food brought to her room to another place. If the food was eggplant she has to go to a water canal putting clover seeds in her mouth and spit the seeds to both her sides into the water, then walk back home through a field of eggplant. (Salama, 1978)

MILK QUALITY: Breast milk can be good (heavy) or bad (light). Heavy milk is the gift of God and not related to what the mother eats. A mother with light milk will never have a fat baby unless she eats appropriate foods (halava, helba, radishes, lentil soup) and avoids food cooked with oil. (Hassouna, 1975)
SPECIAL FOODS: 79 of 88 women interviewed mentioned helba, an herb tea; halawa and moghat, mixed spices made into a drink; as important foods for lactating women. Other foods frequently mentioned include chicken soup and meat soup (72 women), fish (63 women), especially grilled or fried. Important vegetables include gargheer (similar to watercress), molokhaya (a dark green leafy vegetable), eggplant, radishes, carrots, sweet potato, artichokes, lettuce (76 women); lentils and fowl (44 women); molasses (15 women); and cheese (23 women). (Ragheb, 1979)

MILK AND EGGS: Only 11 of 88 women (13%) thought milk consumption was necessary for lactation. Eggs were mentioned only by 6 women (7%). (Ragheb, 1979)

SPECIAL FOODS: After the birth, the daya advises the mother to avoid several foods. She must not eat foods cooked in taklia sauce (onion, fat and tomato sauce) or in concentrated butter. The mother should avoid water and drink helba, a local beverage, instead. The mother is advised to eat an entire boiled chicken or other very large piece of meat. (Nadim, 1980)

2.3.2 FOR THE CHILD

MILK SUPPLY: Each child receives the amount of milk God gives him/her. (Hassouna, 1975)

DURATION: Every child is believed to have a right to breast milk for two years, according to a survey of mothers at MCH centers in the Governorates of Damieta and Quena. (Hassouna, 1975)

BREASTFEEDING AND CHILD'S SEX: Some mothers believe girls should be breastfed a long time to be infused more with mother's compassion. Others believe boys should be breastfed longer as they are more precious. If a newly married woman has a girl first, custom is to curtail nursing and hurry to the next pregnancy in hope of having a boy. (Salama, 1978)

FATHER'S BELIEFS: In Upper Egypt fathers favor a short nursing period for boys. They believe a long nursing period hardens boys' minds and makes them disobedient. (Salama, 1978)

COLOSTRUM: The belief that colostrum is useless or even dangerous for the baby was reported in several studies reviewed. (Ragheb, 1979)

COLOSTRUM: Some women believed colostrum was unhealthy and discarded it. Others believed it was strengthening and fed it to their babies. (Hassouna, 1975)

INTELLIGENCE: Nursing beyond 16 to 18 months is thought to adversely affect intelligence. (Hassouna, 1975)
2.4 BELIEFS ABOUT BREAST MILK SUBSTITUTES AND BOTTLE FEEDING

(national)

CANNED MILK: Surveyed mothers in two Governorates were against canned milk, believing it caused diarrhea. (Hassouna, 1975)

COW'S MILK: 34.4% of mothers had a positive attitude toward fresh milk and believed it was good for their infants' health. 6.6% of the mothers had a negative attitude toward fresh milk and used it unwillingly. 21.7% had a negative attitude and didn't use it. The remainder had a positive attitude toward fresh milk and planned to use it in the future. (Salama, 1978)

EVIL EYE: In the Governorates of Damietta and Quena, a child who gets milk from a bottle is believed likely to be subject to "the evil eye." (Hassouna, 1975)

(rural)

RECONSTITUTED DRIED MILK: 5.5% of rural mothers believed that dried milk was good for their babies and used it with satisfaction; 47.8% had a positive attitude and planned to use it as the need arose; the remainder had a negative attitude. (Salama, 1978)

(urban)

RECONSTITUTED DRIED MILK: 28.6% of mothers believed that dried milk was good for babies and used it with satisfaction; 34.8% had a positive attitude and planned to use it as the need arose; and the remainder had negative attitudes. (Salama, 1978)

2.5 DIETARY BELIEFS ABOUT WEANING

(national)

ABRUPTNESS: Mothers reported giving no food before weaning (in practice this was not found to be true) at MCH centers in the Governorates of Damietta and Quena. (Hassouna, 1975)

MOON PHASE: Weaning is scheduled to be completed two or three days before the beginning of the lunar month. It is believed to be very difficult to wean after the appearance of the new moon and bad for the child's health. (Salama, 1978)

2.6 DIETARY BELIEFS ABOUT ILLNESS AND CURES

(national)

HOSPITAL: The hospital is rarely used for normal delivery. It is associated with operations, anaesthetics, and danger. (Hassouna, 1975)
CAUSES OF ILLNESS: Three main agents are responsible for causing illness: (1) Al-hawa - literally "air" wind, draft, atmosphere - a warm covered person suddenly exposed to cold air; (2) Al-hassad - the evil eye - can harm any aspect of life - home, farm, money, food, health, and can cause any disease; (3) Al-amal - black magic. (Nadim, 1980)

3. DIETARY PRACTICES

3.1 GENERAL

CONSUMPTION: 3122 calories were consumed per capita per day in 1978 with 11.2% coming in the form of protein. 85% of the protein intake came from vegetable origin. (National Academy of Science, 1979)

MEN FIRST: Food is eaten from a common bowl. Males eat first and eggs and meat may be unavailable to children. (Vermury, 1978)

EXPENDITURES: Food expenditures were 1.7 piasters per day for rural infants and 3.0 piasters per day for urban infants. (Wahba, 1975)

SEASONALITY: In rural areas consumption was highest after new harvests and gradually tapered off. For the urban population more food variety existed if one was able to afford it. (Furnia, 1975)

STAPLES: Maize bread is the principal staple in the rural areas. Wheat and rice appear much more widely in urban areas. (Furnia, 1975)

ANIMAL SOURCES: 10.3% of the national diet consisted of animal food in 1974, down from 15% in 1960. (Furnia, 1975)

FISH: Fish is occasionally consumed by those living on the banks of the Nile, on the coast and by Lake Qarum. (Furnia, 1975)

TEA AND COFFEE: Black tea, highly sweetened, is the main beverage in the rural areas, while coffee is an expensive option in the cities. (Furnia, 1975)

OTHER FOODS: In addition to maize, the rural diet consists of cooked broad beans, lentils, rice, raw onions, turnips, peppers, and cucumbers. (Furnia, 1975)

COOKING FACILITIES: In rural homes cooking is done on an open fire. In urban areas kerosene and bottled gas are often used for fuel. (Arab Republic of Egypt, 1979)
3.2 MATERNAL DIET

3.2.1 DURING PREGNANCY

(national)

CHANGES IN DIET: The diet for pregnant women was usually similar to that for non-pregnant women. There was some increase in milk, meat, vegetables, and fruit among urban and well-to-do women. (Vermury, 1978)

(urban)

BREAD CONSUMPTION: Pregnant women in Alexandria consumed 400 grams less bread than pregnant women in Cairo, but ate more protective foods. (Patwardhan, 1972)

3.2.2 DURING LACTATION

(national)

ADEQUACY: Diet of lactating women appeared to be adequate because of their claimed use of green and yellow vegetables, grilled fish and small fish with bones, meat and chicken soup, chicken, beans, sesame seeds and molasses. (Raghab, 1979)

POSTPARTUM REST: There is a tradition forty day post partum rest period during which the mother is segregated from the household. In practice, many poor women cannot afford this luxury. (Pillsbury, 1978)

NURSES AND REST: Nurses are reluctant to suggest early breast feeding because they share the common belief that mothers need an extended period of rest after delivery. (Ragheb, 1979)

(urban)

INCREASED INTAKE: Nursing women in Alexandria and Cairo consumed more energy, protein, and other nutrients than did pregnant women, although it is not known whether intake was adequate. (Patwardhan, 1972)

3.3 INFANT FEEDING PRACTICES

3.3.1 UNSUPPLEMENTED BREASTFEEDING

(national)

PROTEIN–CALORIE MALNUTRITION (PCM): Among children suffering from protein–calorie malnutrition, the proportion who were being breast fed was: age 0–3 months, 14%; 3–6 months, 13%; 6–12 months, 21%; 12–18 months, 5%; and 18–24 months, 5%. (Fattah, 1974)

PCM AND PROLONGED BREASTFEEDING: Among breastfed infants suffering from PCM, 43% of those under 3 months old received no supplementary foods, as well as 40% of infants 6–12 months old, 20% of infants 12–18 months old, and 70% of those 18–24 months old. (Fattah, 1974)
PCM: Many children with protein-calorie malnutrition were receiving no supplements to breast milk, including 43% of those age 0-3 months; 77% of ages 3-6 months; 40% of ages 6-12 months; 20% of ages 12-18 months; and 70% of ages 18-24 months. (Fattah, 1974)

FREQUENCY: Feeding on demand is common. Mothers wear low cut dresses to facilitate nursing and sleep with their babies at night. The breast is used as a pacifier when the baby is frightened. (Hassouna, 1975)

PREVALENCE: In a national sample, 24% of infants age 6 to 11 months were exclusively breastfed, as well as 3.3% of infants 12-23 months. (Arab Republic of Egypt, 1979)

STARTING BREASTFEEDING: 23.3% of mothers initiated breastfeeding on the first day; 66.6% on the second or third day; 10.1% on the fourth day or later. (Nour, 1975)

PRELACTAL FEEDS: In rural areas mothers prepare a paste named "Balah Malzouz" consisting of clarified butter, fenugreek and dates. It is given to the infant in his first three days in the belief it will strengthen the infant and guarantee growth and health. (Salama, 1978)

INFANT FEEDING IN THE FIRST WEEK: The mother puts the infant to the breast as early as the first or second day after delivery. Urban mothers, especially those delivered in hospitals, might not be enthusiastic about putting their infants to the breast so early. (Salama, 1978)

DEMAND FEEDING: 93.6% of mothers fed on demand with no regard for interval or frequency; these infants were fed whenever they cried, day or night. (Nour, 1975)

EXCLUSIVE AND PARTIAL BREASTFEEDING: Up to 3 months of age, 62.8% of infants were wholly breastfed, and 37.2% partially breastfed; at 3 to 6 months 13.3% were wholly breastfed, and 86.7% partially breastfed; at 6-12 months 6.8% were wholly breastfed, 93.2% partially breastfed. (Nour, 1975)

GRADUAL WEANING: 91% of the total sample either had weaned or planned to wean their infants gradually. Gradual weaning usually took place around six months to 18 months. (Salama, 1978)

FAMILY SIZE: The breastfeeding (exclusively) rate for children age 1-24 months increased as family size increased, from 27% in families with less than 4 persons to 41% in families with more than 7 members. Among complex families with more than 7 members, the rate was 37%. (Amine, 1978).

NUTRITION STATUS: 66% of nursed children breast fed exclusively in Baragil village. 77% of the breast fed infants had normal nutritional status. (El Kafie, 1979)
PREVALENCE: Among children age 1-24 months, 47% were exclusively breast fed. (Amine, 1978)

PRELACTAL FEEDS: In rural areas some mothers mix fresh butter and cow’s milk in their mouths and then transfer this mixture directly to their infants' mouths, believing it lubricates the throat and stomach before feeding starts. In El-Shoback area mothers squeeze breast milk into a glass and soak in it mint leaves and a natural kind of bitter chewing gum. They give it to the infant with a spoon to clean the intestines. (Salama, 1978)

DURATION: Breastfeeding is commonly initiated on the first day and continues through the first year in two Giza villages. (Kamel, 1979)

DURATION: Breastfeeding usually started on the first day and was the rule throughout the first year. Over 90% of children 12-17 months were still breast fed. (Shukry, 1972)

LATE EXCLUSIVE BREASTFEEDING: Between 1978 and 1980, the proportion of infants age 12 to 23 months receiving breast milk alone increased from 3% to 5% in Lower Egypt and from 5% to 7% in Upper Egypt. (Arab Republic of Egypt, 1980)

TRENDS IN EXCLUSIVE BREASTFEEDING: Between 1978 and 1980, the percentage of infants age 6 to 11 months being exclusively breastfed increased from 16% to 40% in Lower Egypt and from 22% to 42% in Upper Egypt. The proportion receiving supplements thus dropped, although in this age range breast milk alone is inadequate in calories and other nutrients. (Arab Republic of Egypt, 1980)

ABRUPT WEANING: 15% of rural mothers believed in abrupt, rather than gradual, weaning. (Salama, 1978)

WEANING AGE: Although most mothers believe that children should be breast fed for two years, most stopped earlier - 67% due to another pregnancy. (Shukry, 1972)

FREQUENCY: Among children age 1-24 months, 5.5% received no breast milk. (Amine, 1978)

WEANING TRENDS: Between 1978 and 1980, the percentage of infants age 6 to 11 months not receiving any breast milk dropped from 13% to 9% in Lower Egypt and remained at 3% in Upper Egypt. (Arab Republic of Egypt, 1980)

ALTERNATIVES: Babies are often soothed during their first three days of life with sugar water or suckled by a neighbor. (Kamel, 1979)

PREVALENCE: 58.5% of infants below 6 months were being breast fed exclusively and 24% were partially breast fed by low income mothers in Cairo. (Nasser, 1975)

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MILK QUALITY AND QUANTITY: Milk of 17 malnourished women was lower in protein and calories per 100 ml than milk of 24 healthy women. Healthy mothers produced significantly greater quantity of milk per day. (Hanafy, 1972)

MILK QUANTITY: 24 apparently healthy mothers produced an adequate amount of milk for their infants but 17 malnourished mothers produced 22% less milk. (Hanafy, 1972)

PREVALENCE: 4.0% of children age 1-24 months in a day care center were being exclusively breast fed. (Amine, 1978)

PREVALENCE: Of urban children age 1-24 months not in day care centers, 34% were exclusively breast fed. (Amine, 1978)

PRELACTAL FEEDS: In urban areas, mothers give infants almond oil in the first days of life, believing that it lubricates the throat and stomach, and to clear the intestines. (Salama, 1978)

DELAYS: In Alexandria two-thirds of 600 new mothers delayed breastfeeding until the second or third day after delivery, and one-tenth waited until the fourth day or later, with some using other milks. (Ragheb, 1979)

ABRUPT WEANING: 2.2% of urban mothers believed in abrupt, rather than gradual, weaning. (Salama, 1978)

3.3.2 WEANING (national)

PCM: Among infants with PCM below 1 year of age, 78% were either never breast fed or breast fed for less than 3 months. (Fattah, 1974)

SUPPLEMENTS AND PCM: Breastfed infants who had PCM were sometimes being given supplementary feedings, but these were often clear fluids or starchy gruels which contribute little nutritionally, can serve as mediums for transmission of diarrhea and other infections, and may replace breast milk, especially among younger infants. (Fattah, 1974)

PREVALENCE: 68% of a national sample of 6-11 month olds were breastfeeding with supplemental foods and 62.6% were breastfeeding with supplemental foods in the 12-23 month age group. (Arab Republic of Egypt, 1979)

FAMILY SIZE AND SUPPLEMENTS: Breast and milk supplementation of infants age 1-24 months increased with family size, from 41% of families with less than 4 members to 47% among simple families with more than 7 members and 52% among complex families with more than 7 members. (Amine, 1978)

FAMILY SIZE AND ARTIFICIAL FEEDING: Among families with 4 to 7 members, 38% of mothers practiced artificial feeding (i.e., no breast feeding); among all other families, rate was 11-19%. (Amine, 1978)
MOTHERS' AGE AND BOTTLE FEEDING: Bottle feeding incidence varies with mothers' ages: Among mothers under 20 years, none bottle fed exclusively; age 20-30, 16%; age 30-40 19%; and age 40-45, 6%. (Amine, 1978)

MOTHERS' AGE AND SUPPLEMENTS: Supplemental feeding was more common among older (40+ years) and younger women (less than 20) than the middle age groups. (Amine, 1978)

COMPLETION AGE: By 12-23 months, weaning was generally completed in the national nutrition survey sample group. (Arab Republic of Egypt, 1979)

SEASONALITY: Summer is the favorite time to wean as there are many fruits available. The month of Ramadan is also favored as there are many "goodies" in the house. (Hassouna, 1975)

PREGNANCY: Weaning is generally a gradual process, unless the mother is pregnant, in which case it is done abruptly. (Vermury, 1978)

ABRUPTNESS: Weaning is often abrupt and mothers take pride in weaning child in only a few days. (Ragheb, 1979)

WITHHOLDING MILK: A child is not nursed if he has diarrhea or measles or if the mother is sad. (Hassouna, 1975)

FEEDING METHODS: Mothers take food from their plates and crush it. The babies then lick the crushed food from their mothers' fingers. (Hassouna, 1975)

RESPONSES TO MILK INSUFFICIENCY: 374 mothers, 77.9% of sample, felt they had insufficient breast milk. Of these 374 mothers, 60.2% of rural mothers and 81.8% of urban mothers offered their infants fresh or dried reconstituted milk as a substitute or supplement to breast milk. Other mothers gave the infant fluids such as anise, caraway, fenugreek water, rice water or balouza, "starchy pudding without milk." 11.4% of rural and 6.1% of urban mothers offered these fluids or puddings. 28.4% of rural and 12.2% of urban mothers continued with breastfeeding despite insufficiency. (Salama, 1978)

SUPPLEMENTAL MILK: 60% of rural and 82% of urban mothers gave fresh or reconstituted milk when breastfeeding was unsuccessful. (Amine, 1978)

MILKS: 45.4% of mothers gave fresh milk to their infants; of these infants 63.3% consumed less than a glass a day, 16.5% got 1 to 3 glasses and 8.3% got more than 3 glasses. 11.9% got milk irregularly. (Salama, 1978)

USE OF FORMULA: Local MCH centers in both rural and urban areas encouraged the use of reconstituted formula at an early age. However, distribution of milk is irregular, insufficient, and lacks adequate instructions for use. (Salama, 1978)

SUPPLEMENTS: Breast fed babies are given herbal teas such as caraway or anise tea, as well as breast milk. Rice water and barley water are used to treat diarrhea, mint tea to treat colic. (Ragheb, 1979)
SUPPLEMENTS: Ptisan (caraway, anise and fenugreek water) is considered an important supplement and is introduced as early as 2 months. (Wahba, 1975)

FOODS USED: Common table foods given gradually include: squash, potatoes, rice, lentils, beans, carrots, peas, mangos, banana, and biscuits soaked in tea. (Ragheb, 1979)

FOODS USED: Supplementary foods customarily given to the infant after six months include potatoes, rice, beans, and bread. Eggs, meat, vegetables, cheese and fruits are expensive and rarely used. (Vermury, 1978)

FOODS USED: A baby food sold in pharmacies and given to breast fed babies is a mix of lentils, rice, helba, beans, wheat, corn, and barley - inexpensive and easily available. (Ragheb, 1979)

SPECIAL WEANING FOOD: Superamine is a government subsidized high protein weaning food designed for infants from 4 months to 3 years of age. The Nile Company for Pharmaceutical Products has produced superamine since 1973. Superamine consists of wheat flour, dry skim milk, sugar, legumes (chick peas and lentils), vitamins and minerals. (Austin, 1978)

(rural)

JUSTIFICATION FOR BOTTLE FEEDING: 51% cited insufficient milk, 20% work and 28.9% other reasons (twins, breast complications, mother’s sickness, pregnancy, infant refusal) as reasons for bottle feeding their infants in rural areas. (Amine, 1978)

INTRODUCTION OF COW'S MILK: 51% of rural infants received cow's milk for the first time when 6 to 12 months of age. Low income mothers were more likely to give fresh milk before three months of age than mothers from higher income groups. (Salama, 1978)

FORMULA PREPARED INCORRECTLY: 82.2% of rural mothers who used dried milk did not reconstitute it correctly. 17.8% of rural mothers prepared the formula correctly whether they followed a physician's advice, instructions written on container, or instructions given by MCH center. (Salama, 1978)

INFANTS FED LEFTOVER MILK: 27.1% of rural infants consumed the whole bottle in every feed. The remainder left some milk. In the rural groups 22.1% of mothers dispose of the left over milk and 82.5% refed the left over milk to their infants. 95.1% of the mothers who refed left-overs are from the 2 lower income groups, 4.8% from higher income groups. (Salama, 1978)

ADVICE ON INFANT FEEDING: 71.5% of mothers received their information on infant feeding from relatives and neighbors; 4.2% from MCH centers or physicians; and the remainder from previous experience or radio and television. Mothers from small families were more likely to get information from MCH centers or physicians. (Salama, 1978)
INTRODUCTION OF SUPPLEMENTS: Food supplements were introduced in Lower Egypt at 0-5 months to 15% of weaned infants, at 6-11 months to 43%, at 12-17 months to 36% and at over 18 months to 6%; in Upper Egypt the corresponding rates were 11%, 46%, 38%, and 6%. (Arab Republic of Egypt, 1980)

AGE AND SUPPLMENTS: Among children age 1-24 months, 48% were receiving breast milk and supplemental foods. (Amine, 1978)

SUPPLEMENTATION DECREASE: Between 1978 and 1980 infants age 6-11 months receiving breast milk and food supplements decreased from 71% to 51% in Lower Egypt and from 74% to 55% in Upper Egypt. (Arab Republic of Egypt, 1980)

COMBINED BREAST AND BOTTLE FEEDING: 47.8% of rural mothers were breastfeeding their infants plus giving milk supplementation and 5.5% of rural mothers used artificial feeding completely. Exclusive breastfeeding was practiced by 46.6% of rural mothers. (Salama, 1978)

WEANING TECHNIQUES: 85% of mothers weaned by keeping the infant off the breast by discouraging him: by applying bitter substances to the nipple, scolding him, or hiding the breast in clothing. 1.2% used gradual substitution of solid foods for the breast. The remainder could not specify the method or said that the infant weaned himself. Weaning by substitution was more common among high income mothers. (Salama, 1978)

GRADUAL WEANING: AGE AND METHOD: The second year of life was considered the most favorable period for completing gradual weaning by 58% of the rural mothers; 21.4% favored gradual weaning after the second year. (Salama, 1978)

NUMBER OF MEALS: 17% of mothers fed their infants 4 to 8 times per day; 83% fed their infants more than 8 times per day. (Salama, 1978)

SUPPLEMENTS: When breastfeeding was unsuccessful, 60% of mothers gave milk; 11.4% gave starchy foods or fluids or both; and 28% gave no supplementation. (Amine, 1978)

SPECIAL WEANING FOODS: 87% of mothers did not prepare special weaning foods. (Salama, 1978)

FOODS USED: Child samples family food after 1 year and eats from family dish after two years. (Shukry, 1972)

FOODS USED: In first six months children were given fluids (infusions and decoctions). After this semi-solids were given in small amounts between 6 and 12 months. Even at 12-17 months, 13.6% and 9.9% of children in two villages received no supplemental foods (i.e., breast only). (Shukry, 1972)

FOODS USED: Earliest foods include mehallabia (water, sugar, and starch), rice, potatoes, bread, biscuit, beans, sour milk, and cheese. (Shukry, 1972)
WEANING FOODS: 6.1% of mothers gave or planned to give their infants varied types of foods, (protein rich foods, energy foods, foods rich in vitamins and minerals). 69.7% gave energy rich foods and the remainder used a diet of protein or vitamin and mineral rich foods. (Salama, 1978 (urban)

JUSTIFICATION FOR WEANING: Among 120 mothers, the commonest reasons given for weaning were pregnancy (30.5%), milk inadequacy (24.5%), and child maturity (24.3%). (Kamal, 1969)

JUSTIFICATION FOR SUPPLEMENTS: Among 120 mothers, the most common reasons given for supplementing breastfeeding at an average age of 9 months were milk insufficiency (76.6%) and maturity of child (15.8%). Pregnancy was given as a reason only 1.6% of the time. (Kamal, 1969)

JUSTIFICATION FOR BOTTLE FEEDING: As reasons for bottle feeding 63% cited insufficient milk, 11% work, 27.4% other reasons (twins, breast complications, mother's sickness, pregnancy, infant refusal) in Cairo. (Amine, 1978)

REASONS FOR ARTIFICIAL FEEDING: 13.5% of mothers did not initiate lactation; their infants were wholly artificially fed. Reasons for this were failure of milk secretion (35.9%); medical reasons (30.8%); unwilling to attempt breastfeeding (17.3%); and defective nipples (16%). (Nour, 1975)

INTRODUCTION OF COW'S MILK: 52.2% of urban infants received cow's milk for the first time when 6 to 12 months of age. Low income mothers were more likely to give fresh milk before three months of age than were mothers from higher income groups. (Salama, 1978)

FORMULA PREPARED INCORRECTLY: 28% of urban mothers who used dried milk did not reconstitute it correctly. 72% of urban mothers prepared the formula correctly whether they received a physician's advice, followed instructions written on the container, or were given instructions at an MCH center. (Salama, 1978)

INFANTS FED LEFTOVER MILK: 72.9% of urban infants consumed all milk offered at every feed. 77.9% of urban mothers disposed of leftover milk; 17.5% saved it to refeed the infant. (Salama, 1978)

COMBINED BREAST AND BOTTLE FEEDING: 43.6% of urban mothers were breastfeeding their infants and giving supplemental milk. 29.1% used artificial feeding completely. 27.3% breastfed exclusively. (Salama, 1978)

MOTHERS' AGE: Among 120 mothers studied, those ages 20-25 weaned their infants at an average age of 13 months, but mothers over 25 years weaned at an average age of 16.5 months. (Kamal, 1969)
AGE AT INITIATION AND COMPLETION: Among 290 infants who had been breastfed by 120 mothers, the average age at supplementation was 9 months, and weaning was completed at an average age of 15 months. (Kamal, 1969)

AGE AND SUPPLEMENTS: Of urban children age 1-24 months, not in day care, 46% were receiving breast milk and supplemental foods. (Amine, 1978)

ADVICE ON INFANT FEEDING: 18.5% of mothers received their information on infant feeding from relatives and neighbors; 52% from MCH centers or physicians; the remainder from previous experience or radio and television. Mothers from small families were more likely to get their information from MCH centers or physicians. (Salama, 1978)

GRADUAL WEANING AND METHOD: The second year of life was considered the most favorable period for completing gradual weaning by 81.5% of mothers. Completing gradual weaning after the second year was practiced by 1.8% of mothers. (Salama, 1978)

WEANING TECHNIQUES: 52.9% of mothers weaned by keeping the infant off the breast by discouraging him; by applying bitter substances to the nipples, scolding him, or hiding the breast in clothing. 29.1% used gradual substitution of solid foods for the breast. The remainder could not specify the method or said that the infant weaned himself. (Salama, 1978)

NUMBER OF MEALS: 58.4% of mothers fed their infants 4 to 8 times per day; 42.7% fed their infants more than 8 times daily. (Salama, 1978)

WEANED CHILDREN: Of urban children age 1-24 months and not in day care, 20% were receiving no breast milk. (Amine, 1978)

WEANED CHILDREN AND DAY CARE: 60% of children age 1-24 months in an urban day care center were receiving no breast milk. (Amine, 1978)

PARITY AND BOTTLE FEEDING: 37% of bottle fed infants were primiparas (first born) compared with 17% of breast fed infants. (Nasser, 1975)

ILLNESS AND ARTIFICIAL FEEDING: 49.4% of artificially fed infants failed to thrive and 88.9% suffered from various diseases. (Nour, 1975)

WORKING MOTHERS AND BOTTLE FEEDING: 78.2% of working mothers in poor sections or Cairo relied on bottle feeding for their babies as opposed to 7.6% of non-working mothers. (Lebshtein, 1976)

SUPPLEMENTS AND DAY CARE: 36% of children age 1-24 months in an urban day care center were fed breast milk and supplemental foods. (Amine, 1978)

SUPPLEMENTS: When breastfeeding was unsuccessful, 82% of urban mothers gave milk, 6% gave starchy foods or fluids or both, and 12% gave no supplements. (Amine, 1978)

WEANING FOODS: 40.4% of mothers gave or planned to give varied types of foods (protein-rich foods, energy foods, foods rich in vitamins and minerals) as weaning foods; 30.4% favored energy-rich foods, and the
remainder planned a diet of protein-rich or vitamin and mineral-rich foods. (Salama, 1978)

SPECIAL WEANING FOODS: 29.1% of the mothers did not prepare special foods for weaning. (Salama, 1978)

3.3.3 INFANT DIET AFTER WEANING

(national)

FOODS: After weaning, the child eats family meals from a common pot. No special foods are made. (Hassouna, 1975)

MILK: Milk is not considered essential to a child's diet. Occasionally a child drinks milk added to tea. (Hassouna, 1975)

3.4 HEALTH AND MEDICINE

(national)

DIARRHEA: Diarrhea is treated by stopping breast milk for three days and giving the child caraway, rice, water and tea. (Hassouna, 1975)

MEASLES: Measles are sometimes treated by withholding all foods except molasses. (Hassouna, 1975)

(rural)

DIARRHEA: During attacks of diarrhea only watery fluids, mainly lemonade, are given for a variable period — up to 7 or more days. Breast milk is withheld. (Shukry, 1972)

MEASLES: Children with measles are fed only fluids (for example rice water) for 15 days. After these 2 weeks the child is kept on a light diet with no milk or animal protein for up to 40 days. (Shukry, 1972)

4. NUTRITIONAL STATUS CORRELATIONS

(national)

MORTALITY AND INCOME: Infant mortality rates were most closely linked to poverty, defined as the proportion of families with incomes below LE 250 per year. Therefore income distribution, particularly in rural areas, is a powerful conditioner. (Field, 1980a)

GASTROENTERITIS AND MORTALITY: The primary health problem was found to be the prevalence of poor sanitation, resulting in high rates of gastrointestinal diseases; this was the main reason that the death rate was higher than for most other nations of comparable per capita income. (World Bank, 1978)

MODERNIZATION AND INFANT MORTALITY: Incidence of infant mortality was unrelated to urbanity, literacy, electrification, or provision of purified
water, although in the rural governorates there was a slight positive relationship between mortality and urbanization. (Field, 1980a)

NUTRITION STATUS AND SOCIO-ECONOMIC STATUS: Wasting and stunting of infants increased as the socio-economic status of the father's job decreased. (Arab Republic of Egypt, 1979)

WORKING MOTHERS, INCOME STATUS, AND INFANT MORTALITY: The proportion of women who have entered the paid labor force is the same in rural and urban areas, and keeps a substantial number of families above the poverty level in both areas. It is also associated with lessened infant mortality rates. (Field, 1980a)

WORKING MOTHERS AND BOTTLE FEEDING: 78% of working mothers in poor sections of Cairo relied on bottle feeding for their babies as compared to 7.6% of non-working mothers. (Lebshtein, 1976)

DAY CARE AND BREASTFEEDING: Among children age 0-24 months in day care centers, 4% were exclusively breastfed; 36% were given breast milk and other foods; and 60% received no breast milk. Among children not in day care centers, the rates were 34%, 46%, and 20%. (Amine, 1978).

BREASTFEEDING AND INCOME: Family income was found to be significantly and negatively correlated with breastfeeding. Mothers with incomes under 5 pounds breast fed 44% of children age 1-24 months; 10-15 pounds, 31%; and over 15 pounds, only 4.4%. (Amine, 1978)

BREASTFEEDING AND INCOME: Artificial feeding was more common among the highest income groups; 46.1% among families earning 10-15 E.L. and 60% in families earning more than 15 E.L. Exclusive breastfeeding was least common among this high income group (4.4%). Breastfeeding with or without supplementation is more common among the lower income group, ranging from 38.5% to 52.7% depending on income and whether breastfeeding is full or partial. (Salama, 1978)

BREASTFEEDING AND SOCIAL CLASS: There was no statistically significant relationship between mother's social class and whether she breastfed. More women of high social class gave partial breastfeeding than women of middle or low status. (Nour, 1975)

BREASTFEEDING AND FAMILY SIZE: Artificial feeding was more common among small size families—less than 4 individuals (32.2%). Strict or exclusive breastfeeding was more common among medium and large families; 39.1% in medium families and 37% to 40.9% in large families. (Salama, 1978)

LITERACY AND BOTTLE FEEDING: 14.3% of surveyed literate mothers were bottle feeding compared with 6.7% of surveyed illiterate mothers. (Nasser, 1975)

ELASTICITY OF DEMAND: Despite food subsidies, propensity to spend additional income on food was high, indicating marginal consumption. (National Academy of Science, 1979)
MIDWIVES AND BELIEFS AND PRACTICES: The "daya" or traditional birth attendant, helps shape food beliefs and practices. The daya does pre- and post-natal care as well as delivery. Much of her therapy involves nutrition advice. (Pillsbury, 1978)

MIDWIVES AND MATERNAL MORTALITY: The high maternal mortality rate (9/1000) may be attributed to the high proportion of home births attended by traditional village midwives, who lack antiseptic practice training and who work under adverse conditions. (Furnia, 1975)

LITERACY AND NUTRITIONAL STATUS: Protein-calorie malnutrition was significantly more prevalent among children of illiterate fathers. Almost all mothers were illiterate. (Shukry, 1972)

ENVIRONMENTAL SANITATION AND RURAL MORTALITY: Rural infant mortality did not appear to be influenced by water purification or by electrification, perhaps because there was a critical threshold of change which had yet to be attained. (Field, 1980a)

DIET AND INCOME: Diets of urban women in the second and third trimesters of pregnancy were related to income: As income rose, intake of bread and fresh vegetables decreased, consumption of legumes was unchanged, and consumption of all other foods increased, including meat, fish, eggs, and milk and milk products. (Patwardhan, 1972)

MODERNIZATION AND URBAN INFANT MORTALITY: Within urban areas, pure water and electrification were significantly related to lessened infant mortality. (Field, 1980a)

BREASTFEEDING AND EDUCATION: No statistically significant relationship was found between the pattern of breastfeeding and mother's education. (Nour, 1975)

BREASTFEEDING AND OCCUPATION: No statistically significant relationship was found between mother's occupation (worker or housewife) and whether she breastfed. Mothers who worked outside the home were more likely to partially breastfeed at 6-12 months, housewives more likely to fully breastfeed at 6-12 months. (Nour, 1975)

BREASTFEEDING AND MOTHER'S AGE AND PARITY: There was no statistically significant relationship between mother's age or parity and whether she breastfed. (Nour, 1975)

BREASTFEEDING AND MOTHER'S WEIGHT AND HEMOGLOBIN: There was no statistically significant relationship between mother's weight and whether she breastfed or not. Mother's with hemoglobin levels below 8.5 breastfed less frequently (69.2%) than mothers with a hemoglobin of 8.5-10.5 (85.9% breastfed their infant) or those over 10.5 (89.6% breastfed); this is a significant difference. (Nour, 1975)
5. NUTRITION AND HEALTH PROGRAMS

5.1 HEALTH CENTERS

(national)

ADEQUACY: Only 40% of the vulnerable rural and urban target populations were reached by the health units and center services. (Nasser, 1979)

(rural)

INSTITUTIONAL STRUCTURE: The Ministry of Health has established 2300 rural health units and centers distributed uniformly among 4200 villages, staffed by 2777 physicians, 6000 nurses, and 3000 technicians. (Ministry of Health, 1979)

PERFORMANCE: 61% of 130 sampled rural health centers and units reported they did not possess infant growth charts to monitor nutritional status. However, 69% did report weighing or medical check-ups at one time or another (not routinely) of children attending the clinics. (Burkhardt, 1980a)

PERFORMANCE: Records from 1500 children attending rural health centers and units showed that 28% had not been weighed since birth and another 23% had not been weighed at all. (Burkhardt, 1980a)

STRENGTHENING DELIVERY SYSTEMS: Westinghouse Health Systems and the Ministry of Health have undertaken a five year project to strengthen the rural health service delivery systems in 1978 with clear measurable objectives and built in evaluations. Nutrition education will be included in both the in-facility and outreach programs. (Ministry of Health, 1979)

CONSTRAINTS: The major constraints to effective delivery of services identified include the lack of supportive structures such as transportation and communication; many physicians and nurses were not oriented toward rural health problems; lack of motivation at all levels among health care providers in rural areas and the underutilization of available health resources by the population. (Ministry of Health, 1979)

5.2 FOOD SUPPLEMENT PROGRAMS

(national)

SUPERAMINE: Superamine is a Ministry of Health subsidized high protein weaning food designed for infants from 4 months to 3 years of age. The Nile Company for Pharmaceutical Products has produced supramine since 1973. It consists of wheat flour, dry skim milk, sugar, legumes (chick peas and lentils), vitamins and minerals. (Austin, 1979)

PL 480: In fiscal year 1977 almost $12 million worth of Title II food commodities were distributed in Egypt through the World Food Program and two voluntary agencies, the Catholic Relief Service and CARE, to primary schools and health units and centers. (National Academy of Science, 1979)
HEALTH CENTERS: The supplementary feeding efforts of most rural health centers/units were not well targeted, monitored, or administered according to the responses of doctors to the MIT-Cairo University survey questionnaire. Two thirds of the centers/units reported distributing the food at times the clinics were not open, and all at once rather than at regular intervals. Half of the facilities stated that they did not weigh or provide check-ups for children who came to the clinic for food supplements. (Burkhardt, 1980a)

INFLUENCE OF PHYSICIANS' ATTITUDES: The only statistically significant (p < .05) influence on how well supplementary feeding was handled is the doctor's own satisfaction with his job, according to the MIT-Cairo University survey. Doctors who were content with their jobs performed their jobs better. (Burkhardt, 1980a)

ATTRIBUTES NOT INFLUENCING PERFORMANCE: The MIT-Cairo University survey found no statistically significant relationships between good performance in supplementary feeding and: the reported attributes of the health centers/units; the doctors' experience, age, sex, or background, or the local incidence of malnutrition. (Burkhardt, 1980a)

NECESSARY ATTRIBUTES: Only 13% of the 112 health centers/units responding to the MIT-Cairo University survey questions concerning supplementary feeding displayed more than half of the attributes considered necessary for successful supplementary feeding: using it as a resource to improve the nutritional status of malnourished children and integrating it with other activities of the clinics. (Burkhardt, 1980a)

IMPACT OF ORIENTATION: The likelihood of a center/unit reporting reasonably good performance in supplementary feeding was almost twice as high (53% vs. 28%) in those clinics reporting an active orientation to health care delivery (i.e., some outreach and follow-up efforts). (Burkhardt, 1980a)

IMPACT OF DOCTORS' ORIENTATION: Only 17% of the centers/units in which the doctor expressed a "passive" personal orientation to health care delivery had reasonably good performance in supplementary feeding activities, while 44% of the clinics with doctors having "active" personal orientations to health care performed well. (Burkhardt, 1980a)

OUTREACH: In response to questions concerning outreach and follow-up between 73% and 79% of the doctors surveyed reported only serving children when they come to the centers/units. (Burkhardt, 1980a)

SUPERAMINE: In fiscal year 1979 the Ministry of Health distributed 900 metric tons of superamine to 222 health centers. The Ministry also provides dry milk to all governorates for use in maternal and child health services. (Burkhardt, 1980a)

PL 480: The Catholic Relief Service distributes food to rural health units and MCH centers serving approximately 500,000 preschool children
under 3 years of age. Fortified wheat-soy blends, bulgar and vegetable oil are imported from the U.S. under Title II of PL 480. There is no screening of recipients' need. Demand exceeds supply. (National Academy of Science, 1979)

PL 480: In fiscal year 1979 the Ministry of Health distributed 14,000 metric tons of wheat-soy blend, bulgar and cooking oil donated by Catholic Relief Services to 543,000 recipients on a take-home basis. (Burkhardt, Field and Ropes, 1980)

5.3 NUTRITION EDUCATION PROGRAMS

(national)

NURSES AND SOCIAL WORKERS: The Egyptian Ministry of Health in conjunction with the Egyptian Nutrition Institute and Catholic Relief Services run a nationwide program to train nurses and social workers to teach nutrition at MCH and rural health centers. (The program actually started in 1979.) (TAICH, 1978)

WOMEN: The Coptic Evangelical Organization for Social Service (CEOSS) educates women in home crafts, nutrition, and child care. Budget for calendar year 1977 was $67,000. (TAICH, 1978)

NURSES AND MIDWIVES: Project Hope, in conjunction with Egyptian universities, administers a training program for maternal/child health nurses and nurse-midwives. As part of a five-year program of training and teaching in medicine and public health. (TAICH, 1978)

LACK OF NUTRITION EDUCATION: The government's health delivery system presently does not include a formal nutrition education component. Community outreach and education do not fit the task descriptions or the training of any health center staff. (National Academy of Science, 1979)

(rural)

HEALTH CENTERS: The MIT-Cairo University questionnaire data indicate that most centers/units provide some nutrition education, but much of it is unrelated to the supplementary food furnished. (Burkhardt, 1980a)

5.4 OTHER PROGRAMS

(national)

NUTRITION SURVEY: Approximately $90,000 from the U.S. AID Office of Nutrition and L.E. 42,000 ($60,000) in Special Foreign Currency Program funds supported the national nutrition status survey, 1979. (National Academy of Science, 1979)

CHILD CARE: Catholic Relief Service provides equipment for and monitors a model child care program at a Cairo electronics factory. The factory provides special facilities for nursing mothers. (TAICH, 1978)
RESEARCH AND TRAINING: The Nutrition Institute, a quasi-independent institution responsible to the Ministry of Health, has trained health care providers in elements of nutrition, and has conducted some nutrition surveys and a limited amount of research. (National Academy of Science, 1979)

RESEARCH AND TRAINING: The Pediatric Department at Cairo University Medical School, the Assiut University, the High Institute of Public Health in Alexandria, the National Research Centre and Al Azhar University have all been active in some aspects of nutrition research. (National Academy of Science, 1979)

6. NUTRITION AND HEALTH POLICIES AND LEGISLATION

6.1 GOVERNMENT (HOST AND DONOR COUNTRIES)

MATERNAL AND CHILD: Egypt's Five Year Plan (1978-1982) puts a high priority on improving maternal and child nutritional status. The Ministry of Health has assumed major responsibility for providing health services through Rural Health Centers and Maternal and Child Health Centers. (National Academy of Science, 1979)

NURSERIES: By law, employees of over 100 females must provide nurseries for children from 3 months to 6 years. The mothers make a contribution to the financing of the nursery. There is no provision establishing nursing breaks. (Richardson, 1975)

NO NUTRITION POLICY: As of 1978 there was no comprehensive nutrition policy and no formal mechanism for the development of such coordinated nutrition policies or projects. The Nutrition Institute, responsible to the Ministry of Health, is the only public organization exclusively concerned with nutrition policy. (National Academy of Science, 1979)

ENVIRONMENTAL CONCERNS: The GOARE Ministry of Health considers environmental health conditions, including excreta and waste disposal and the provision of pure water, of immediate and critical importance. (Furnia, 1975)

PRESCHOOLERS: The U.S. plans to emphasize high risk preschoolers as recipients of PL 480 Title II supplemental foods by 1981, and to phase out its participation in the school feeding program. (National Academy of Science, 1979)

EDUCATION: The government regarded education as a major vehicle for popularizing its objectives and promoting national consciousness. (Furnia, 1975)
6.2 NON-GOVERNMENT (INCLUDING INTERNATIONAL AGENCIES)

(rural)


6.3 COMMENTARIES

(national)

PLANNING CAPABILITIES NEEDED: The National Academy of Science recommends that Egypt needs a nutritional surveillance system and increased capacity for intervention in order to make training, community outreach, and educational activities more effective. (National Academy of Science, 1979)

IMPACT OF DEVELOPMENT: Development alone is too complex, costly, and slow to be relied upon to decrease fertility and infant mortality. The mode of development experienced by Egypt to date offers little hope of early and meaningful impact on the problems of high mortality and high fertility. (Field, 1980a)

INTERVENTION RECOMMENDATIONS: Reducing infant and early childhood mortality requires health interventions that succeed in reaching small children, monitoring their growth performance, and responding effectively to the range of health insults that underlie mortality statistics. (Field, 1980a)

INTERVENTION RECOMMENDATIONS: Fertility preferences and behavior are likely to follow upon experience with and expectations about childhood mortality. Addressing the latter is a direct route to dealing with the former. (Field, 1980a)

SUPERAMINE: The impact of superamine has been minimal because it is: too costly to produce given the imported ingredients; unfamiliar in taste to recipients; never produced in quantity; and not regularly available to at-risk children. (National Academy of Science, 1979)
A. GENERAL REFERENCES

FAO


Offers a general overview of Egypt's agricultural sector based on 1970 data. Discusses production of major crops, imports and exports.


Gives detailed information on food available for domestic utilization (specifically for actual consumption) and per capita supply. Useful for countrywide but must be supplemented with food consumption surveys to show consumption among different population groups.

FAO/United Nations


Presents agricultural data mainly in terms of worked regions, but within the Near East breakdowns are presented for some things for Egypt (food production rates, instability index, self-sufficiency ratio, per capita dietary energy supplies, consumer food prices).

United Nations


B. EGYPT REFERENCES USED FOR THIS REPORT

*Arab Republic of Egypt, Ministry of Health, Nutrition Institute; U.S. DHEW, Center for Disease Control; U.S. Department of State, A.I.D.


Original research summary.
Method: Survey; population proportionate representative sample; one time baseline information.
Sample: 11,657 six to 71 month old infants; demographic criteria include literacy, education, occupation and several household indices.
Geographic location: 21 urban and rural Governorates.

*Exemplary reference
This is the first comprehensive nation-wide nutrition survey of preschool children in Egypt. Anthropometric indices, infant feeding practices, anemia and socio-economic characteristics were recorded. The goal of the survey was to provide baseline data for use in determining priorities in planning, policy and research.

*Arab Republic of Egypt, Ministry of Health, Nutrition Institute


Original data.
Method: Nutrition Status Survey, including physical and biochemical measures and health related interview with mothers.
Sample: Statistically representative sites, with randomly chosen households within areas, permits prevalence estimates and use of standard testing to determine differences between this survey and the 1978 survey and between areas within this survey. A total of 1,783 children age 6-71 months were included.
Geographic location: Rural areas within the 17 rural governorates of the 1978 survey.

This study was conducted as a follow-up study to the 1978 Nutrition Status Survey, in response to the criticism that the latter was conducted during the spring when there is little diarrheal disease, which accounts for the low rates of undernutrition found by the survey. In order to balance this seasonal effect, this survey was conducted during August and September, 1980 in two of the six rural areas used in the 1978 survey.

Aly, H.E.


Original data.
Method: Survey; a population proportionate representative sample; one time baseline information.
Sample: 11,657 six to 71 month old infants.
Geographic location: Same as the Arab Republic of Egypt Nutrition Status Survey; plus three frontier areas (the Red Sea; Matrouh; New Valley).

This brief report summarizes the nutritional data from the National Nutrition Survey.

*Exemplary reference
Amine, E.K., El-Sherbini, A.F., and H.E. Ali

1978 "Factors affecting the feeding patterns of infants and young children in urban and rural Egypt." Bulletin of the High Institute of Public Health (accepted for publication).

Original data.
Method: Survey; selected representative rural and urban sectors; systematic random selection within sectors; interview with precoded questionnaire; cross sectional.
Sample: 480 mothers with infants one month to two years old; 253 rural dyads, 177 low-income urban MCH attendees, and 50 mostly high income urban day care attendees.
Geographic location: Edfo region in Upper Egypt (rural); Sanhour and El Shoback El Gharby in Lower Egypt (rural); two sections of urban Cairo (Masr El Kadema and Heliopolis).

The aim of this work was to study infant feeding practices and related factors in urban and rural areas. In addition to information on the infants' feeding patterns mothers were asked about their occupation, age, family size, and income. The relationships between these variables were presented and discussed.

Arab Republic of Egypt, Ministry of Health and Westinghouse Health Systems


Program Description (no actual research data).

This report presents a detailed description of the five year "Strengthening of Rural Health Service Delivery" Project, begun in 1979, which has as its general objective improving the status of the rural population's health through the improvement of existing health service delivery practices. Two districts each from four rural governorates (Beheira, Fayoum, Dakahleia and Assiut) with a total population of more than 2 million people were selected to be representative of the country's rural population. Project activities will ultimately involve 212 health centers and units and is being carried out within the existing M.O.H. administrative system.

Austin, J.E.


A survey of 140 nutrition programs around the world found that only 23% reported having analyzed nutritional status data and only 15% stated that they had analyzed their programs' cost data. Austin finds this situation "understandable even if intolerable, given the state of the art of nutrition program evaluation." He then discusses issues related to the technical, financial,
psychological and political aspects of evaluation, given the realities of resource and personnel constraints.

Barakat, M.R.

no date "Comments on the nutritional assessments made recently in Egypt" (unpublished)

Literature review.

This critical review of recent nutrition surveys concludes that seasonality is an important factor in determining rates of severe malnutrition. Rates of acute severe malnutrition in Egypt were as high as 6% in the summer and as low as 1% in the winter.

Burkhardt, R., J.O. Field, and G. Ropes


Original data. 
Method: Survey questionnaire to head doctors of rural health centers. 
Sample: 132 rural health centers and units sampled (1 per district in 17 governorates). 
Location: Rural.

This report of the MIT-Cairo University Health Care Delivery Systems Project focuses on questions of how well supplementary feeding is being implemented, what shortcomings exist and what to do to overcome them. Data is taken from the relevant portions of the project questionnaire and the Egyptian experience of administering supplementary feeding is evaluated in light of proposed criteria of effectiveness. The analysis concludes by relating differences in performance to other characteristics of the centers and units, including the beliefs and attitudes of the doctors who manage them.


Original data. 
Method: Health System Questionnaire. 
Sample: 132 (of total 2,000) rural health centers and units. 
Geographic location: The 17 rural governorates. Omitted were four urban governorates and four sparsely populated "frontier" governorates.

This monograph addresses the experience of the Ministry of Health with family planning in rural Egypt as interpreted by the head doctors in charge of implementing national policy at the local level.
El Lozy, M., J.O. Field, F. Ropes, and R. Burkhardt


Original data.
Method: Physicians and nurses weighed and measured 250 children at each center.
Sample: 4,327 children in 17 rural health centers.
Geographic location: The 17 rural governorates of Lower and Upper Egypt. Omitted were four urban governorates and four sparsely populated "frontier" governorates.

Children were measured as part of a national survey. Purposes of the exercise were: 1) to document the extent and nature of nutritional problems, and 2) to test the feasibility of incorporating growth surveillance into the normal routines of the rural health system, to serve as an early warning mechanism. Data are presented by governorate.

El Rafie, M.


Original data.
Method: Survey, random sampling, one fifth of village population.
Sample: 1,115 children under 6.
Geographic location: Baragil village, close to Cairo.

Survey of social, economic, physiologic, and biochemical status of population. Mothers were interviewed regarding feeding practices and beliefs and children's health histories. Report includes several tables illustrating relationships found among age, height, weight, type of feeding, motor development, and health problems.

Fattah, M.A., Gabrial, G., Shalby, S. and S. Moreas


Original data.
Method: Survey questionnaire; non-random sample.
Sample: 230 pregnant women described as "low socioeconomic status poor."
Geographic location: MCH center in Giza.

In this study of MCH attendees, many poor Egyptian women showed biochemical abnormalities in calcium metabolism and riboflavin deficiency.
Fattah, M.A.

1974 "Dietary faults in health and disease leading to protein-calorie malnutrition." Gazette of Egyptian Pediatric Association, 22(1).

Original data.
Sample: 102 infants and children 2-36 months attending Mounira Pediatric Hospital Malnutrition Clinic suffering debility, retarded growth.
Geographic location: Infants attending Mounira Pediatric Hospital.

A dietary questionnaire was taken from mothers of 102 infants and young children suffering from PCM. The study showed that failure of breastfeeding was common and that this may be an important cause of PCM in first year of life. Supplementary feeding was markedly deficient in all nutrients. Foods given after weaning were also deficient in every respect; protein, calories, minerals, vitamins. Most deficient were iron, vitamin A, thiamine, and vitamin C. Subjects suffered both PCM and other nutritional deficiency diseases. Food intake was restricted for unduly long periods, worsening nutrition status.

Field, J.O. and G. Ropes

1980a Infant Mortality, the Birth Rate, and Development in Egypt, Cambridge, MA, M.I.T.-Cairo University Health Care Delivery Systems Project, Monograph #1.

Survey of existing data.
Method: Computerized analysis of statistics related to infant mortality, birth rates, literacy and other socioeconomic data, and population.
Sample: Nationwide surveys. Central Agency for Public Mobilization and Statistics (CAPMAS), Ministry of Health, and other sources.
Geographic location: nationwide data collected and analyzed on a governorate basis.

Analysis of aggregate data, derived from official sources, found that although "facts and figures" were readily available, knowledge and insight tended to be anecdotal. Relationships among variables were rarely analyzed. This study analyzed existing data in order to establish critical relationships and causal patterns, particularly the ways in which infant mortality and birth rate are affected by social attributes including population density, literacy, urbanization, and water quality.

Original data.
Method: Health Systems Questionnaire.
Sample: 132 (of total of 2,000) rural health centers and units, one per district.
Geographic location: The 17 rural governorates of Lower and Upper Egypt. Omitted were four urban governorates and four sparsely populated "frontier" governorates.

Data were organized at the governorate level in an attempt to identify the extent to which and ways in which characteristics of the health system affect the recording of births and infant deaths, and to establish whether "reporting bias" is systematically related to various health system attributes.

Furnia, A.H.

Literature review and summary.

This document gives a general description of the health conditions of the country. Three chapters are focused upon the most significant health problems, including one on nutrition. Three other chapters describe the government's health system, policies and practices. A brief review of the historical and cultural make-up of the country is also offered.


Original data.
Method: Collection and analysis of milk samples, anthropometry and biochemical evaluations; cross-sectional.
Sample: 41 urban mothers of moderate to poor income families in Alexandria; range of income 4.5 to 25 L.E., median income 7.5 L.E. (U.S. dollars $10 to 60, median $20).

In this sample, 17 mothers were judged to be malnourished and 24 healthy. Healthy mothers gave milk with a significantly higher concentration of protein and their milk contained more calories per 100 ml. The healthy mothers produced a significantly greater amount of milk.

*Exemplary reference
Hassouna, W.A.

1975  Beliefs, Practices, Environment and Services Affecting the 
Survival, Growth, and Development of Young Egyptian Children: A 
Comparative Study in Two Egyptian Governorates. Cairo: Institute 
of National Planning, #1115.

Original data. 
Method: Observation and descriptive interviews. 
Sample: 1000 young children attending MCH and day care centers. 
Geographic location: Two rural governorates (Damietta and Quena) 
and an old section of Cairo.

This study describes customary care and feeding of infants and 
small children as well as the dietary health beliefs and practices 
of women during pregnancy and lactation.

Kamal, I., Hefnawi, F., Ghoneim, M., Talaat, M., Younis, N., Taqui, A. and 
M. Abadalla

1969  "Clinical, biochemical and experimental studies on lactation I. 
Lactation pattern in Egyptian women." American Journal of 

Original data. 
Method: Interviews; retrospective; cross sectional; last three 
lactation periods over last five years. 
Sample: 120 mothers attending MCH centers in old Cairo chosen at 
random (total of 290 lactation periods); average income of 150 
L.E. per year. 
Geographic location: Cairo.

Based upon maternal interviews, present and past lactation periods 
were explored. Along with descriptive data, information 
concerning factors influencing breast feeding was collected.

Kamel, L.M.

1979  "Egyptian National Nutrition Survey. V. Malnutrition in Pre-
school Children." Appendix 5, Workshop on Nutrition and Health in 
Nutrition, U.S. A.I.D.

Summary of original data. 
Method: Four cross sectional surveys and two longitudinal surveys 
are reviewed. 
Sample: Selection and number vary by survey from a large sample 
of all preschool children (1494) in Manshaat El Bakery (Giza 
Governorate) to 81 children visiting two MCH centers in Giza and 
Ein El Sira. 
Geographic location: Specific area varies with surveys, but Giza 
Governorate (rural) or Cairo (urban).
Rates of mild to moderate malnutrition in these studies are similar to the findings of the national nutrition survey. They also support the findings that from birth to 12 months infants receiving the breast were less likely to suffer protein calorie malnutrition and that during the second year weaned children had better chances of being well-nourished. Kwashiorkor was more commonly found in rural areas, marasmus was more common in urban areas.

Khalia, I.F.


Original data.
Method: Cross sectional survey of anthropometry.
Sample: 4,327 preschoolers and infants identified from birth registers or self selected by attendance at MCH centers.
Geographic location: 17 health centers in 17 rural Governorates.

This report summarized the overall project and highlights those aspects which offer data on nutritional status and other aspects of child health. This summer data confirmed that widespread malnutrition is present in rural areas (measured by weight for age). The results are higher than those reported by the national survey.

Lebshtein, A.K. and A.M. El Bahay


Original data.
Method: Survey; random sample, cross sectional.
Sample: 434 mothers (250 non-working and 174 working mothers) with incomes as low as 3-5 Egyptian pounds per month.
Geographic location: Boulak District of Cairo.

Survey of working and non-working mothers of infants being exclusively breast fed found that breast fed infants weighed more at all ages. Working mothers were less likely to be breast feeding. Discussion section assesses impacts of bottle feeding, sanitation, and nutrition knowledge.

MIT-Cairo University Health Care Delivery Systems Project

Original data.
Method: Survey questionnaire.
Sample: Head doctors at 132 rural health centers and units (one per district).
Geographic location: The 17 rural governorates.

This volume in the series presents the raw data, presented question-by-question, which is analyzed in the volumes by Burkhardt, Field, and Ropes (see above).

*National Academy of Sciences

1979 Health in Egypt: Recommendations for U.S. Assistance.
Washington, D.C.

This report presents the findings and recommendations of a National Academy of Sciences study on the health problems in Egypt and on the programs and plans for improving the health and nutritional status of the Egyptian people. It covers all areas of concern with a focus on how USAID can effectively contribute to the national effort. "Very good critical evaluation and well thought out recommendations."

Nour, El-din, S.A.


Original data.
Method: Questionnaire, cross-sectional; assessed socioeconomic status, reproductive history, anthropometry of mother and child, feeding history.
Sample: 600 mothers attending well baby clinic or hospital (every 4th attendant was interviewed). Some mothers came from birth registers of hospitals. Multiple births, prematures, major complications or pregnancy excluded.
Geographic location: Alexandria

The author describes patterns of breastfeeding, bottlefeeding and weaning among these mothers.

Patwardhan, V.N. and W. Darby


Summary material.

Review of nutritional observations, research findings, developments, and needs in several countries of the Arab Middle East, with information of historical interest.

*Exemplary reference -44-
Pillsbury, Barbara L.K.

1978 Traditional Health Care in the Near East. USAID Contract No. AID/NE-C-1395.

Literature review.

This document covers in general terms the traditional health care practitioners, customs and beliefs of the Near East. The only mention of nutrition is that provided by the traditional birth attendant (the daya) but that is not specific. There is little breakdown of practices and beliefs by country or group and thus is only a general reference.

Ragheb, S. and E. Smith


Original data plus good literature review.
Method: Interview questionnaire.
Sample: Random sample of 88 lactating women in a private maternity hospital, a university hospital, an insurance hospital and an MCH center.
Geographic location: Urban Alexandria.

The aim of this study was to identify beliefs and superstitions of lactating Egyptian women in order to better allow nurses to assist these women. Most of the beliefs uncovered were harmless and many promoted good nutrition. Areas of intervention were discussed in light of existing nutrition problems. The authors compared their findings with other studies and found a high degree of consistency.

Richardson, J.L.


Summary document.

The purpose of this paper is to ascertain what legislation exists in various countries to protect the nursing relationship. Breastfeeding is a practice that can be encouraged or discouraged by the presence or absence of labour laws affecting the nursing mother. The intent of most of these laws is primarily to retain mothers in the labour force and thus these laws are encompassed in maternity protection labour laws rather than in child welfare laws. Information was gathered mainly from the International Labour Office publication "Legislative Series."
Salama, M.M.


Original data.
Method: Cross-sectional. Questionnaire. Study included socioeconomic data, reproductive history, infant health and feeding.
Sample: 480 mothers (253 rural, remainder urban) with children 1 month to 2 years. Urban mothers used day care or MCH center. Rural mothers described as random with no further information.
Geographic location: Rural areas included the Edfo region in Aswan Governorate, Sanhour in Behera Governorate, Western Ek-Shoback in Giza Governorate. Urban areas were Masr El-Kadem in Cairo and Heliopolis, a suburb of Cairo.

This study surveyed the feeding practices and dietary patterns during the first two years of life, in male and female Egyptian infants in rural and urban areas. It compares these variables within and between the studied groups.

Shukry, A.S., Labib, F.M., and L.M. Kamel


Original data.
Method: Random cross-section-selected every fifth family in area.
Sample: 695 children 0-6 years.
Geographic location: El Assal area of Cairo; crowded government housing with clean water supply and access to MCH center.

A field survey was carried out in a high density Cairo community to assess health and nutrition status of pre-school children. Children were subjected to clinical exams, anthropometry, hgb, urine and stools examined for parasites, medical history. Results pointed to high prevalence of preventable infections and deficiency diseases. (This in spite of fact that this is not a slum.)


Original data.
Method: Clinical examination and parental questionnaire two consecutive years in April, random sampling and total village children.
Sample: 1494 children in Manshaat (total in village) and 747
children in Saft (50% of children, selected randomly). Both villages have MCH centers, compulsory education, pure water and electricity.

Geographic location: Two rural areas, Giza Province (Manshaat El Bakary and Saft El-Laban).

In study of 2 rural villages, malnutrition was prevalent among pre-school children, most commonly mild-moderate PCM. Breastfeeding is rule for 4-6 mo., at 7-11 mo. supplements are given in some cases, usually starchy or watery foods. PCM and diarrhea usually appear at 7-11 months and these problems continue through the 2nd year of life.

TAICH (Technical Assistance Information Clearing House)

April 1978 Egypt TAICH Country Report

This document lists all American private voluntary assistance service organizations that have projects in Egypt and that responded to this questionnaire survey.

Vermury, M.

1978 Project on Beliefs and Practices that Affect Food Habits; A Literature Review. CARE.

Literature review.

This report pieces together information on the food habits and beliefs in the general North Africa region. Even though there is much useful information on Egyptian practices and beliefs, it is often difficult to know just which country or area the author is describing, making it hard to judge the generalizability of the data presented.


Original data.
Method: Assessment of nutritional status, dietary, economic and social conditions; one time nutrition education intervention and three month follow-up.
Sample: 92 infants (67 randomly chosen rural infants under 20 months of age and 25 infants from an urban nutrition clinic). Geographic location: Kerdasa village in rural Giza and Mounira Children's Hospital (urban clinic).

In this study simple assessments of the nutritional status and evaluation of the dietary, economic and social conditions were done for a sample of urban and rural infants and young children.
A one time intervention consisting of suggestions for improved home-made diets was attempted. At follow-up those children who were below 70% of weight standard increased their weight. However, those children at or above standard lost weight.

World Bank


C. REFERENCES OF INTEREST: HISTORICAL

Abdou, I.A., Ali, H.E. and A.K. Lebshtein


Abdou, I.A., Shaker, F.M., Bishara, F.F. and M.K. El-Megharbel


Shaheen, F.


Brief review of pre-1977 nutrition surveys.

D. REFERENCES OF INTEREST: UNAVAILABLE

Ammar, H.


Badraoui, M.H.H., Fawzi, G., and F. Hefnawi


Correa, N. and W. Hassouna

1970 Planning for Health of Infants and Pre-School Children in Egypt. Cairo: UNICEF.
El-Behairy, F., El-Mougi, M., Mostafa, S., and N.H. Osman


El-Behairy, F., El-Mougi, M., Osman, N.H. and S. Mostafa


El-Naka, N.M.


El-Naka, N.M.


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Labib, F.M., El-Gammal, R. and L.M. Kamel


Report of Health Sector Assessment Team


Yehya, S.A., Said, A., El-Hawary, M.F. and R. Sakr