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MCHIP Maternal and Child Health Integrated Program

# Examining Factors Associated with Stunting in Lower Egypt in Comparison to Upper Egypt

## Bridging the Gap between Cultural Beliefs and Feasible Feeding Practices through Trials for Improved Practices

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# Abbreviations

| | |
|---|---|
| AUC | American University in Cairo |
| CDA | Community Development Association |
| EDHS | Egypt Demographic Health Survey |
| FAO | Food and Agriculture Organization of the United Nations |
| GDP | Gross Domestic Product |
| IYCF | Infant and Young Child Feeding |
| MCHIP | Maternal and Child Health Integrated Program |
| MNCH | Maternal, Newborn, and Child Health |
| SD | Standard Deviation |
| SMART | Maternal and Child Health Integrated Program – MCHIP Egypt project |
| TIPs | Trials for Improved Practices |
| USAID | United States Agency for International Development |
| WHO | World Health Organization |

# List of Egyptian Foods and Liquids Given to Young Children

| | |
|---|---|
| Herbal drinks | Locally produced pre-packaged herbal health products for young children. Consist of a sachet of a mix of herbs (e.g., chamomile, thyme, licorice, anise, and peppermint oil) which is mixed with ¼ cup of water, boiled, cooled, and given to the baby to drink following childbirth and in the first 6 months of life to remedy colic |
| Belila | Wheat (grains) porridge made with milk and sugar |
| Foul | Fava beans |
| Samna | Boiled clarified butter |
| Halawa Tahenaya | Sweet made with ground sesame seed paste, sugar, and butter |
| Kofta | Meat balls made from ground red meat |
| Jarjeer | Watercress |
| Lisan al-osfoor shurba | Soup made with broth and small macaroni |
| Mahshi cromb | Rice rolled into cabbage leaves and cooked and stewed |
| Mhlabia | Rice pudding |
| Molassena | A locally made complementary food made from ground chickpeas, flour, milk, and fenugreek |
| Molokhaia | Jew's mallow leaves cooked as a viscous green soup |
| Store-bought small sponge cake | Commercial store-bought small sponge cake with cream filling that is high in sugar and fat and low in nutritive value |
| Seasamina | A locally made complementary food made from lentils, flour, and *tehena,* developed by National Nutrition Institute of Egypt |
| Sugary Biscuits | Pre-packaged cookies, can be filled with cream |
| Tamaiya | Egyptian bean patties made with mixture of fava beans |
| Tehena | A paste made from ground sesame seed |
| Tilia | A yellowish herb used to make herbal tea |

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# Executive Summary

## INTRODUCTION

Since 2005, Egypt has faced increased levels of food insecurity, combined with rising poverty rates and food prices, and successive crises, including the avian influenza epidemic (2006) and food, fuel, and financial crises (2007–2009) resulting in reduced household access to food and purchasing power. An increase in the prevalence of child stunting between the 2005 and 2008 Egypt Demographic and Health Surveys (EDHS) coincided with the avian influenza outbreak in Lower Egypt. The purpose of this study, conducted by the Maternal and Child Health Integrated Program (MCHIP), was to address factors related to stunting, including infant and young child feeding (IYCF) practices and the avian influenza outbreak within the context of the rise in stunting in Lower Egypt. This study addressed factors related to stunting, focusing on IYCF practices and how cultural perceptions and beliefs of mothers, other caretakers, and health care providers impact these practices. Mothers were also asked to try practices new to them through Trials for Improved Practices (TIPs).

The aim of this operations research study was to understand how mothers' behaviors, perceptions, and cultural beliefs impact dietary intake and feeding practices in stunted and non-stunted Egyptian children from 0–23 months of age. Four research objectives were addressed in this report, as part of this operations research study: 1) identify gaps and positive aspects of IYCF practices through the application of the TIPs methodology with Egyptian mothers; 2) understand cultural beliefs, perceptions, behaviors, and motivating factors that may facilitate or act as a barrier to optimal IYCF practices and how these factors may explain the rise in stunting in Lower Egypt, including perceptions related to maternal diet, weight gain and birth spacing; 3) ascertain the role of grandmothers, fathers, and health care providers in IYCF; and 4) examine changes in growth perceived by mothers, other caretakers, and health care providers resulting from the avian influenza outbreak within the context of the rise in stunting in Lower Egypt during the previous 5–6 years. The examination of maternal diet and weight gain during pregnancy and diet, family planning and birth spacing in the 2 years following childbirth, among lactating and non-lactating women are addressed in a separate report.

## METHODS

The two study sites were composed of one district each in Upper Egypt (El-Maragha District, Qaliobia governorate) and Lower Egypt (Kafr Shokr District, Sohag governorate), which allowed for comparisons between the region with the highest (Lower Egypt) and the lowest (Upper Egypt) levels of stunting.

This study used Trials for Improved Practices (TIPs), a consultative research methodology, which consists of three household visits to the mother to identify barriers and facilitating factors to optimal IYCF practices and work together with the mother to identify and agree on feasible solution(s). The three TIPs visits consist of: 1) first visit: determine current IYCF practices; 2) second visit, conducted 1-day after the first visit: discuss with mothers practices that are not currently being used and recommend implementing new practices for a 1-week trial period; and 3) third visit, 1 week after TIPs visit 2: conduct follow-up with the mother, to ask about her likes/dislikes concerning the new practices, her experience, and whether she modified and/or will continue the practice(s) IYCF practices are discussed within the context of WHO's "ideal practices."

As part of TIPs, qualitative data on cultural beliefs, perceptions, and behaviors related to IYCF practices was collected by in-depth interviews with mothers 18 years and older with children 0–23 months of age (N=150) during the first TIPs visit (See data collection tool in Appendix). Ascertainment of dietary intake (i.e., food frequency questionnaires, 24-hour dietary recall) and

measurement of nutritional status (i.e., weight, length) was collected during both the first and third TIPs visit in children 6–23 months of age (N=120).

Mothers' TIPs interviews were contextualized with the collection of information on perceptions and advice given by family members and health care providers on IYCF practices . In-depth interviews were also conducted with fathers with children 0–23 months of age (N=40), grandmothers with grandchildren 0–23 months of age (N=40), and health care providers (N=40) who were selected using purposive sampling from the same communities as TIPs in Lower and Upper Egypt

In addition, to examine perceptions, cultural beliefs and behaviors related to maternal dietary practices, weight gain during pregnancy, birth spacing and family planning, qualitative data was collected by in-depth interviews. A total of 120 in-depth interviews with pregnant women (n=40), lactating (n=40) and non-lactating women (N=40) were carried out in study areas, which provided context to IYCF practices collected through TIPs, and are reported elsewhere. Pregnant women, lactating and non-lactating mothers were selected using purposive sampling from the same communities as TIPs in Lower and Upper Egypt.

All questionnaires and oral consent forms were translated and administered in the local language of Arabic. Ethical approval was granted by The Egyptian Society for Healthcare Development, PATH Ethics committee, and the AUC Social Research Center.

Preliminary analyses of in-depth interviews was conducted to identify dominant themes on IYCF and to develop an agreed-upon coding structure or an "a priori" coding framework, which served as the basis of our qualitative analyses.

## KEY FINDINGS

Dietary intake data from the first TIPs showed that nearly all children lacked sufficient fat and sufficient energy. Non-stunted children suffered from multiple micronutrient deficiencies, with three-quarters of children below recommended intakes for zinc, iron, and, to a lesser extent, calcium, where deficiency was found in children 9–11 months only. Egypt is a dairy-consuming society; yogurt and white cheese are common complementary foods, which explains why most children met their calcium requirement.

Only 11% of children were stunted in the sample, with slightly greater proportion of stunted children in Lower Egypt (12%) than in Upper Egypt (10%). Stunted children also suffered from multiple nutrient deficiencies, but to a greater extent and severity than non-stunted children. In Lower Egypt, stunting was seen in all age groups (6–8, 9–11, and 12–23 months), with multiple feeding problems. Children were fed little to no animal-source foods (chicken, meat, fish, or partial eggs), and fruits and vegetables in small amounts. Stunted children were frequently ill and tended to be fed less. In Upper Egypt, stunting was found in all age groups, with the exception of children 9–11 months old. In Upper Egypt, stunted children were not fed animal-source foods (6–8 months only), and frequently consumed tea or canned juice. Upper Egypt had fewer feeding problems with stunted children than Lower Egypt. Both areas noted limited quality, quantity, and diversity of foods.

This study revealed that mothers, fathers, grandmothers, and health care providers had a limited understanding of causes of poor growth, as a child's growth was often not perceived to be related to poor IYCF practices and/or illness. Some mothers, providers, and grandmothers believed stunting is hereditary. In Lower Egypt, fathers, grandmothers, and providers relayed how the avian influenza epidemic caused economic hardships for families, reducing household consumption of poultry, meat and eggs, including consumption by children. However, study participants did not relate how feeding less animal-source foods and replacing these foods with

less nutritive foods could affect growth of young children. General education on what causes poor growth and the link between feeding, illness, and stunting is needed in communities. Breastfeeding initiation was delayed in most mothers due to prelacteal feeding. Locally produced pre-packaged herbal drinks and herbal teas (e.g., anise, fenugreek, caraway) were commonly believed to soothe and calm a crying or *"colic"* baby after birth. Immediately after birth, mothers and babies were routinely separated in facility-based deliveries, which were a barrier to skin-to-skin contact, immediate and exclusive breastfeeding, and mother-infant attachment. Doctors prescribed herbal drinks as mothers recovered from childbirth, which delayed breastfeeding initiation from several hours to a few days.

Mothers were committed to breastfeed, but exclusive breastfeeding was hindered through cultural barriers. Egyptian children are breastfed on demand, and mothers understand the benefits of breastfeeding. However, mothers did not breastfeed their children frequently enough and the duration of breastfeeding was short. Mothers introduced liquids and *"light foods,"* such as yogurt, biscuits, and potatoes, too early. Only one-quarter of mothers exclusively breastfed their infants. Many mothers perceived that either they did not have enough breast milk and/or their breast milk was of inferior quality, seen as *"too thin"* or *"weak"* or *"light."* Perceptions of insufficient breast milk were an impetus for early introduction of foods, as early as the first month of life (i.e., giving biscuits with milk or tea), while light foods were commonly given at 3–5 months of age. The mother or family member assumed that children cried from hunger, which was related to the inability of mothers to produce enough milk to satisfy the child.

The study found that a motivation for continuing to breastfeed for 2 years was the guidance from the Holy Quran, as mothers were adamant regarding their desire to follow the recommendations to feed for 2 years that are stated in Muslims' holy book. However, despite this belief, continued breastfeeding until 2 years of age was not practiced, as all children were weaned between 18–23 months of age. Mothers feared breast milk was *"poisonous"* or *"harmful"*; if a mother is pregnant, "*a child needs to eat solid food more than breastfeeding at this age,"* and *"breastfeeding too long will affect the child's intelligence."*

Generally, mothers were fearful of introducing foods at 6 months of age that may cause illness or difficulty with digestion, such as family foods, and foods cooked with fat (i.e., oil or butter), and chicken meat or liver, red meat or fish prior to 1 year of age. This limited the variety, quantity, and frequency of foods, which was a common feeding problem with all children. Small, infrequent amounts of *"light"* foods dominated children's diets through the first year of life, and there was a general lack of animal-source foods, fruits, and vegetables. Feeding part of the egg, primarily the egg yolk, was common. Mothers feared difficulty swallowing, and/or allergies, if the entire egg was consumed, which could be a remnant from the avian influenza outbreak scare.

Junk food consumption was pervasive, increasing with age, and peaking among children 18–23 months old. This practice was supported by fathers, grandmothers, and even some health care providers. Mothers perceived *"junk foods"* (e.g., commercial store-bought small sponge cakes with creme filling that are high in sugar and fat and low in nutritive value, chips, sugary biscuits) to be easy to give to children, and essential complementary foods, which often replace other nutritive foods. There was also a heavy reliance on liquids—herbal teas, juices, and black tea—which can suppress the appetite for solid foods. Excessive juice consumption can cause loose stools. Tea can interfere with absorption of iron.

Dietary intake at TIPs visit 3 improved and mothers expressed a desire to continue the recommended practices. At the third TIPs visit following counseling and mothers trying recommended practices for a 1-week period, improvements in fat, energy, calcium, iron, and vitamin A (slightly improved) were found in non-stunted children. For stunted children, improvements were found in energy, fat, vitamin A, vitamin D, calcium, and iron. Energy

increased slightly as a result of increasing the number of meals and amounts given; the greatest increase was in children 9–11 months old, as 41% more children met the nutrient requirement and there was an increase in median caloric intake of 143 calories after the mothers tried the new nutrition practices. In addition, after the third visit, most mothers expressed their desire and commitment to continue the recommended practices in their daily lives, beyond 1 week TIPs trial period, as they noted improvements in children's health, including improved appetite, sleep, and less crying and illness.

Although TIPs was not carried out with sick children, feeding during and after illness is important for growth. Mothers relied on breastfeeding or other liquids, like milk, and withholding food. They continued to give herbal drinks or other liquids, such as milk, for illness.

## Recommendations

The information collected from this study demonstrates that TIPs is a powerful methodology, as mothers are able to try practices new to them, which were feasible, tailored, culturally appropriate and affordable. Despite poor infant and young child feeding practices, specific, targeted counseling messages given to women through TIPs demonstrate women's ability and willingness to make feasible changes in feeding practices. Women were excited and happy as recommended changes in feeding resulted in improvements in their children's sleep, better appetite, and less illness. Mothers were empowered to improve their child's dietary intake, and marked improvements in nutrient intake were shown, even after only 1 week of adopting new IYCF practices.

This study also revealed the limited understanding of the causes of poor growth was evident in these communities, as a child's growth was often not perceived to be related to poor IYCF practices and/or illness. General education for mothers, other caretakers, and health care providers on what causes poor growth and the link between feeding, illness, and stunting is needed.

Within the context of the SMART project which has provided messaging on breastfeeding, nutrition counseling, as well as growth monitoring, preliminary counseling messages developed from this study were incorporated into the SMART project to improve breastfeeding practices and complementary feeding, including avoidance of junk food disseminated through community health workers. However, these messages were incorporated towards the end of the project. Though mothers' knowledge of IYCF has seen some improvement, operational implementation of the IYCF counseling package developed by this study (i.e., using it to train health care providers), and rolling it out systematically through the public and/or private clinics (i.e., CDAs) should be considered for future activities.

This study recognizes the large gap between current infant and young child practices and optimal practices in Egypt. Therefore, by engaging and counseling mothers to select and try a few IYCF practices that are new to them, programming aimed at the community and health facility levels, can help improve IYCF. Health care providers should be trained on how to deliver messages and counsel on IYCF, using the TIPs counseling guide developed from this study, which can be rolled out through the Ministry of Health and community development associations through community health workers, and other providers (doctors, nurses, midwives). Health care providers need to be trained to correctly monitor children's growth, and to use this information to advise mothers on how best to feed and care for their children during the first 2 years of life.

A comprehensive educational strategy aimed at health care providers and community health workers, as well as tailored messages for mothers, grandmothers; fathers, and other caregivers,

should strengthen and reinforce optimal breastfeeding and complementary feeding practices, within the context of reducing junk food given to children less than 2 years of age.

**Key Program and Policy Recommendations for Breastfeeding Practices**

- Develop educational materials, based on messages developed in this study through the TIPs Counseling Guide, and addressing the need to strengthen the promotion of exclusive breastfeeding.34
- Provide new guidance and train community health workers, doctors, and other health care providers to counsel mothers on prelacteal feeding, insufficient breast milk, and other breastfeeding problems, and encourage mothers to feed on demand and to feed for longer durations of time. This guidance should support and encourage health providers to not prescribe herbal drinks for children less than 6 months of age using messages developed in the TIPs counseling guide.
- Continuing education about the importance of early and immediate initiation of breastfeeding, without the use of herbal drinks/teas, and of not separating the mother and child after childbirth, with support from the Egyptian Lactation Consultant Association (ECLA), may go far in remedying this problem.
- Strengthen knowledge of the benefits of exclusive breastfeeding through mothers' support groups, which can also include grandmothers as a community-wide strategy.
- Identify mothers who breastfeed on demand and exclusively breastfeed, to act as positive influences and champions, to lead mothers' support groups and share their personal experiences and how mothers can address barriers they face.
- Identify additional champions such as community and religious leaders to reinforce messages on exclusive and continued breastfeeding through sermons at local mosques.

**Key Policy and Program Recommendations for Address Complementary Feeding Practices and Reduce Junk Food in Egypt**

- Develop educational materials, based on messages developed in this study through the TIPs Counseling Guide, and addressing the need to strengthen quantity, quality and frequency of dietary intake, along with continued breastfeeding.[34]Train community health workers, doctors, and other health care providers to counsel mothers on optimal feeding practices, and have mothers try a few practices new to them.
- Messages on breastfeeding and complementary feeding need to be given to mothers and their families who do not have this information to improve quantity, quality, and frequency of meals, within the context of reducing junk food.. These messages should be disseminated through community health workers and health care providers and reinforced through cooking classes ("educational kitchens") and through maternal and child health clinics.
- Community-level strategies should prioritize educational messages that target mothers, fathers, grandmothers, community health care providers, and community development associations (CDAs) to not feed junk foods—including sugary, salty foods, and soft drinks—to children less than 2 years of age. Families should be advised that junk food is detrimental to the growth of children and the entire family's health and well-being.
- A national policy on junk food should be developed, stating that junk foods should not be given to children less than 2 years of age and junk foods should not be marketed to young children [37]
- Junk foods should have a warning on the package that they should not be given (are dangerous) to children less than 2 years of age and should be given on a limited basis (once a month) to older children.
- *Seasamina* is a promising and nutritious local complementary food that is affordable and available, that can aid in improving dietary intake. Mothers should be taught variations of the recipe, considering mothers' concerns regarding lack of time, as well as children's tastes and perceptions of color and texture.
- Through surveys, like the EDHS, information should be routinely collected on junk food consumption by children under 2 years of age, which captures the wide range of junk foods consumed (e.g., store-bought small sponge cakes, chips, sugary drinks/soda, sugary biscuits).Messages on complementary feeding, to improve quantity of food, dietary diversity, and frequency of meals, could be expanded through community health workers and health care providers.

# Chapter 1: Background, Methods and Objectives

## BACKGROUND: PUBLIC HEALTH SIGNIFICANCE OF STUNTING

Stunting occurs when a child is not growing in length or height according to his/her potential. A child is defined as stunted when his height-for-age is below -2 SD (standard deviation) of the World Health Organization (WHO) child growth standard.[1] The process of stunting occurs over the child's first 2 years of life and often begins early in life.[2] Maternal undernutrition, maternal stunting, and infection restrict growth in utero.[3] Stunting contributes to impaired cognitive development and increased risk of illness and death in young children.[4-7]

Stunted children are likely to be stunted adults.[8] Stunting negatively impacts work capacity and productivity, increases the risk of obesity and related non-communicable diseases, such as hypertension and diabetes, and poor delivery and birth outcomes in women who are stunted adults.[3,9,10,*] Stunting reduces lifetime earnings by 10% and gross domestic product (GDP) by 2–3% in low- and middle-income countries.[10]

Since 2005, Egypt has faced increased levels of food insecurity, combined with rising poverty rates, food prices, and successive crises, including the avian influenza epidemic (2006) and food, fuel, and financial crises (2007–2009) resulting in reduced household access to food and purchasing power.[11,†] One of every three Egyptian children under 5 years old is stunted, ranking Egypt among the 34 countries with the highest burden of malnutrition—where 90% of the world's stunted children reside.[16,41] Stunted Egyptian children are more likely to repeat a grade and drop out of school, according to modeled estimates of 2009 data.[12] The Cost of Hunger in Africa Egypt study also estimated losses of 857 million working hours among stunted adults in 2009 alone. The total economic cost of child undernutrition is estimated at 20.3 billion Egyptian pounds (3.7 billion U.S. dollars), or 1.9 % of the GDP, which mostly emanate from stunting-related losses in potential manual labor ‡ productivity, which affects 64% of Egyptians.[12] In addition to stunting, Egypt is experiencing the double burden of malnutrition: with static prevalence of stunting accompanied by rising levels of overweight and obesity in adults and children.[13] Twenty percent of children under the age of 5 are overweight or obese[2,13] and nearly 75% of adult women are overweight[39]. In Egypt, losses due to chronic disease associated with obesity are estimated to be US$1.3 billion by 2015[14]

## STUNTING TRENDS IN EGYPT

Stunting in Egyptian children younger than 5 years of age decreased from 35% to 20% between 1995–96 and 2003.[15, §] However, from 2005 to 2008, a rise in national stunting levels from 24% to 31% occurred.[15,**] Stunting levels peak at 18–23 months (41%) in Egyptian children. *[16] This

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* WHO conceptual framework on Childhood Stunting: Context, Causes and Consequences.

† Analyses of Egypt's Central Agency for Public Mobilization and Statistics CAPMA's 2011 Household Income, Expenditure and Consumption Survey (HIECS).

‡ Manual labor is defined as agricultural, forestry, or fishing activities, as source of employment.

§ Sources: WHO Global Database on Child Growth and Malnutrition, which is based on Egypt Demographic and Health Survey data, 1995–96, 2003, 2005, and 2008. The 2008 figures shown by WHO are slightly different from those shown in the 2008 EDHS report because WHO and DHS have different exclusion criteria for these data. WHO recalculated all past survey growth data s for Egypt and other countries using the WHO Child Growth Standards.

** Sources: WHO Global Database on Child Growth and Malnutrition, which is based on Egypt Demographic and Health Survey data, 1995–96, 2003, 2005, and 2008. The 2008 figures shown by WHO are slightly different from those shown in the 2008 EDHS report because WHO and DHS have different exclusion criteria for these data. WHO recalculated all past survey growth data s for Egypt and other countries using the WHO Child Growth Standards.

recent increase coincided with the outbreak of avian influenza in 2006. †‡[17,18] Regional variation in stunting was noted between 2005 and 2008:[16,19]

- Stunting prevalence increased in Lower Egypt by 89% rising from 19–36%, and increased by 100% in Frontier Governorates from 18–36%. Urban Governorates had a much smaller increase (by 14%) from 21–24%.
- Stunting prevalence slightly declined in Upper Egypt by 7%, decreasing from 29–27%.

The increase in the prevalence of stunting between the 2005 and 2008 surveys requires further exploration. The avian influenza has been suggested as one of the factors that may have contributed to this rise—due to decreased supplies and household consumption of poultry and eggs and strained household resources that followed the avian influenza outbreak in Lower Egypt. *†[16,17] Poor infant and young child feeding (IYCF) practices are strongly associated with stunting.[20] A summary of IYCF practices in Egypt is presented in the following section.

## FEEDING PRACTICES FOR EGYPTIAN CHILDREN LESS THAN 2 YEARS OF AGE

The 2008 Egypt Demographic Health Survey (EDHS) provides data about mothers of children less than 23 months of age.[16] These survey data provide information on breastfeeding practices, and types of food and liquids consumed by the youngest child of the mother interviewed, during the 24-hour period (day and night) prior to the survey. A summary of IYCF practices in Egypt is presented in the following section:

- **Breastfeeding practices:** It is thought that breastfeeding is a universal practice in Egypt; however, closer examination of EDHS 2008 data reveals that breastfeeding practices are far from optimal. Exclusive breastfeeding†† in the first 6 months of life is a global recommendation, with initiation immediately after birth, and breastfeeding on demand, whenever the baby wants to feed.[21] Several feeding practices hinder exclusive breastfeeding, including:
  - At birth, half of mothers delayed initiation of breastfeeding and did not breastfeed within the first hour after birth of the child. The majority of mothers (88%) initiated breastfeeding within the day of birth. It is likely that mothers fed colostrum,‡‡, the *"first milk,"* to infants, given that initiation occurs within 1 day of birth.
  - According to the EDHS 2008, about half of children receive prelacteal feeds, defined as any type of liquid given prior to breastfeeding. Children primarily received sugar/glucose water or tea /herbal infusions.
  - In the first 2 months of life, exclusive breastfeeding rates are high at 77%. However, by the age of 4–5 months, only 30% of children are exclusively breastfed. About one-third of mothers feed complementary foods when the child reaches 4–5 months of age and a few mothers (6%) start as early as 2–3 months.

  From 6-23 months of age, mothers should continue to breastfeed, and give complementary foods. [21]

†† † Exclusive breastfeeding is defined as the infant consuming nothing but breast milk and no other foods or liquids including water during the first 6 months of life.

‡‡ At birth and the first 3 days after birth, colostrum, the mother's first milk, provides the baby with protein, vitamins and minerals, antibodies, and other substances that fight infection.

- 6–8 months of age: Breastfeeding continued for 91% of children, while some mothers delayed complementary feeding.[§§] About one-third of children were not receiving solid food by 6–8 months of age, which includes mothers who are breastfeeding and giving water and other liquids, other milk (animal milk) and/or infant formula. About half of children received foods made from grains, roots/tubers, and also milk products, such as cheese and yogurt. Most children did not receive foods made from legumes and nuts (88%), fruits and vegetables rich in vitamin A[***] (75%), and other fruits and vegetables (84%), and meat, poultry, fish, or eggs (69%).
- 9–11 months of age: Most (88%) continued breastfeeding and received complementary foods. About 12% of children did not receive solid or semi-solid food by 9–11 months of age, indicating a continued delay in complementary feeding in some children. Dietary diversity increased in this age group. Meat intake improved, as 63% of children were fed meat, fish, poultry, or eggs. However, gaps still existed, as most children still did not receive vitamin A-rich fruits and vegetables (75%), legumes and nuts (74%), and other fruits and vegetables (68%).
- 12–23 months of age: The majority (78%) of children,12–17 months of age were breastfed and nearly all (97%) children were fed complementary foods, yet by 18–23 months of age, only 34% of children are breastfed, as children were weaned early. The average length of time that a child was breastfed was 17.9 months, and children were not breastfed the recommended 2 years of time. By the time a child reached 12–17 months of age, almost one-quarter of children had been weaned. Most children (65%) were weaned prior to 23 months of age. Dietary intake consisted primarily of food made from grains, tubers (e.g., potato), and meat, milk products (e.g., yogurt, cheese), and foods made with oil, fat, or butter. Approximately 60% of children were still not eating fruits and vegetables of any kind.

There is a need to address factors related to stunting, including IYCF practices and the avian influenza outbreak within the context of the rise in stunting in Lower Egypt. This was the focus and impetus for an operations research study conducted by the Maternal and Child Health Integrated Program (MCHIP), in collaboration with American University in Cairo (AUC) Social Research Center and local nutritionists affiliated with the National Nutrition Institute. MCHIP is the United States Agency for International Development (USAID) flagship project on maternal, newborn, and child health focused on accelerating the reduction of maternal, newborn, and child mortality by increasing the use of integrated maternal, newborn and child health (MNCH) interventions to address underlying causes of mortality, including malnutrition. MCHIP implemented the SMART project in Lower and Upper Egypt to improve health service delivery through private sector community development association (CDA) clinics and community health workers to carry out community-based strategies to improve nutritional status and newborn health.

## Study Aim and Objectives

The aim of this operations research study was to understand how mothers' behaviors, perceptions, and cultural beliefs impact dietary intake and feeding practices in stunted and non-stunted Egyptian children from 0–23 months of age. Four research objectives were addressed in this operations research study: 1) identify gaps and positive aspects of IYCF practices through the application of the Trials for Improved Practices (TIPs) methodology with Egyptian mothers;

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[§§] Complementary feeding is defined as the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with continued breastfeeding. The target age range for complementary feeding is 6–24 months of age.

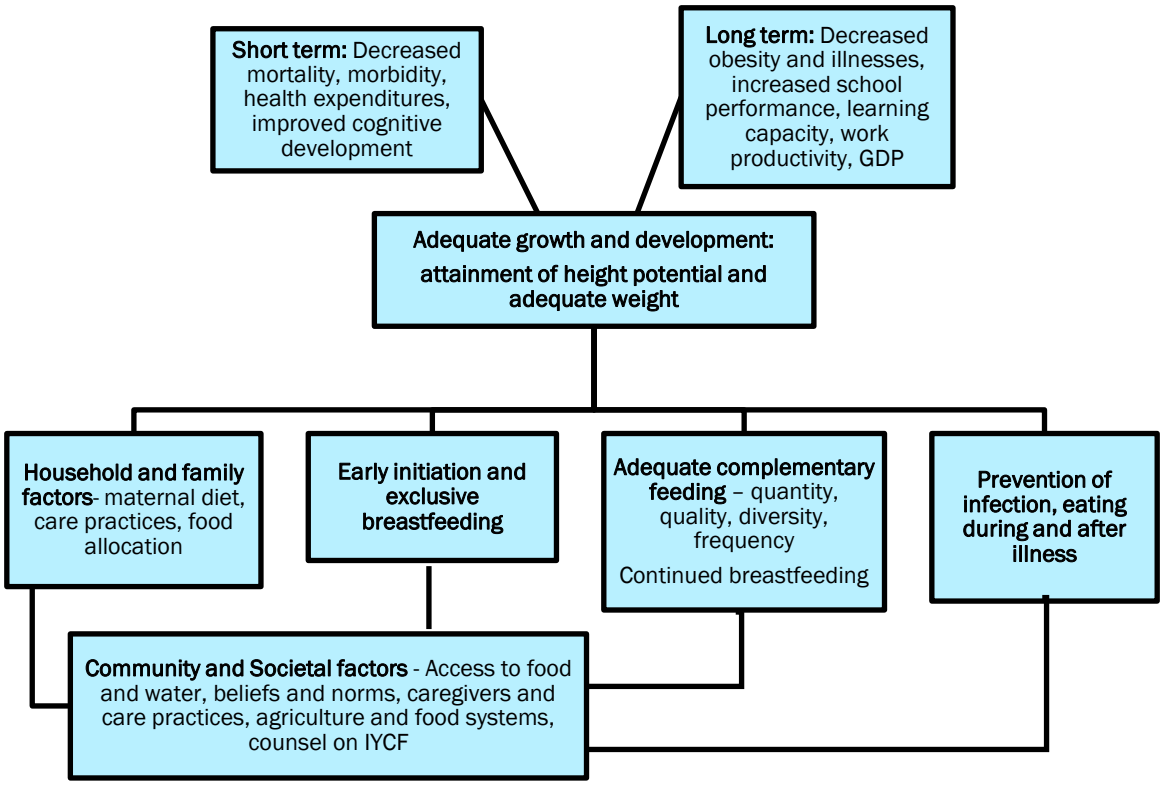
[***] Includes pumpkin, red or yellow yams, squash, carrots, red sweet potatoes, mangos, cantaloupe, dark green leafy vegetables, and other locally grown fruits and vegetables rich in Vitamin A.

2) understand cultural beliefs, perceptions, behaviors, and motivating factors that may facilitate or act as a barrier to optimal IYCF practices and how these factors may explain the rise in stunting in Lower Egypt; 3) ascertain the role of grandmothers, fathers, and health care providers in IYCF; and 4) examine changes in growth perceived by mothers, other caretakers, and health care providers resulting from the avian influenza outbreak within the context of the rise in stunting in Lower Egypt during the previous 5–6 years.

## Study Design and Methods

The study was conceptualized using the WHO Framework on Childhood Stunting, which emphasizes the importance of complementary feeding, as well as exclusive breastfeeding in the first 6 months and continued breastfeeding until 2 years of age for strengthening IYCF programs.[3] We adapted the WHO model to provide for a structured contextual approach to explore behaviors, perceptions, and cultural beliefs that impact optimal breastfeeding and complementary feeding practices during the first 2 years of life, as well as to explore the role of other caregivers and health care providers (see Figure 1).

**Figure 1. Adapted WHO framework of factors associated with stunting**




In this mixed methods study, qualitative data collection methods (i.e., in-depth interviews) were used to gather detailed information from mothers, other caretakers, and health care providers on infant and young child nutrition practices and cultural beliefs and perceptions that influence these practices. Quantitative methods, including 24-hour dietary recall and food frequency, and measurement of weight and height, were used to collect data on nutrient intake and nutritional status of children.

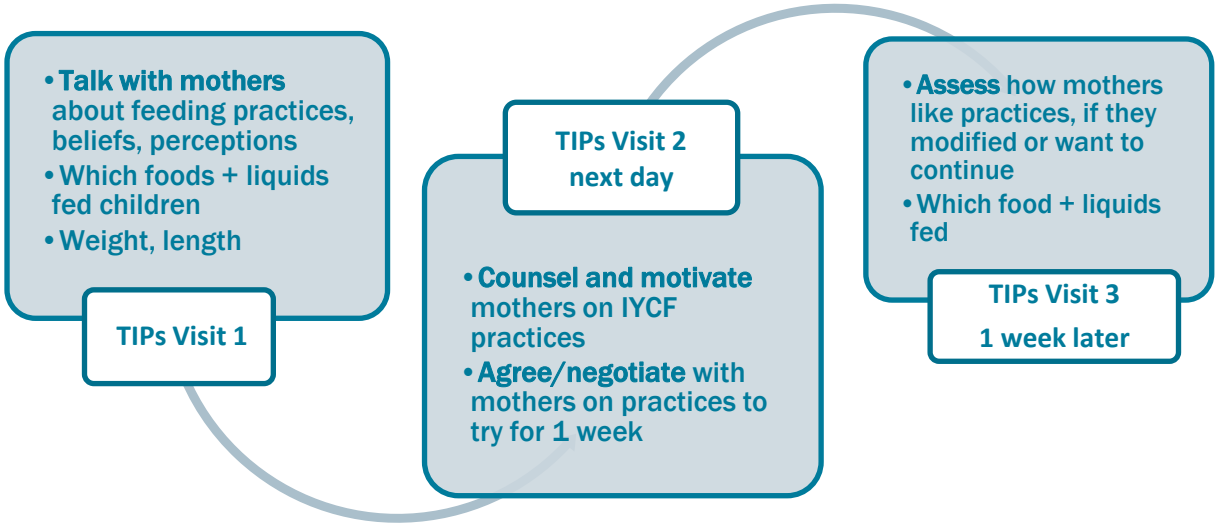
In collaboration with local researchers, questionnaires were piloted in communities in Lower and Upper Egypt, and then adapted to the local cultural context. All questionnaires were

translated and administered in the local language of Arabic. Oral consent forms were translated into Arabic. These Arabic consent forms were then back-translated into English to confirm accuracy. Ethical approval was granted by The Egyptian Society for Healthcare Development, PATH Ethics committee, and the AUC Social Research Center.

The two study sites were composed of one district each in Upper Egypt (El-Maragha District, Qaliobia governorate) and Lower Egypt (Kafr Shokr District, Sohag governorate). Qaliobia, Lower Egypt (population 4.2 million, 11% poor), is a semi-urban area, north of Cairo in the Egypt Delta (also known as "greater Cairo"), and produces maize, wheat, cotton, fruits, animal husbandry, and is the top producer of chicken and eggs.[22] Upper Egypt, Sohag governorate, is an agricultural rural area, producing sugar cane, grains, and clover for animal husbandry; nearly half of the population (3.7 million) is considered poor.[22] These districts reflect two of six SMART project governorates and allowed for comparisons of infant feeding practices between regions with the highest (Lower Egypt) and the lowest (Upper Egypt) levels of stunting, according to the EDHS.[16] Data collection was carried out in five villages (Shundaweel, Naga Abo Awad, Shorania, El Gherizat, and Nahed Amer) in El-Maragha District, Sohag governorate, in Upper Egypt and in three villages (Kafr Kordy, Kafr Tesfa, and Tesfa) in Kafr Shokr District, Qaliobia governorate in Lower Egypt.

Trials for Improved Practices (TIPs), a consultative research methodology, consists of three household visits to the mother to identify barriers and facilitating factors to optimal IYCF practices and work together with the mother to identify and agree on feasible solution(s).[23] The three TIPs visits consist of: 1) first visit: determine current IYCF practices; 2) second visit, conducted 1-day following first visit: discuss with mothers practices that are not currently being used and recommend implementing new practices for a 1-week trial period; and 3) third visit: conduct follow-up with the mother, to ask about her likes/dislikes concerning the new practices, her experience, and whether she modified and/or will continue the practice(s) (third TIPs visit, 1 week after TIPs visit 2) (see Figure 2). IYCF practices are discussed within the context of WHO's "ideal practices."[21]

**Figure 2. TIPs involves discussing with, counseling, and motivating mothers to make feasible modifications to feeding practices**




As part of TIPs, 150 in-depth interviews, ascertainment of dietary intake (food frequency, 24-hour recall) and measurement of nutritional status (i.e., weight, length) were carried out with mothers 18 years and older with children 0–23 months of age, following oral consent. Household observations were planned but were not carried out due to cultural superstitions concerning

"evil eye."[24,†††] *"Mothers try to hide that they have enough milk to breastfeed in order to avoid the evil eye,"* a health care provider from Lower Egypt explained. Consequently, such superstitions did not allow for observation of breastfeeding or mothers feeding their children. No information on hygiene was systematically collected, though opportunities during interviews to observe handwashing behaviors were noted. Children were stratified into five age groups based on established milestones for IYCF:[21] 0–5 months; 6–8 months; 9–11 months; 12–17 months; and 18–23 months (N=15, per age group). SMART project-generated lists of children by village and age were used to randomly select every sixth child for inclusion in this study, for a total of 150 children (75 per site). Each mother enrolled in TIPs received the three consecutive home visits from the same pair of study team members, one qualitative interviewer, and one nutritionist (the study team comprised a total of three pairs). Descriptive characteristics of mothers enrolled in TIPs are shown in Table 1.

Trained nutritionists affiliated with the National Nutrition Institute of Egypt collected dietary intake information and during the first and third TIPs visits using 24-hour recall and food frequency questionnaires (TIPs visit one only) for children aged 6–23 months (N=120). Egyptian food consumption tables were used to compute nutrient intake from 24-hour recall data at the first and third TIPs visits, using recommended intakes from WHO and the Food and Agriculture Organization of the United Nations (FAO) and UNICEF[21,25-27] and recent calculations made for protein in this age group. [28,29] Food frequency, collected at first TIPs visit only, was analyzed by daily, weekly (<3 times, > 3 times per week), and monthly intake, and by age group and region. Weight and recumbent length were measured for all children 6–23 months of age (N=120) during the first TIPs visit. Nutritional status was categorized by anthropometric (i.e., physical growth) measures of stunting <-2 SD (standard deviation) height for age, wasting -< 2 SD weight for height, underweight <-2 SD weight for age, as well as overweight (>+2 SD) and obese (>+3 SD), computed using the WHO International Growth Reference Curves.[30] Children whose height for age, weight for height, or weight for age was between -1 and -2 SD compared to WHO Reference medians were defined as "at risk" for becoming stunted, wasted, or underweight, or overweight (+1-+2 SD weight for age), respectively.

Mothers' TIPs interviews were contextualized with the collection of information on perceptions and advice given by family members and health care providers on infant and young child feeding practices. Fathers, grandmothers and health care providers were selected using purposive sampling, from the same communities as TIPs in Lower and Upper Egypt. In-depth interviews were conducted with fathers with children 0–23 months of age (N=40), grandmothers with grandchildren 0-23 months of age (N=40), and health care providers (N=40). In addition, to examine perceptions, cultural beliefs and behaviors related to maternal dietary practices and weight gain during pregnancy, and diet during lactation and non-lactation, birth spacing and family planning, 120 in-depth interviews with pregnant women, lactating and non-lactating women were carried out in study areas, which aided in contextualizing IYCF practices, reported elsewhere[38] Pregnant women, lactating and non-lactating mothers were selected using

[†††] Most Egyptians believe in the "evil eye," defined as a power fueled by envy or jealousy, which is superstitiously attributed to certain persons. These persons can inflict injury or bad luck through a glance or a brief look at a person or his/her family members or children. Mothers' desire to protect their children from evil eye, which is believed to cause harm, resulted in their refusal to have the study team observe them breastfeeding/feeding their children during the TIPs home visits.

purposive sampling from the same communities as TIPs in Lower and Upper Egypt. Fieldwork took place from February–March 2013.

Descriptive characteristics of fathers, grandmothers, and providers are shown in Tables 2, 3, and 4. The in-depth interviews included questions pertaining to infant and young child feeding practices, cultural beliefs, perceptions, and behaviors related to IYCF, growth, and stunting, as well as the perceived role of the avian influenza outbreak on IYCF practices and/or child growth in the last 5–6 years.

Trained transcribers audio-recorded and all in-depth interviews from TIPs, fathers, grandmothers, and health care providers and transcribed them verbatim by into Arabic. Locally trained researchers from AUC listened to all the tapes after the transcription process to confirm Arabic transcriptions. Trained interpreters translated transcripts from Arabic into English. MCHIP and AUC researchers jointly read the English transcripts, which were checked against Arabic transcripts. All transcripts were reviewed and triangulated with field data collection forms and informal observations conducted during fieldwork.

The team conducted preliminary analyses of in-depth interviews to identify dominant themes on IYCF and to develop an agreed-upon coding structure or "a priori" coding framework, which served as the basis of our analyses. The coding process allowed for the identification of additional themes that emerged during interviews, which included perceptions of good and poor growth, the role of the avian influenza outbreak in perceived changes in growth in Lower Egypt, as well the advice given by other caretakers and health care providers. Two researchers verified dominant and emergent themes in a subset of transcripts. Qualitative analyses of transcripts were carried out using the NVIVO version 10.0 analytic program.[31] The three TIPs visits were coded in Arabic, and then verified with the English translations. Two separate researchers coded interviews with fathers, health care providers, and grandmothers in English to confirm reliability.

Overall, mothers (N=150) ranged in age from 18–43 years of age in both areas. Table 1 describes the characteristics of the study participants for mothers enrolled in TIPs In Lower Egypt, most mothers had 3–4 children, whereas in Upper Egypt 37% had 3–4 children and 24% had 5–6 children. Nearly all mothers were not working in both Upper and Lower Egypt, though slightly higher in Upper Egypt. More women worked in professional positions in Lower Egypt (10%) than Upper Egypt (6%). More than half of mothers had completed secondary education and twice as many mothers in Lower Egypt (28%) vs. Upper Egypt (14%) had completed post-secondary education. Fathers, participating in in-depth interviews, ranged in age from 24–50 years of age (N=40). Table 2 displays information on fathers enrolled in this study. Slightly less than half of fathers had completed secondary or post-secondary education in Upper and Lower Egypt. The majority of fathers worked in white collar, salaried positions in Upper Egypt (70%), while less than half were in professional positions in Lower Egypt. Thirty percent of fathers in Upper Egypt were unskilled laborers, while 45% were employed as laborers in Lower Egypt. Most grandmothers (N=40), participating in the study in Lower Egypt could read or write, while in Upper Egypt, grandmothers were primarily illiterate, with few having completed secondary education (Table 3). In-depth interviews were also conducted with health care providers (N=40), whose characteristics are detailed in Table 4. In Lower Egypt, most providers were doctors. In Upper Egypt, the majority of providers were nurses, and the remaining were community health workers and doctors, with a few pharmacists and midwives. Both regions of Egypt are primarily Muslim.

In the next chapter, we describe our findings from qualitative, in-depth interviews with mothers during the first TIPs visit, which shed light on facilitators and barriers to optimal IYCF practices in the first 2 years of life. We describe mothers' cultural beliefs and perceptions in the context of current IYCF practices and advice given by grandmothers and health care providers.

**Table 1. Descriptive characteristics of mothers participating in TIPs, Upper and Lower Egypt**

| Characteristics of Mothers* | Gender of Children | | Number of Children | | | | Education | | | | | Employment | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Boy | Girl | 1–2 | 3–4 | 5–6 | 7–9 | Illiterate | Read and Write | Primary | Secondary | Post-Secondary | Not working | Unskilled Labor^ | Professional |
| **Lower Egypt (N=75)**** | 51 | 49 | 31 | 59 | 4 | 0 | 4 | 7 | 9 | 52 | 28 | 83 | 7 | 10 |
| **Upper Egypt (N=75)**** | 61 | 39 | 31 | 37 | 24 | 8 | 9 | 7 | 7 | 62 | 15 | 92 | 3 | 5 |

*Descriptive characteristics are presented as percentages of each study group.

** Note that in the selection of mothers and children for TIPs, 15 children were selected for each of the child age groups explored in the study (0–5.99months, 6–8.99 months, 9–11.99 months, 12–17.99 months, 18–23.99 months), with a total of 75 children for both Upper and Lower Egypt. This variable represents the overall number of children a mother has, including the child being assessed for the TIPs study. Information on the number of children was missing for five mothers in Lower Egypt.

^Unskilled labor occupations among mothers included “peddler” or “farmer”; Professional occupations included “teacher”, “pharmacist”, and “engineer” for example

**Table 2. Descriptive characteristics of fathers with children 0–23 months of age participating in in-depth interviews, Upper and Lower Egypt**

| Characteristics of Fathers* | Gender of Children | | Age of Children in Months | | | | | Education | | | | Employment | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Boy | Girl | 0–5.99 | 6–8.99 | 9–11.99 | 12–17.99 | 18–23.99 | Illiterate | Primary | Secondary | Post-Secondary | Not working | Unskilled Labor^ | Professional |
| **Lower Egypt (N=20)** | 45 | 55 | 5 | 15 | 5 | 25 | 50 | - | - | 55 | 45 | 5 | 50 | 45 |
| **Upper Egypt (N=20)** | 60 | 40 | 20 | 5 | 10 | 40 | 25 | 5 | 15 | 45 | 35 | - | 30 | 70 |

*Characteristics are presented as a percentage.
^Unskilled labor occupations among fathers included “peddler,” “mason,” “farmer,” and “driver,” for example; Professional occupations included “lab assistant,” “business manager,” and “white collar employee,” for example.

**Table 3. Descriptive characteristics of grandmothers, with grandchildren 0–23 months of age, participating in in-depth interviews, Upper and Lower Egypt**

| Characteristics of Grandmothers* | Gender of Children | | Age of Children in Months | | | | | Education | | | | | Employment | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Boy | Girl | 0–5.99 | 6–8.99 | 9–11.99 | 12–17.99 | 18–23.99 | Illiterate | Read & Write | Primary | Secondary | Post-Secondary | Not working | Unskilled Labor^ | Professional |
| Lower Egypt (N=20) | 60 | 40 | 15 | 20 | 10 | 35 | 20 | 20 | 60 | 15 | 5 | 0 | 95 | 0 | 5 |
| Upper Egypt (N=20) | 30 | 70 | 15 | 25 | 0 | 35 | 25 | 65 | 20 | 10 | 0 | 5 | 90 | 10 | 0 |

*Characteristics are presented as a percentage.
^Unskilled labor occupations among grandmothers included “farmer”; Professional occupations included “business manager”

**Table 4. Descriptive characteristics of health care providers, Upper and Lower Egypt**

| Characteristics of Health Care Providers* | Gender | | Health Care Provider Type | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Medical Doctor | | | | Pharmacist | Nurse | Community Health Worker | Midwife |
| | | | ENT | Ob/Gyn | Family Doctor | Pediatrician | | | | |
| Lower Egypt (N=20) | 70 | 30 | 5 | 5 | 60 | 15 | 10 | 5 | 0 | 0 |
| Lower Egypt (N=20) | 20 | 80 | 0 | 10 | 5 | 0 | 10 | 45 | 20 | 10 |

* Characteristics are presented as a percentage.

# Chapter 2: Findings from Trials for Improved Practices (TIPs) Visit 1—Cultural Beliefs and Perceptions Are Drivers of Infant and Young Child Feeding Practices in Egyptian Children 0–23 Months of Age

Chapter 2 discusses dominant and emergent themes in IYCF from Upper and Lower Egypt. These themes were identified in the analyses of in-depth interviews with mothers from TIPs visit 1. Themes from mothers' TIPs interviews were contextualized with advice given and perceptions on IYCF from in-depth interviews with grandmothers, fathers, and health care providers. Themes are highlighted in **bold-face text**. In the analyses presented here, there were no differences found by socioeconomic status and educational level, regarding perceptions, beliefs and IYCF practices. However any differences within themes noted between Upper and Lower Egypt, are explained, where appropriate. If no differences were found between these regions of Egypt, results are presented aggregated for both Lower and Upper Egypt.

## PERCEPTIONS OF GROWTH, STUNTING, AND THE ROLE OF AVIAN INFLUENZA IN LOWER EGYPT

All study participants were asked to discuss their personal perspectives on growth in their communities. In Lower Egypt, mothers, fathers, grandmothers, and health care providers were asked to describe how growth has changed in the last 5 or 6 years (2007/8–2013) in relation to child feeding and the avian influenza. During the 2006 avian influenza outbreak, the Egyptian government carried out mass culling of chickens and eggs in Lower Egypt. Lower Egypt governorate, one of the stunting study sites, is the largest producer of chickens and eggs in the country.

Overall, most mothers believed that their children were healthy and they blamed themselves if the child became sick. Mothers relayed their knowledge about how to care for children, hygiene, and feeding children nutritious foods, which they learned from the SMART project. Their knowledge of feeding came from various sources, including health care providers, family members, and neighbors, and revealed that mothers followed the advice of the SMART project, which was mentioned by mothers frequently.

"Health *educators [SMART] advised me to feed my child milk, cottage cheese and eggs and to keep him clean."* Mother, Upper Egypt, child 8 months old

"*To monitor his development we were given the right eating habits to give to small children by a project nearby [SMART] … they educate us."* Mother, Upper Egypt, child 23 months old

As one mother said, *"I have noticed that most of the children are not tall enough. I think this is due to lack of healthy nutrition of both mothers and children."* Mother, Upper Egypt, child 0–5 months old

One-fifth of health workers noted that growth has improved due to educational programs and mothers' increased knowledge, *"The children of today are much healthier than those born in 2006–2007 because there are lots of programs that raise the awareness of the mothers and educate them concerning their children health."* Health care provider, Lower Egypt

**Overall, health care providers and grandmothers view breastfeeding and good nutrition as an essential determinant of optimal growth, and leverage their experience and influential position as a means to positively influence child growth and remedy growth problems in their community.**
As a doctor from Lower Egypt explained, *"I give advice about feeding the child when a patient comes to me, as I take advantage of them coming and I give them information about young child feeding, especially children of 1 or 2 years …. I feel it's important to advise mothers about feeding young children for growth … I wish there will be no child who is underweight." Grandmothers emphasized that their concern for their grandchildren motivated them to give advice and influenced feeding practices: "I advise the child's mother and parents during the first 2 years of their life to take care of their children, to feed them well with good nutritious food because the grandmother loves to see her grandsons and granddaughters growing well, clean and healthy."* Grandmother, Upper Egypt, grandchild 12 months old

In Lower Egypt, where the rise in stunting occurred, half of health care providers affirmed observing an increase in stunting and overweight since the avian influenza outbreak. A few stated an increase in obesity had been notable due to "fast food" consumption. In Upper Egypt, where stunting has not increased but has remained constant or static, half of providers remarked that child health had deteriorated, but did not necessarily pinpoint poor growth—citing factors such as anemia, mental retardation, and poor health care as causes for concern.

**Among some mothers, grandmothers, and health care providers, poor growth and stunting are attributed to mothers' negligence and illness, while others believe genetics plays a role, not avian influenza.**
Some mothers discussed changes in growth due to child illness and the negligence of mothers, as evidenced by the following quote, "*I felt there are changes in the growth of children, as there are some sick children and some healthy children. Definitely the sick children are the children who their mothers do not take care of them."* Mother, Lower Egypt, child 18–23 months old

> *"There should also be an examination of the family genes as some families are short by nature and the health provider should take this into consideration when calculating the child height and comparing it to the average range."*
>
> ~Health care provider, Lower Egypt

In Lower Egypt, most health care providers (N=13) had similar perspectives, and viewed mothers as neglectful of their responsibilities toward their children and believed these were contributing factors to poor child health, including consumption of non-nutritive, *"junk"* foods.

*"I started to see **children becoming shorter and skinnier due to bad eating habits** such as eating meat balls (kofta), **potato chips, burger, chocolate, fast food**, and cakes because the **mother neglects her child's health** and may feel that this type of food gives the impression of high social status, and this way the child will not get used to eating home-made food such as rice and salads which are best for him."* Health care provider, Lower Egypt

Some mothers and health care providers believe the primary cause of stunting is genetic and therefore not amenable to change or intervention. About one-third of providers from Lower Egypt stated that short stature and poor growth are a consequence of genetics.

As one physician explained, *"There should also be an examination of the family genes as some families are short by nature and the health provider should take this into consideration when calculating the child height and comparing it to the average range."* Health care provider, Lower Egypt
Some mothers reinforce this notion as: *"Children's growth seems normal. No recognizable changes. The children take after their parents in terms of growth, for example, if their parents*

*are tall, they grow tall, if their parents are short, and they stay short."* Mother, Lower Egypt, child 12–17-months old

A grandmother from Lower Egypt explains, "*Our children are smaller. I don't know why this is, it is from God. The reason that children here are short is that they are like their family, it is hereditary, even if the parents are tall for example, a child can be short like his grandmother or grandfather for example. I am tall and my husband is tall, but my daughter is short and my son is tall."*

**Mothers did not perceive any impact of avian influenza on child growth, yet fathers shared their experiences of reductions in income and changes in family diet and the children's diet, which was confirmed by health care providers and grandmothers.** Nearly all mothers, with the exception of two, did not attribute negative changes in growth to the avian influenza outbreak.

Most health care providers saw a similar connection: "I *don't think there is a link between children's poor growth and avian influenza because it is a disease that affects the respiratory system."* Health care provider, Lower Egypt

In Lower Egypt, where chickens are an integral part of the diet, fathers and grandmothers framed their experiences of avian influenza through their personal experiences of economic loss, changes in dietary habits of their own families and others in the community, and restriction of foods their children should eat.

"*The avian influenza affected us as well as the rest of the families raising birds at home, and even those that were not keeping birds at home, as the diet changed, and included meat instead of chicken. Meat prices are far higher than chicken. I am a daily wage worker and earn between 10–20 pounds daily, 25 at most, so one kilo of meat for 60 pounds is a catastrophe to my budget. My family stopped even buying [frozen] chicken from the market because we were afraid of getting sick, so we took chicken out from our diet. The meat and fish are very expensive so we started replacing these foods with rice, cooked vegetables and beans for a year and a half. During the avian flu, the food for the children was totally different from the elders'. The children's diet included yogurt, milk, and biscuits, and elder members of the family had rice and vegetables."* Father, Lower Egypt

| IYCF during First 6 Months (0-5 months) of Life |
| --- |
| The ideal feeding practices for children 0–5 months of age (prior to 6 months) are: [21,27, 32]<br>▪ Initiate breastfeeding within 1 hour after birth, give colostrum, and do not give pre-lacteal feeds.<br>▪ Practice exclusive breastfeeding from birth; breast milk without any other liquids or foods, on demand (whenever the child wants to) for the first 6 months of life.<br>▪ Mother should breastfeed 10 to 14 times for newborns and 8 or more times for older babies, day and night.<br>▪ Use both breasts and empty them at each breastfeeding session. |

**Mothers related breastfeeding to children being "smart" or "intelligent" up until the child is 17–18 months of age. All mothers held the common belief that colostrum is valuable for children's health.**
The *"first milk"* is viewed as *"valuable," "clean"* and *"full of nutrients,"* and mothers eagerly discussed their understanding of the benefits of colostrum. Nearly all mothers (94%) gave colostrum following recovery from childbirth as soon as *"it started flowing,"* with the exception

of nine mothers who were either drowsy due to anesthesia administered during cesarean section or very tired when the baby was placed on the breast to suckle. The importance of colostrum was also repeatedly emphasized through advice from health care providers and the MCHIP/SMART project as, *"Community health workers from the community development association (CDA) clinic visited our homes and recommended that mothers not give the newborns anything but colostrum because anything else might cause the baby to suffer from anemia or jaundice."* Lower Egypt, mother, child 18–23 months old

As relayed by another mother, "*It was the doctor who advised me to breastfeed him colostrum right after delivery, he said this milk contained multiple proteins and nutrients, in addition to his feeling of safety I learned from public sessions on child care that are offered to us these days [SMART/MCHIP project], I felt very happy when I first had colostrum; I felt that I will not need pasteurized milk. Nothing will make me change this decision now*." Mother, Upper Egypt, child 0–5-months old

Mothers believed that giving colostrum allows the newborn *"to immediately feel the mothers' love"* and also feel *"safe"* through the *"bonding/tenderness between the mother and child." "The important thing is for the baby to suckle it immediately so he can feel his mother's tenderness*. Mother, Lower Egypt, child 9–11 months old

*"I was encouraged to breastfeed Ahmed through the television, breastfeeding prevents disease, the doctor, the health education at the community organization [SMART/MCHIP] and the TV advised me to breastfeed, the community educator from the CDA told me to breastfeed my son because outside milk harms him."*

~Mother, Upper Egypt, child 9–11 months old

Mothers believed colostrum gave the baby strength, aided in weight gain, and provided protection against diseases, especially physiological neonatal jaundice, which many mothers fear.

Although **breastfeeding is "*a natural choice,*" this is dependent on whether mothers perceive they have enough breast milk of sufficient quality**. Overall, mothers felt encouraged to breastfeed, based on the advice of their doctor, counseling sessions from SMART project community health workers, and media messages in locally televised health programs on the benefits of breastfeeding. Mothers felt breastfeeding was a natural choice, as long as mothers have enough milk that is of good quality and consistency, not too *"thin"* or too *"weak"* but *"thick"* and *"heavy"* in order to *"build the child's body"* and help his growth and weight gain and strengthen his protection against illness.

"*I was encouraged to breastfeed Ahmed through the television, breastfeeding prevents disease, the doctor, the health education at the community organization [SMART/MCHIP] and the TV advised me to breastfeed, the community educator from the CDA told me to breastfeed my son because outside milk harms him."* Mother, Upper Egypt, child 9–11 months old

Breastfeeding frequency was not high for the majority of mothers in Upper Egypt, who fed between 5 and 7 times per day. Similarly, over half of mothers in Lower Egypt did not breastfeed their children frequently enough, mothers mentioned feeding 5 times per day. A few mothers mentioned breastfeeding from 5 to 10 times per day and at night. Mothers often did not wake children to feed at night. All mothers reported that infants were fed on demand. Crying or a touch to the mother's breasts signaled to mothers that infants wanted to breastfeed. Although breastfeeding was frequent, researchers observed that the duration of breastfeeding was short for some mothers, as short as 5 minutes, while the majority of mothers breastfed for 10 or 15 minutes. Only a few mothers breastfed for 20 or 30 minutes. All mothers fed from both breasts

per feeding session, except for two mothers in Lower Egypt. Another frequent problem was that mothers needed help positioning infants correctly while lying down breastfeeding.
Although all mothers give colostrum and understand that breastfeeding is good for the child's health and mental development, mothers experienced several challenges to initiating exclusive breastfeeding. **Prelacteal feeding of liquids is recommended by some health care providers, encouraged by grandmothers and practiced by most mothers in the first days of life**. Mothers were often persuaded by providers and grandmothers into giving commercial herbal drinks, herbal tea infusions, and sugar/rice water after birth, in the initial days of life. Herbal drinks produced in Egypt, are marketed as a nutritional supplement for babies and young children. Many health care providers' and grandmothers' support of prelacteal feeding of herbal drinks supersedes mothers' knowledge of the benefits of breastfeeding, delaying breastfeeding initiation from several hours to up to 6–8 hours. Herbal drinks contain a variety of herbs, such as chamomile, thyme, licorice, anise, and peppermint oil and which is added to ¼ cup of water, boiled, cooled, and given to the baby to drink following childbirth.
The primary reasons for initiation of herbal drinks are to stop the child from crying until the mother is able to initiate breastfeeding or until a mother's milk *"comes in."* Mothers relayed that health care providers prescribe and often given these drinks directly following childbirth, and counsel the mother that these are used to "*wash the gut of the baby,*" thereby soothing his/her colic or crying. *"I had a natural delivery at a private doctor's clinic. The first breastfeeding session was 2–3 hours after birth. When I went home my mother gave my baby herbal drink using a syringe as prescribed by my doctor. I gave her herbal drink for about 2 days, once in the morning and once at night until my milk came in and the baby was able to latch on."* Mother, Lower Egypt, child 9 months old

Doctors tended to prescribe herbal drinks with greater frequency in Lower Egypt, as slightly over half of mothers had elective cesarean section under full anesthesia, and were drowsy for several hours, delaying initiation of breastfeeding. Nearly all mothers with children less than 6 months of age gave prelacteal feeds in Lower Egypt. Herbal drinks was the most frequently given, followed by anise/caraway/fenugreek herbal tea, and sugar-water mixture. In Upper Egypt, about one-quarter of mothers had a cesarean section performed. Prelacteal feeds were common among most mothers in Upper Egypt, with greater emphasis on water, followed by anise/caraway/fenugreek/mix herb tea, with few mothers giving herbal drinks or sugar-water mixture. Grandmothers supported the prescription of herbal drinks, as one grandmother explains: "*The doctor prescribed a herbal drink for colic, he started taking it since he was born up until 6 months.*" Grandmother, Upper Egypt, grandchild 15 months old

**Continued use of herbal drinks "helps babies sleep at night," "soothes and calms," and remedies "crying from hunger" or illness, in response to perceptions of insufficient milk prior to 6 months of age.**
Anise and caraway herbal teas were also given when the baby had colic or stomach trouble or cries repeatedly. Herbal drinks and rice or sugar water were seen to provide nourishment for children "*crying from hunger*" as some mothers expressed that infants' crying was an indication that the child did not have enough to eat from breastfeeding alone. As a result of these perceptions, early feeding of liquids was a common cultural practice in Lower and Upper Egypt.

Grandmothers favored these drinks as a remedy for mothers "*not having enough breast milk" or when the child has cold or cough" or "is crying"* in the first year of life, and advised mothers to continue giving these drinks to infants. As one grandmother explained, "*So if the mothers' milk is weak, then we make him the anise and caraway herbal mixture, we bought it when we saw that her milk was not satisfying him, we bought him caraway and we give it to him in a bottle once during the day and once at night.*" Grandmother, Lower Egypt, grandchild 3 months old

"*My baby was given herbal drink or anise when she is not feeling well. She has that every few days, she doesn't like it that much. That doctor said that herbal drink is good for her. He said that it is good because it is warm and good for the chest. It's like a tea bag and is prepared with a quarter of a cup of boiling water and left to cool.*" Mother, Lower Egypt, child 2 months old
Maintaining exclusive breastfeeding is challenging in the face of advice given by both health care providers and grandmothers. Consequently, mothers don't recognize early introduction of herbal drinks as being a feeding problem, as long as mothers continue to breastfeed the baby.

**Perceptions of insufficient breast milk serve as the impetus for mixed feeding, defined as breastfeeding with formula feeding, combined with early feeding of "light" foods, a practice encouraged by some doctors and grandmothers.**
When mothers believed their milk was lacking in quantity and/or quality, "*too weak, and not heavy,*" and the mother was not eating well, perceptions of insufficient milk prompted mothers to supplement breast milk with foods. "*Artificial milk*" or infant formula and/or *"light"* foods (e.g., yogurt, rice, potatoes, soft white cheese) are introduced as early as 4 months of age, because children were "*not nourished enough,*" were "*still hungry*." Some mothers were also prompted to first introduce junk foods at this age, specifically sugary biscuits, which are also considered appropriate to feed children at this age (Table 5). Mothers considered crying as pangs of hunger that indicated they did not have sufficient milk in their breasts. This belief was supported by some grandmothers; as one grandmother said, "*From the age of 4–5 months mother's milk was not enough so we gave him some bread, some milk or some fenugreek drink [herbal tea]*". Grandmother, Lower Egypt, grandchild 23 months old

> "*The problem is that the flow of my milk is weak, so the child feeds and keeps crying. I was told that if my milk is thick, the child would feed, and sleep and be calm, but Habeeba feeds and cries. I tried consulting many doctors, but it was no use. Before 6 months, I told the doctor that my breast milk was weak. He asked that I buy milk from the pharmacy to give the baby alongside my own. She breastfeeds a lot and she just had a meal and still asks for more … because my milk is thin, my husband tells me that she will start feeding properly after weaning.*"
>
> ~Mother, Lower Egypt, child 8 months old

Some mothers indicated that perception of not having enough breast milk is the main reason for the decision to give mixed feeding of breastfeeding with formula feeding and/or early introduction of foods to their infants younger than 6 months. In Upper Egypt, health care providers provide counseling to mothers that are specific to increasing their milk supply, as a provider from Upper Egypt explained, "*Actually, the mothers that I see and deal with have enough breast milk to breastfeed their children well. Of course the breast milk of the mother will increase if she eats well and breastfeeds well her children. In order to know whether the mother has enough breast milk or not I usually asks her about the daily number of times she breastfeeds her infants.*" Community health workers indicated that to help mothers maintain breastfeeding, they also "*visit mothers at home to educate them about breastfeeding and the correct way to breastfeed.*" However, more health care providers in Upper Egypt indicated providing such counseling than in Lower Egypt.

Consequently, mothers in Lower Egypt received little to no counseling from health care providers on what they could do to increase their supply of breast milk, (i.e., by feeding more frequently and for a longer time at each breastfeed). Several providers advised artificial milk or feeding their infants *"light"* food, as a means to satiate the child's hunger.

As one mother relayed, "*The problem is that the flow of my milk is weak, so the child feeds and keeps crying. I was told that if my milk is thick, the child would feed, and sleep and be calm, but Habeeba feeds and cries. I tried consulting many doctors, but it was no use. Before 6 months, I*

*told the doctor that my breast milk was weak. He asked that I buy milk from the pharmacy to give the baby alongside my own. She breastfeeds a lot and she just had a meal and still asks for more … because my milk is thin, my husband tells me that she will start feeding properly after weaning.*" Mother, Lower Egypt, child 8 months old

About half of doctors from Lower Egypt repeatedly explained their reasoning for confirming that a mother's milk is insufficient, "*If the mother's milk is unsatisfactory in quality or quantity, the child cries after feeding. If so the child cries every hour instead of every 3–4 hours, in this case I would prescribe artificial milk at that moment the child would begin to be satisfied after every meal.*" Health care provider, Lower Egypt

Grandmothers also believed that children less than 6 months of age are not *"full," "satisfied,"* or nourished enough with breast milk alone, as one grandmother from Upper Egypt explained, *"Before we used to feed the children at 4 months, because we felt that we did not have enough milk, so we used to breastfeed them then give them a few bites of food."*

Grandmothers pressured mothers to feed early because they are "*older and more experienced,*" while mothers today "*are still young, and they do not have enough experience.*" Another grandmother explained, "*I knew that he was ready to eat when he kept crying at four months, I told the mother "your breastfeeding is not nourishing him, and the child is a human like us who needs to eat, what your milk will do for him?*" Grandmother, Lower Egypt, grandchild 7 months old

Regardless of breast milk sufficiency, foods that are introduced early are initially screened through "*licking*" ("*talhees*"), a process during which the mother dips her finger in the food and has the child lick the food, to adapt the child to different tastes, textures, and assess "*readiness*" to eat, ability to swallow, and the child's likes and dislikes for particular foods.

**IYCF Practices of Children, 6–8 Months of Age**

The ideal feeding practices for children 6–8 months of age are:[33, 27,32]

- Continue breastfeeding on demand, 6–8 times per day (and night).
- Gradually introduce nutritious, mashed and semi-solid complementary foods at 6 months.
- Feed at least 2 meals per day for the breastfed child; the non-breastfed child should receive 1–2 cups of milk and 1–2 extra meals per day. Feed a variety of energy and nutrient dense foods (vegetables and fruits, sources of vitamin A, and foods prepared with fat) to ensure dietary diversity, feed foods from at least 4 food groups.
- Add an animal-source food or beans (groundnuts, peas, soybeans).
- Increase the amount of food gradually, feeding the child about 8 tablespoons (½ cup or 120 ml) of food per meal by 8 months.
- Total calories required from complementary foods is 202 kcal, with average breast milk intake (required intake for non-breastfed infants is 615 kcal).
- Practice responsive, patient feeding. Feed infants directly and encourage eating.

At this age, **the majority of mothers and grandmothers are cautious and continue to believe *"simple"* and *"light"* foods should be fed to children in small amounts**, in Lower and Upper Egypt. Pre-packaged plain yogurt or yogurt with fruit, soft processed cheese and potatoes were "*nutritive and easy to digest,*" and considered appropriate foods for children of this age group. Some children were also fed the following: *belila*, wheat boiled with milk and sugar of watery consistency, *mhlabia*, rice pudding (i.e., rice boiled with milk and sugar, of thick consistency) and Cerela, (i.e., wheat or rice-based infant cereal made with water or milk of thin consistency). Mothers

introduced food "*gradually*" out of a general fear of food being a source of the child becoming "ill." Therefore, the variety of food given was limited, and food required little to no preparation or was prepackaged, such as yogurt. It was encouraging to find that reported frequency of meals for some children was adequate, some children were given snacks, and mothers continued to breastfeed their children. On average, children 6–8 months of age had one or two meals, and some children had snacks; all children, with the exception of two, received solid food, even in small amounts. Of three stunted children in this age group, one (LE) was reported to be ill frequently, and the mother relied on breastfeeding more. Mothers fed stunted children small amounts of food, and no meat or fish, vegetables or fruits, and part of egg.

> "*My sister advised me to feed Yara boiled food, vegetables, eggs, zucchini, yogurt, [commercial] infant cereal, and fresh juices from the age of 6 months but I did not do that because I and the child's father are afraid she might get ill.*"
>
> ~Mother, Lower Egypt, child 6-8 months old

Similarly, grandmothers viewed yogurt, milk, eggs, rice, pasta, or potato as essential foods that should be consumed by young children daily, as a grandmother expressed in the following quote: "He *is given foods, such as mashed and fried potatoes, a little bit of yogurt, eggs, and milk, with a little bit of sugar … my heart goes out to her, so I go get her some potatoes from outside, or I boil an egg for her, or I give her some milk from the fridge, the important thing is that I feed her right away…. A child should eat eggs, potatoes, some rice with milk every day.*" Grandmother, Upper Egypt, grandchild 8 months old

Although **most mothers talked about the desire and/or receiving advice to feed children nutritious foods, like eggs and vegetables, some mothers are reluctant to feed a variety of food out of fear this may harm children or result in illness, as the child may not be able to digest certain foods.** As one mother described receiving advice on food introduction but not following it, "*My sister advised me to feed Yara boiled food, vegetables, eggs, zucchini, yogurt, [commercial] infant cereal, and fresh juices from the age of 6 months but I did not do that because I and the child's father are afraid she might get ill.*" Mother, Lower Egypt, child 6-8 months old

Another mother relayed her doubts of her child being able to digest food, "*I'm afraid to give him anything for fear he will get gas, as I started with spoonfuls of [commercial] Infant cereal but he refused it. I did not feed him yogurt or boiled vegetables before. I give him anise drink when he has abdominal pains. I was advised to feed my child but was afraid to do so even after the age of 6 months, I did not trust this advice I received after delivery. My child refuses to eat, though a child should eat eggs milk and vegetables every day.*" Mother, Upper Egypt, child 6 months old

The notion of gradual introduction of foods was supported by the majority of health care providers who recommended foods that are boiled, mashed, or softened "*without adding oil or fats*" such as boiled clarified butter or *samna* to ease the child's digestion. As a provider explained, *"Light food that can be easily digested can be offered to the child … giving the child this food gradually until the child reaches the stage of being able to digest without troubles."* Health care provider, Lower Egypt

Buffalo milk and egg yolk are not seen as foods that contain fat.

With regard to feeding some foods, such as eggs, some **mothers also fear development of allergies**. Some mothers repeatedly mention that they "fear *giving the entire egg, as their child may have difficulty swallowing it or they fear that the child may develop allergies.*" Most mothers gave egg yolk, rather than egg white (i.e., albumin), to avoid allergies. Some doctors

also recommended giving the yolk of the egg and discussed the need for awareness of potential food allergies, as one physician from Lower Egypt relayed, "*Mothers must be careful with the introduction of banana, mango or strawberries.*"

Some grandmothers also limited the feeding of eggs to just the yolk "… *because that is the nutritious part, that yolk inside.*" Grandmother, Upper Egypt, grandchild 5 months old

But they also advised that "*when you first start to feed the child something, like an egg yolk for example or some yogurt, you need to monitor him, if his cheeks start to get red, then you should stop feeding him that food and take him immediately to the doctor.*" Grandmother, Upper Egypt, grandchild 2 months old

**After 6 months of age, an overreliance on herbal teas and drinks occurs, based on recommendations of some health care providers and grandmothers. Liquids are featured prominently in the diets of young children, including black tea with milk and processed juices.**
Some doctors believed that these drinks are part of healthy growth, and part of the foods and liquids that should be consumed by children of this age. "*The types of food and drinks that should be given first to the children after six months are: anise, tilia (mint-like herb), herbal drink, herbs, poached potatoes, and fruits.*" Health care provider, Lower Egypt

Such drinks also are used for children when ill.

Feeding children non-nutritive foods was initiated starting from 6 months of age, and considered an essential part of children's meals (see Table 5). All grandmothers in Lower and Upper Egypt regularly gave and recommended giving sugary biscuits to their grandchildren as a meal, or as a snack, or mixed with milk and yogurt, or as a softened food by wetting the biscuits in tea. Sugary biscuits (which are pre-packaged cookies) were regularly recommended and given as a meal, as a snack, or in combination with another introductory food (milk/yogurt/tea) as they were not perceived to be an *"outside"* food. Store-bought small sponge cakes, (see Table 5) were also perceived as an acceptable food to satisfy a child's hunger as well as a convenient introductory complementary food, see Table 5, as junk foods are given alongside and often considered *"light"* foods.

Nearly all grandmothers did not consider this practice to be harmful, as they consider this feeding "*good"* and *"natural."* One grandmother commented, "*I would advise all parents to feed their children store-bought small cakes and biscuits."* Grandmother, Upper Egypt, grandchild 5 months old

Another grandmother discussed how biscuits were an integral part of the child's diet: "*We try to give him one container of yogurt, in the beginning, when he gets used to eating we can put a biscuit in the box, we do things gradually, this way, if he accepts, then we can increase the number of yogurt containers to two with a biscuit in each. She currently eats a bit of rice, eggs, a boiled potato, a container of yogurt (with honey or sugar), a pack of biscuits, that's about it.* Grandmother, Lower Egypt, grandchild 23 months old

| IYCF Practices, Children 9–11 Months of Age |
| --- |
| **During this age, children should begin the transition to solid family foods. The ideal feeding practices for children 9–11 months of age are:[21, 27,32]**<br>▪ Continue frequent breastfeeding on demand, day and night (at least 6 times). Feed nutritious meals with a variety of foods.<br>▪ Feed at least 3 meals per day for the breastfed child; the non-breastfed child should receive 1–2 cups of milk and 1–2 extra meals per day.<br>▪ Feed a variety of energy and nutrient dense foods (vegetables and fruits, sources of vitamin A, and foods prepared with fat). To ensure dietary diversity, feed foods from at least 4 food groups.<br>▪ Feed an animal-source food or beans, groundnuts, peas, or soybeans daily. Serve about 8 tablespoons (½ cup or 120 ml) to 12 tablespoons (¾ cup or 180 ml) per day when a child is approaching 1 year of age.<br>▪ Total calories required from complementary foods is 307 kcal, with average breast milk intake (required calorie intake for non-breastfed infants is 686 kcal).<br>▪ Practice responsive feeding, encouraging children to learn to eat.<br>▪ Feed infants directly and assist older children to eat from their own plate. |

For most children aged 9–11 months**, breastfeeding is continued and more solid foods are given**, in both Upper and Lower Egypt. Children received an average of two or three meals and one or two light snacks. We noted that in Upper Egypt children were fed a greater number of meals and snacks, including a wider variety of nutritious foods, including lentils or fava beans (*foul* or *tamaiya* – fava bean patties), vegetables, and eggs.

Children continue to receive *"light"* foods and some vegetables from family foods, alongside junk foods, such as potato chips and store-bough small sponge cakes (see Table 5). Yet, with children 6–8 months of age, quantity, quality, and frequency of intake were not optimal for the 9–11 month age group. In Lower Egypt, in particular, children lacked a variety of fruits, had no intake of lentils/beans, and no fat or calcium intake. Instead of consuming solid foods, children consumed more liquids, such as herbal teas (mint, cumin, caraway, anise fenugreek). Most children received potato, rice, and/or macaroni, while meat (red meat/chicken) was given to a few children. Less than half of children received cooked vegetables/fresh vegetables, and some fruits, such as banana and orange. Two stunted children in this age group, both from Lower Egypt, were reported as ill, and delivered by cesarean section. Stunted children were primarily lacking sources of food with energy, fat, calcium (milk products), and iron- and zinc-rich foods (meat/ fish), as well as vegetables and fruits, and fed small amounts of food. This is shown in the **Stunting Case Study** on page 32, where the child only received carbohydrates and sugar in the past day, and was fed less than 8 tablespoons daily, only part of the egg, and a limited variety of other foods.

In comparison to Lower Egypt, in Upper Egypt a greater variety of foods were given to children, and though limited, included animal-source foods. The majority of mothers fed yogurt, rice, and potato while some gave children egg, chicken, and *molokhaia*. Some mothers gave family foods, such as chunky vegetable soup, a little chicken, rice and/or potato, which could be improved. As in Lower Egypt, in Upper Egypt mothers relied on giving their children liquids, like fruit juices. Children did not consume energy-dense foods with a fat source, and nutrient intake from vegetables and fruits was limited. Mothers in the study preferred and had access to eggs, especially in Lower Egypt, the largest producer of eggs in Egypt.

As one mother from Upper Egypt described: "*I feed Habiba home-made food, mashed beans, molokhaia, zucchinis, string beans, eggs, and lentils. I also feed her pasta soup, rice, pasta, orange juice and bananas. I started give her bread at 8 months. I do not feed her chicken, meat or fish. I started to give her this food as I felt she was not satisfied with breast milk alone and she also refused baby milk (breast milk) from the age of 3 months."* Mother, Upper Egypt, child 10 months old

Children from Upper Egypt were often fed mashed cooked vegetables prepared in simmered tomato sauce with a little oil or *samna*/butter and a little meat (chicken or red meat), foods commonly eaten as part of the family's diet. These *"family foods"* are also referred to as *"heavy"* or *"table"* foods that mothers prepare for the family.

Foods were not prepared specially for children in both Upper and Lower Egypt, so mothers continued to rely on pre-packaged yogurt or junk foods, for ease in feeding children. Fathers' role in IYCF was to purchase and feed yogurt/snack cakes during lunchtime or in the evenings when returning from work or farming, as biscuits and snack cakes were seen as an easy way to feed infants as they become older.

"*At night, the father helps by getting [purchasing] yogurt and store-bought small sponge cakes and feeding the child … my child had a hernia and is ill [bacteria in the blood]. He likes fried potatoes not boiled, these foods are light and easy and easy to chew and he also eats rice and pasta. If he does not breastfeed enough, I try to force feed him. He doesn't like the taste of home cooked food, he likes yogurt, infant cereal sweetened with sugar, and store-bought small sponge cakes*." Mother, Lower Egypt, child 9 months old

If a child refused food, some mothers felt that they had to give children something to eat and gave snack cakes, succumbing to foods the mothers thought that their children "liked" and which became part of the daily meal. As one mother explained, "*I do not find it difficult to feed Reda. If he refuses food, I get him a different type of food like store-bought small sponge cakes and so on—a child must have milk, fruit and eggs, to make sure he is eating his meals, I have to feed him myself*." Mother, Lower Egypt, child 22 months old

Mothers also tended to sweeten juice drinks/yogurt/teas with sugar or honey, prior to giving them to children, so they became accustomed to sweetened foods and drinks at an early age.

Although **some mothers introduce more variety at this age, others limit the types of food children should eat - delaying introduction of "heavy" foods to 1 year of age out of fear of illness.** So, children, 9–11 months of age continued to receive the same *"light"* foods given at 6–8 months of age. Mothers perceived that "heavy foods" should not be given to children until they are older, after 1 year of age.

**Meats are also restricted to a certain extent at this stage, though small pieces of chicken liver and "light" meat (i.e., chicken), are considered acceptable by most mothers.**
Few mothers offered meat at meals in both Upper and Lower Egypt. This is because some health care providers and grandmothers often recommended delaying introduction of meat from 9 months to 1 year of age. Some providers recommended that the appropriate age for introducing meats ranges from 9 months to a year, and forbade mothers to introduce them before then.

As one health care provider from Lower Egypt said, "*We can provide the child with protein in the tenth month by starting to give him a little piece of chicken,"* while another provider reinforced this misperception further by stating that meat is prohibited before 12 months of age: "*There*

*are forbidden foods that we should not feed the child until he is 1 year old—like meat."* Health care provider, Lower Egypt

Most grandmothers also generally don't give cooked table food and meat until after a year. As one grandmother explained: "*Food for adults should always be different from children's food, as children can only eat light food such as vegetable soup, liver, or light meat but they can't eat red meat for example*." Grandmother, Lower Egypt, grandchild 3 months old

**IYCF Practices, Children 12–23 Months Old**

During the second year of life, the ideal feeding practices are:[21, 27,32]

- Continue frequent breastfeeding on demand, day and night.
- Feed family foods with an adequate texture for age.
- Feed at least 3 meals per day for the breastfed child; the non-breastfed child should receive 1–2 cups of milk and 1–2 extra meals per day.
- Feed children a variety of energy- and nutrient-dense foods (vegetables and fruits, sources of vitamin A, and foods prepared with fat).
- To ensure dietary diversity, children should be fed foods from at least four food groups.
- Feed children meat, poultry, fish, or eggs daily (or beans, groundnuts, peas, soybeans).
- Serve children about 1 cup (16 tablespoons or 240 ml) of food per meal.
- Total calories required from complementary foods is 550, with average breast milk intake (required intake for non-breastfed infants is 900 kcal).
- Practice patient, responsive feeding, encouraging children to eat.
- Feed infants directly and assist older children to eat from their own plate.

**Egyptian mothers were adamant regarding their desire to breastfeed for 2 years based on guidance from the Quran, Muslims' holy book.**
This demonstrates their intention, commitment to breastfeeding, and understanding of the length of breastfeeding for 2 years. Yet, **some women decide to stop breastfeeding prior to 2 years of age.** In our sample, cessation of breastfeeding was common among mothers of 18–23 months of children of age.

"*I stopped breastfeeding my daughter when she was one year and a half because people told me if the child is breastfed longer, she will be slow in comprehending and understanding things. I heard this from my family and neighbors*."

~Mother, Lower Egypt, child 23 months old

Mothers shared their reasons for ceasing to breastfeed early, stating that breast milk was *"poisonous"* or *"harmful,"* if a mother was pregnant: *"A child needs to eat solid food more than breastfeeding at this age," "breastfeeding too long will affect the child's intelligence."* As one mother explained, *"I plan to wean Zaid after a year and a half because some people said that breastfeeding the child for 2 whole years or more would affect his intelligence and also the doctor and some neighbors said the same."* Mother, Lower Egypt, child 20 months old

"*I stopped breastfeeding my daughter when she was one year and a half because people told me if the child is breastfed longer, she will be slow in comprehending and understanding things. I heard this from my family and neighbors*." Mother, Lower Egypt, child 23 months old

This notion of the limited benefit of breastfeeding has been often supported and given as advice by grandmothers, neighbors, and/or health care providers.

**Some women also continued to share their frustrations of inadequate quantity or quality of breast milk (milk was described as "too light"),** as well as feelings of weakness, exhaustion, and fatigue and a negative impact on the mother's health, which appeared to be related to the discontinuation of breastfeeding. "*I had no problems with breastfeeding, but I intend to wean Mostafa at 18 months as I did with my other children. If the duration [of breastfeeding] increases, my health is affected badly."* Mother, Upper Egypt, child 6–8 months old

Early cessation of breastfeeding also seemed to be related to mothers' greater reliance on other liquids believed to nourish the child, such as juices or tea.

In the second year of life, in addition to breastfeeding, children were deemed *"ready"* to eat solid family foods. As confirmed by one health care provider "… *until the child becomes 1 year old. At that point we tell the mother that her child is ready to eat all types of food which are available in their environment in the normal way*." Health care provider, Lower Egypt

In our study sample, most children 12–17 months of age had two or three meals and one or two snacks, while older children 18–23 months of age had 2.5–3.5 meals, on average, and two or three snacks. Children in Upper Egypt had a slightly greater number of meals given and had twice as many snacks as children in Lower Egypt. There were seven stunted children in this age group; four from Lower Egypt were reported to be ill frequently and were fed fewer meals and/or lesser amount of food, of limited variety. Junk food was fed to all stunted children.

**From 12–23 months of age, mothers begin to feed common "table foods" given at family meal times, such as cooked vegetables, rice or pasta, lentils or fava beans, known as "foul," as well as very small quantities of red meat, fish, chicken meat, or chicken liver, as meat, typically eaten once to twice a week.**
At this age, children were exposed to "family foods," which included vegetables simmered in tomatoes, as stated in the following quote: *"I give Youssef some food like vegetables soup, rice, pasta soup, boiled potatoes, boiled eggs and yogurt. I also give him fruit juice, ready-made or homemade—orange and strawberry juice. I also give him banana and plain biscuits. I have not given him meat or chicken yet, but I have given him some chicken liver, he can also have some lentil soup and he can have beans. He likes to have lentil soup with some bread in it. As for beans, I remove the skin and give it to him without adding any oil, I boiled potatoes I give him are always clean without their skin, I do not add anything to them but salt. I started giving him family food when he was 8 months. I knew he was ready because he showed interest in what we eat."* Mother, Lower Egypt, child 13 months old

Yogurt was the most frequently consumed food in children 12–17 months of age in both Upper and Lower Egypt. In Lower Egypt, the majority of women also gave children "table" foods prepared for family meals, including cooked vegetables and rice or potatoes cooked with tomatoes. As cabbage is readily available, grown and produced in Lower Egypt, rice rolled in cabbage leaves, or ("*mahshi cromb*") was also given. Foul, lentil, and milk were given to few children in Lower Egypt.

In Upper Egypt, a larger variety of foods was given: cooked and fresh vegetables (N=9), including peas, cabbage, spinach, cucumber, *molokhaia* (i.e., Jew's mallow leaves), squash, along with rice pudding and bread. A few children were also fed milk, foul, and lentils. Eggs were given to half of the children, while chicken meat or liver was given to slightly less than half of children in both areas. Fruit consumption was very low in both areas; instead, children commonly consumed fruits in the form of liquid juices—primarily pre-packaged boxed/canned

juice, and at times, freshly made juice. Herbal teas made of fenugreek, anise, mint, or mixed herbs, mixed with milk or alone, continued to be given to half of children in Lower Egypt, and a few children in Upper Egypt. Black tea was given to the majority of children in both areas. In Lower Egypt, junk food consumption consisted of biscuits and store-bought small sponge cakes while in Upper Egypt, karate (locally made chips), store-bought small sponge cakes, and chips were predominant. Sugary, pre-packaged biscuits were predominantly consumed in Lower Egypt.

As children become older, a greater variety of foods is given. In Lower Egypt, junk food consumption increased among children 18–23 months of age, and the variety of foods expanded to include more than one low-nutrient food, defined as potato chips (commercially or locally produced), soda, store-bought small sponge cakes, chocolate powder added to milk, and hot cocoa, while sugary biscuit consumption decreased. Mothers in this age group relayed reported giving their children rice, potatoes cooked in tomatoes, cooked vegetables, yogurt (sweetened with sugar/honey, at times), milk, and eggs. While frequency of consumption of these items increased, the variety of foods eaten also increased slightly, with half of mothers giving red meat, chicken or fish, as well as apples and bananas. For liquids, herbal teas and juices were given to nearly all children. Among children in this age group, there was no increase in the consumption of vegetables, and less than half of children consumed fruits, due to the consumption of fruit juices instead of fruits.

There was a greater acceptability among mothers to giving children chicken liver, as mothers were prone to feeding liver rather than meat, due to the lower cost of chicken liver. It was encouraging to find that mothers expanded their children's diets to include boiled eggs, lentils, and in some cases chicken liver, as mothers believed children were "ready" for these foods and they were "appropriate for the child's age."

**Some mothers have an overreliance on breastfeeding, and experience difficulty deciding what foods and with what frequency to feed their children, relying on milk products, such as cheese and yogurt, with little intake of other foods.**
One mother described the challenges she faces in feeding her child, describing that she depends on breast milk as a means of dealing with *"fussy"* or *"picky"* children:

"*I give her yogurt in the morning and later in the evening, she started taking very little amounts of food lately, maybe a spoonful of rice, I tried many times giving her potatoes and vegetable soup but she refused them, so I stopped making her any extra food. I think she cannot swallow the food. I eventually settled with giving her cheese and yogurt … the two main ingredients in her growing up process. I feel it [yogurt] has become addictive, she enjoys yogurt and becomes restless if I don't give it to her. My mother said to change food types regularly so that she doesn't get bored but I still don't do that. I am unable to make out the real reason behind her crying so I nurse her when she cries, otherwise I give her yogurt without her asking. She does have a problem with food, if she doesn't want to eat I don't force her but increase nursing for a longer time. I don't make a big deal of out of food. For me nursing [breastfeeding] makes 90% of her food intake and the other 10% comes from yogurt."* Mother, Lower Egypt, child 16 months old

**In Lower Egypt, mothers remain cautious in introducing a wider variety of foods. Mothers conveyed their worries and fears surrounding digestion, illness, and development of childhood allergies,** which have led some mothers to continue to restrict the intake of *"light"* and *"simple"* foods by their children as they become older. This behavior was sometimes based on advice from grandmothers, who, as additional caretakers were shown to be influential in decision-making regarding foods their grandchildren eat.

As one grandmother explained, "*It is important for the child to eat a small amount of rice, some mashed potatoes, these are light foods that are easy to digest and better than eating cooked table foods…. I also tell their mother not to make them food like us, I tell her to make them a small amount of rice with milk, or bread with tea because children are not like us*." Grandmother, Lower Egypt, grandchild 20 months old

**An increasing reliance on junk foods, such as chips, sugary biscuits, and handheld snack cakes, are perceived to satiate children's hunger, given that a good proportion of mothers have stopped breastfeeding and increasingly rely on low-nutrient foods.** As children became older, some mothers compensated for the limited intake of foods, as well as children's refusal to eat, with feeding junk food and non-nutritive liquids, such as potato chips (locally made potato chips and pre-packaged chips), commercial store-bought small sponge cakes with creme filling that are high in sugar and fat and low in nutritive value and non-nutritive liquids like sodas. One mother talked about the calming effect of non-nutritive foods, "*His father gives him soothing foods to eat like yogurt, plain biscuits and chocolate creme filled snack cakes."*

For these reasons, junk foods have become incorporated into the children's meals, as part of daily food intake. As one grandmother framed her experiences of feeding her grandchild around addressing feeding problems: "*I give my grandchildren eggs, yogurt, and store-bought small cakes. Because children were deprived of their mothers' milk … If a child does not eat [much] for 2 or 3 days, I would give him some chips for example, or store-bought small cakes, some rice, or cheese, calcium is good for the child."* Grandmother, Upper Egypt, grandchild 22months old

"*The foods that Hesham eats now are fish, rice, fries and chicken … he loves to drink tea a lot and I add 3 spoons of sugar and he also drinks strawberry juice. Sometimes I make guava juice at home and sometimes I buy it, when I make it at home, I cut it into pieces, and water and sugar in a blender. He also drinks soda around twice a week and I see that these drinks are fit with his age*."

~Mother, Lower Egypt, child 18 month old

Junk food is seen as a means to encourage a child to eat when a child refuses food or refuses to supplement dietary intake if a mother's milk is perceived to be "*not enough.*" This situation is also fueled by mothers' desire to give their children foods they *"like."*

Processed cheese and store-bought small sponge cakes were perceived by mothers and grandmothers as *"easy to swallow"* and the ideal food for young children. Mothers said are store-bought small sponge cakes *"soft, squeezable, easy for children to hold and easy to swallow."* For example, a mother may have the child's sibling care for the child for a brief period of time, while she runs an errand, and tells the child to feed his/her younger sibling a snack, such as a store-bought small sponge cake, if she/he cries.

One mother also explained how her child's dietary intake included sweetened tea, juices, and sodas, "*The foods that Hesham eats now are fish, rice, fries and chicken … he loves to drink tea a lot and I add 3 spoons of sugar and he also drinks strawberry juice. Sometimes I make guava juice at home and sometimes I buy it, when I make it at home, I cut it into pieces, and water and sugar in a blender. He also drinks soda around twice a week and I see that these drinks are fit with his age*." Mother, Lower Egypt, child 18 month old

The ideal practices for feeding during illness are[21]: to Increase fluid intake during illness and encourage the child to eat soft, varied, appetizing, favorite foods. After illness, give food more often than usual and encourage the child to eat more. **For feeding during and after illness, mothers rely on breastfeeding or other liquids, withholding food.** This deviates from the

ideal practice. Mothers reported that children continued to breastfeed when sick and tended to breastfeed more often and for a longer duration of time, especially if the child did not have an appetite and refuses solid foods. Mothers relayed that the child did not eat food or only small quantities, and they continued to give herbal drinks or other liquids, such as milk for illness.

As reflected by one mother who encourages her child to eat by offering other foods and liquids, in addition to breastfeeding: "*Hossam eats small quantities of food when he is sick or when he does not like the food. I know my child is hungry when he cries and when he feels satiated he refuses to eat. When my child is not accepting food for 2 days I give him different types of food and liquids such as anise or milk …. During illness Hossam refuses to eat but breastfeeds more.*" Mother, Upper Egypt, child 6–8 months old

**Table 5. Age of first introduction and consumption of traditional and processed foods in Lower and Upper Egypt**

| Age Group | Reason(s) for Introduction | Consumption of Traditional Foods and Liquids | Introduction and Consumption of Processed "Junk" Foods and Liquids |
|---|---|---|---|
| **0–5.99 months** | Insufficient milk<br>Crying/colic<br>Help child sleep | **Foods**: "***Light Foods***"**:** yogurt, potatoes, rice, soft white cheese<br>**Liquids:,** anise, caraway, fenugreek, mixed herbs tea, sugar-water, water (*UE) | Biscuits (pre-packaged cookies) |
| **6–8.99 months** | Easy to digest, fear of illness | **Foods**: "***Light Foods***" and soft/mushy foods: boiled potatoes, pre-packaged triangular soft cheese; yogurt, *(cooked fava beans)*, rice pudding (***mhlabia***), ***lisan al-osfoor shurba*** (soup with small macaroni), ***belila*** (wheat with milk), rice; part of egg (*LE)<br>**Liquids:** Herbal teas and hot drinks; fenugreek/anise/ caraway/ mint; juices | Introduced fried potato chips purchased from local street carts, continued biscuit consumption (*LE*)*<br>Continued use of herbal drink and soda |
| **9--11.99 months** | Easy to digest, fear of illness | **Foods:** Yogurt (*UE), clear, chicken/red meat soup -- ***shurba*** (*UE), chunky vegetable soup. Cooked, green leafy vegetables – ***molokhaia***, fresh green leafy vegetables –***jarjeer*** (watercress), other fresh vegetables; (tomato, cucumber), limited fruits (banana, orange)<br>Continued "***Light Foods***": rice, potatoes, pasta<br>**Liquids:** Herbal tea, juices | Continued potato chip and biscuit consumption (*LE) |

| | | | |
|---|---|---|---|
| **12–17.99 months** | Appropriate for the age of the child, delayed introduction of meat | **Foods:** Continued yogurt, rice, potatoes, started to introduce **cooked vegetables** – ***"table/simmered/heavy foods,"*** and small amounts of chicken meat or liver, fish and red meat; eggs, some fresh vegetables, few fruits, ***foul***, lentils, milk<br>**Liquids:** Juices (packaged or fresh), herbal tea, black tea | Continued biscuits (*LE), locally made potato chips, commercial potato chips, soda |
| **18–23.99 months** | *"Heavy/simmered"* food is appropriate for the age of the child, can tolerate these foods | **Foods**: "***Simmered/heavy foods"*** (okra, green peas, zucchini, squash, and potato cooked in chicken or red meat stew, tomatoes, with ***samna (boiled clarified butter*), *molokhaia***, potatoes cooked in tomato stew, yogurt, milk, eggs, meat, chicken, fish, fruits (apple, banana)<br>**Liquids:** herbal teas, juices, black tea | Introduced hot chocolate, chocolate powder with milk; continued locally made potato chips, soda, fewer biscuits |

Another mother also discussed giving only liquids out of fear the child's condition would worsen, *"When Youssef is sick, I feed him nothing but vegetable soup because I am afraid if I feed him anything else his stomach might hurt him too. When he gets better I feed him."* Mother, Upper Egypt, child 12–17-months old

Some mothers also depended on breastfeeding alone, and withheld food during illness, to avoid worsening the child's illness: *"When the child gets sick, I stop the outside food and depend on breastfeeding alone. I do this so the child does not get a fever."* Mother, Lower Egypt, child 9 months old

This practice was also confirmed by grandmothers, *"When he is sick, we just breastfeed him."* Grandmother, Lower Egypt, grandchild 6 months old.

## TIPs Case Study: Stunted Child, Lower Egypt, 11 Months Old, Adam

Stunted children had multiple feeding problems, including lack of/small quantities of meat, dairy, vegetables, and fruits. Adam primarily relied on sugary biscuits and bread with sugary syrup, but lacked nutrient-rich foods. His mother was able to successfully carry out the IYCF practices through TIPs, following counseling and discussion of her motivations.

### Feeding Problems, First TIPs Visit

- Dietary recall: Intake of sugary biscuits, bread w/sugary syrup.
- Baby is not fed meat or fish daily.
- Baby is not fed vegetables daily.
- Baby is not fed legumes.
- Baby is fed only egg yolk 4 times a week.
- Baby is not fed dairy products.
- Baby is fed less than 8 tablespoons of food at each meal.

### Recommended Practices (Second TIPs Visit)

- Give your baby portion of fish, meat, chicken, rabbit, daily (2 heaping tablespoons):
  - Pound/mince meat and grind with rice or mashed vegetables.
  - When cook chicken, prepare liver.
  - If you don't have meat/fish – give lentils, rice, mashed beans.
- Give baby same vegetables you cook for your family and mash them (spinach, zucchini, okra, carrot, tomato), fresh carrot/tomato juice, Seasamina with vegetables.
- Feed baby whole egg boiled, fried with oil, mixed with mashed potato.
- Feed baby yogurt, cheese daily.
- Increase gradually the amount of food given to baby at each meal to 8 tablespoons.

### Motivations

- Your baby is small for his age, he needs more food to grow well. Your baby will feel full, happier, sleep well and not cry.
- Baby needs meat and fish to build her body, and make her strong, healthy, and grow better, improve baby's blood and protect from anemia and malnutrition.
- Vegetables improve appetite and growth, and prevent illness, prevent baby from being constipated.
- Legumes are useful for baby's growth and can substitute for meats.
- Dairy products build bones and teeth so baby can grow strong and better.

# Chapter 3: TIPs Visit 1: Nutrition Status, Dietary Intake, and Food Frequency in Egyptian Children 6–23 Months Old

In Chapter 3, the nutritional status of children in the study is presented. Children's nutrient intake, as well as the frequency and type of foods consumed, are compared to global recommendations. Chapter 3 interprets Chapter 2's qualitative data on cultural beliefs, perceptions, and behaviors on IYCF in Upper and Lower Egypt.

## NUTRITIONAL STATUS OF CHILDREN IN LOWER AND UPPER EGYPT, FIRST TIPS VISIT

Our analysis of anthropometric data revealed a small proportion of children were stunted (11%, N=13) (12 %, N=7 cases out of 60 in Lower Egypt, 10%, N=6 cases out of 60 in Upper Egypt). The majority (87%) of children had normal weight for age (see Table 6), while 17% of children were at risk for being stunted. Upper and Lower Egypt had about 7–8% of children categorized as overweight or obese, with a greater proportion of children in Lower Egypt at risk for being overweight. Children in Upper Egypt had a tendency to be underweight or at risk for underweight. The distribution of these cases according to their weight for age revealed that one-quarter of the stunted children had low weight for age, whereas three-quarters had normal weight.

**Table 6. Nutritional status of children (N=120), First TIPs visit, Lower and Upper Egypt[33]**

| Percentage of Children Who Are Stunted, or on Way to Being Stunted | | | | |
|---|---|---|---|---|
| | < - 3 SD severely stunted | < -3 to -2 SD moderately stunted | Total stunted (<-2 SD) | At risk of being stunted (-2 to -1 SD) |
| Lower Egypt (N=60) | N: 4 (7%) | N: 3 (5%) | N: 7 (12%) | N: 4 (7%) |
| Upper Egypt (N=60) | N: 4 (7%) | N: 2 (3%) | N: 6 (10%) | N: 10 (17%) |
| **Percentage of Children Who Are Overweight and Obese** | | | | |
| | > +3 SD - Obese | >+2 to +3 SD- Overweight | Total overweight > +2 SD | At risk of being overweight (+2 to +1 SD) |
| Lower Egypt | N: 2 (3%) | N: 2 (3%) | N:4 (7%) | N= 4 (7%) |
| Upper Egypt | N: 0 | N: 1 (2%) | N: 5 (8%) | N=1 (2%) |
| **Percentage of Children Underweight** | | | | |
| | < - 3 SD severely | -3 to -2 SD moderately | Total underweight (<-2 SD) | At risk of being underweight (-2 to -1 SD) |
| Lower Egypt | N: 2(3%) | N: 2 (3%) | N: 3 (5%) | N: 3 (5%) |
| Upper Egypt | N: 2(3%) | N: 4 (7%) | N: 5(8%) | N: 5 (8%) |
| **Percentage of Children Who Are Wasted, or on Way to Being Wasted** | | | | |
| | < - 3 SD severely | -3 to -2 SD moderately | Total wasted (<-2 SD) | At risk of being wasted (-2 to -1 SD) |
| Lower Egypt | N: 0 | N: 3 (5%) | N: 3 (5%) | N: 0 |
| Upper Egypt | N: 0 | N: 5 (8%) | N: 5 (8%) | N: 0 |

## 24-HOUR DIETARY RECALL – FIRST TIPS VISIT

In the sample of stunted children (N=13), the majority of whom had multiple nutrient deficiencies, including energy, protein, fat, calcium, and iron. Vitamin A deficiency was found among stunted children 6–8 and 12–23 months of age. Protein deficiency was found in two children 6–8 months of age.

Data from 24-hour dietary recalls collected during the first TIPs visit revealed that nearly all children lacked sufficient energy and fat, and suffered from multiple micronutrient deficiencies including iron, zinc, and calcium (see Table 9 in the Appendix). Calcium deficiency was less common, except in the children 9–11 months old in Lower Egypt. Gaps in nutrient intake at the initial TIPs visit were due to mothers feeding children small amounts of food, which included small amount of meat/fish, low intake of fruits and vegetables, and low amounts of starches, such as bread, macaroni, and rice, which are part of the Egyptian diet. This was compounded by daily intake of black tea, which decreases the absorption of minerals like iron, as well as consumption of herbal drinks, and herbal teas (e.g., caraway, fenugreek, anise) when the child was ill or crying. Canned juices and herbal teas displaced food in the diet, from 6 months onwards, and at times even earlier.

Protein requirements were met in nearly all children (with the exception of two stunted children), as children consumed lentils or fava beans, known as *foul* or *tamaiya*, daily with rice or macaroni. According to in-depth interviews with mothers and fathers, chicken meat or liver, fish, and red meat, though available, were either not given to children or fed infrequently in very small quantities. Adult family members did consume chicken meat, liver, and fish.

Children aged 6–11 months met their nutrient requirements for vitamin A, D, and folate; however, older children, following the first year of life, did not meet their nutrient needs for these vitamins. Some children were given foods rich in vitamin A such as green leafy vegetables prepared as part of family foods (such as "*molokhaia*," also known as Jew's mallow, spinach, okra), and some mothers fed children eggs (the majority gave the egg yolk rather than egg albumin (the white of the egg) while some mothers gave the whole egg). Dairy products provided vitamin D. Some women ceased breastfeeding early, and early introduction of solid foods between 4–5 months of age was common.

## FOOD FREQUENCY – FIRST TIPS VISIT

Our food frequency data (see Figure 3, and Table 11 in the Appendix) for children 6–23 months of age indicated that children's dietary intake was predominately composed of the following: starches/carbohydrates such as *Baladi* bread (i.e., made of wheat flour and sprinkled with bran); rice, macaroni and/or potato; dairy products (milk, yogurt and/or cheese); lentils/beans; and junk food, defined as sugary biscuits (pre-packaged cookies), commercial pre-packaged potato chips), locally produced fried potato chips sold by street vendors, store-bought small sponge cakes, and soda. Dairy products and lentils/fava beans are staples of the Egyptian diet. Children 6–23 months of age commonly consumed yogurt, cheese, and/or milk daily, ranging from slightly under half to three-fourths of our sample. In Lower Egypt, yogurt was the most commonly consumed dairy product, compared to Upper Egypt, where buffalo or cow milk was reported to be given to the majority of children. Any type of lentils/fava beans were consumed by 30–40% of children, 12–23 months of age in Lower and Upper Egypt, with infrequent feeding of these foods to younger children 6–11 months of age.

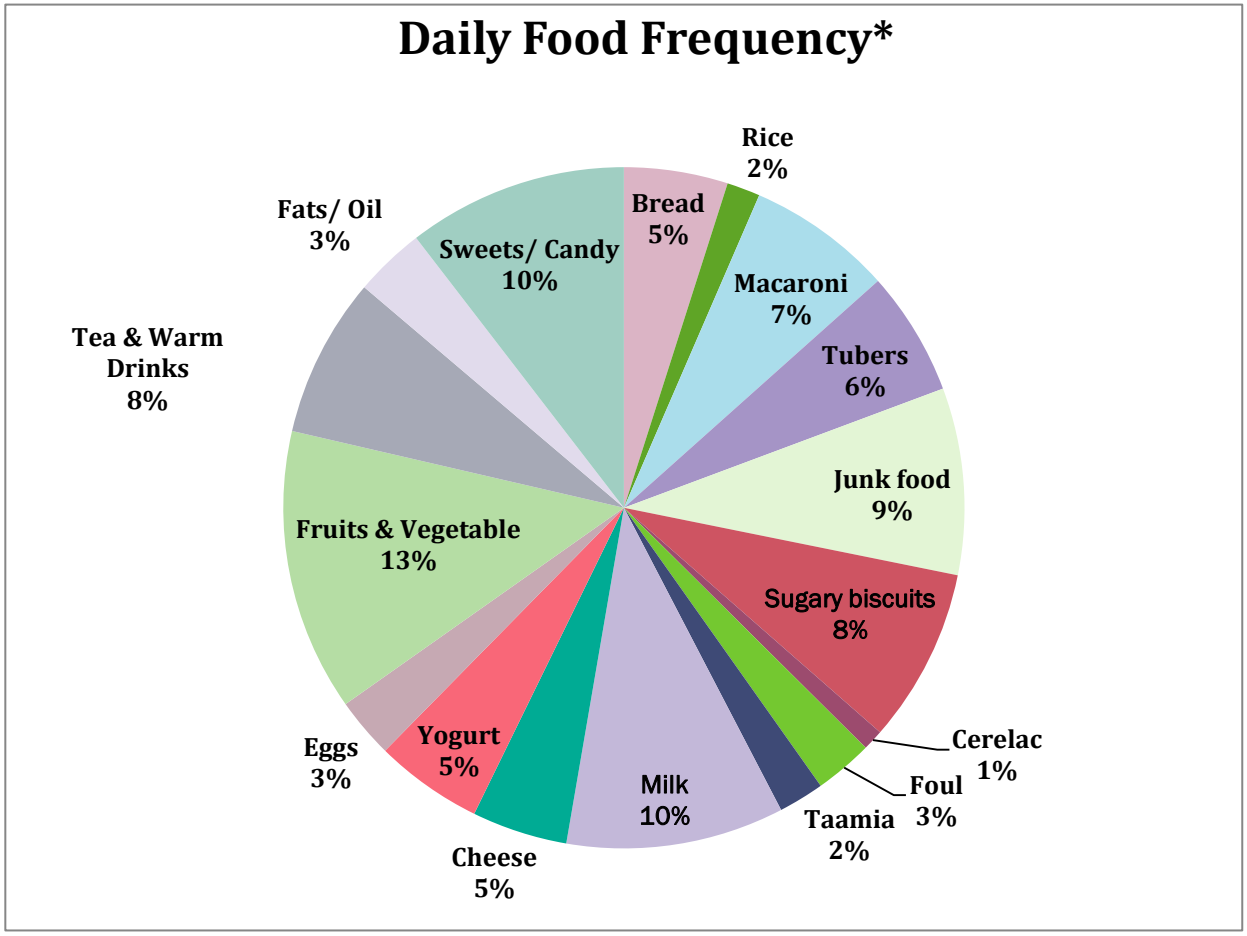
Junk food, including sugary biscuits and sweets, featured prominently in the diets of young children. As shown in **Figure 3**, approximately one-third of all children receive non-nutritive foods daily, including junk foods (e.g., store-bought small sponge cakes pre-packaged chips, c locally made potato chips), sweets, and sugary biscuits. While consumption of junk food was

pervasive in both areas of Egypt, a greater proportion of children in Lower Egypt ate junk food, regardless of age group or frequency of intake. Store-bought small sponge cakes and locally made potato chips sold by local street vendors were reported to be eaten daily by twice as many children in Lower Egypt compared to Upper Egypt (60% vs. 30%). Junk food consumption steadily increased with age, as half to three-quarters of children, 12–23 months of age were reported to eat these junk foods less than 3 times a week, and a 20-fold increase in junk foods eaten more from than 3 times/per week to daily was found in Lower Egypt compared to Upper Egypt (See the Appendix). Notably, daily consumption of biscuits (pre-packaged cookies) and sweets/candy was 280% and 147% higher in Lower Egypt in comparison to Upper Egypt, respectively. Intake of sugary biscuits was as high as other junk foods in Lower Egypt, whereas biscuit intake was lower (20%) in Upper Egypt.

While these data indicate high intake of junk food, intake of vitamin A rich fruits and vegetables was very low, with less than one-fifth of mothers reporting giving these foods to their children of any age. In Lower Egypt, orange and apple intake was noted only in older children. At least half of children in Upper Egypt had other vegetables 3 times a week or less. These were vegetables typically eaten during family meals, such as cooked vegetables, including *molokhaia*, okra, squash simmered in tomatoes with a small amount of oil/*samna*, or fresh vegetables such as tomato and cucumber. In Lower Egypt, mothers tended to restrict intake of other vegetables to children 1 year of age and older. Instead of giving children fruits, mothers replaced fruits with fresh squeezed or canned juices, and/or other liquids including herbal teas/infusions (anise, caraway, fenugreek boiled with water, and sugar or honey), and soda were given at least 3 times a week or less. Black tea, given with cow's milk, was routinely given to about one-third of children daily.

In addition, data indicate low intake of eggs and meat, including no daily intake of red meat, chicken, fish, liver, or luncheon meat. While Lower Egypt is the highest producer of chickens and eggs in the country, nearly 60–70% of children, 12–23 months of age, were reported to eat chicken and/or chicken liver less than 3 times a week, compared to 30–40% of children in Upper Egypt. Small quantities of meat and liver were typically given to children, as liver was sold individually or by pieces by weight. Few children 6–11 months of age were given meat/fish or liver. Eggs were given with the greatest frequency in Lower Egypt (33% of children received eggs 3 times a week or more), especially to children in the second year of life. Canned beef luncheon meat was given to nearly 20% of children in Upper Egypt, after 1 year of age.

Figure 3. Commonly consumed daily foods, children 6-23 months, Upper and Lower Egypt




*Definitions and Specifications: **Tubers** are plants yielding starchy roots and here they include potato, sweet potato, and taro; **Junk Foods** are processed high-fat and/or low nutrient-containing foods and here include locally made potato chips, commercial potato chips, and store-bought small sponge cakes. ***Foul*** is traditionally cooked fava beans. ***Tamaiya*** is traditional bean patties. **Milk** includes both fresh milk and powdered milk. **Cheese** includes traditional white and karees cheese as well as soft processed cheese. **Teas and Warm Drinks** include black tea and herbal drinks sweetened with sugar or honey as well as chocolate (cacao) drink. **Sweets and Candy** include *halawa tahenaya*, molasses cane, honey, sugar, and hard candy.

# Chapter 4: Understanding Gaps in IYCF Practices (TIPs Visit 1), as a Basis for Recommending IYCF Practices New to Mothers (TIPs Visit 2), and Sharing Mothers' Experiences with These Practices (TIPs Visit 3)

The study team used the interview and dietary data from TIPs visit 1 to understand the challenges and gaps Egyptian mothers face in IYCF. Mothers were counseled about optimal IYCF practices in TIPs visit 2 (see Figure 2), and were offered several infant feeding practices to try, based on gaps in current IYCF practices (Chapter 2) and dietary intake (Chapter 3), which were identified in TIPs visit 1.

The research team reviewed the TIPs visit 1 data, and used the data to make recommendations for TIPs visit 2. Interviewers proposed several new practices for mothers to try in TIPs visit 2, and following discussion of what was feasible for mothers to carry out, mothers agreed to try some or all of these offered practices for a 1-week period. During TIPs visit 3, mothers were asked to share their experiences with the recommended practices, their likes/dislikes, and any modifications to the recommendations that were made.

In Figures 4 and 5, the main recommended IYCF practices are depicted on the X-axis, along with the number of mothers who were proposed (i.e., counseled) on each practice. The numbers of mothers who accepted, tried, succeeded, and modified these practices are shown on the Y-axis of the figures for Lower Egypt and Upper Egypt. The practices proposed to mothers are new to them. Therefore none of the mothers were practicing any of the IYCF practices prior to the TIPs visits. These figures reveal the continuum of TIPs: from counseling, the trial period, and the response of mothers, as detailed below in Table 3.

**Figure 4 Lower Egypt -TIPs Main Outcomes by % of mothers with children 0-23 months (N=75)**

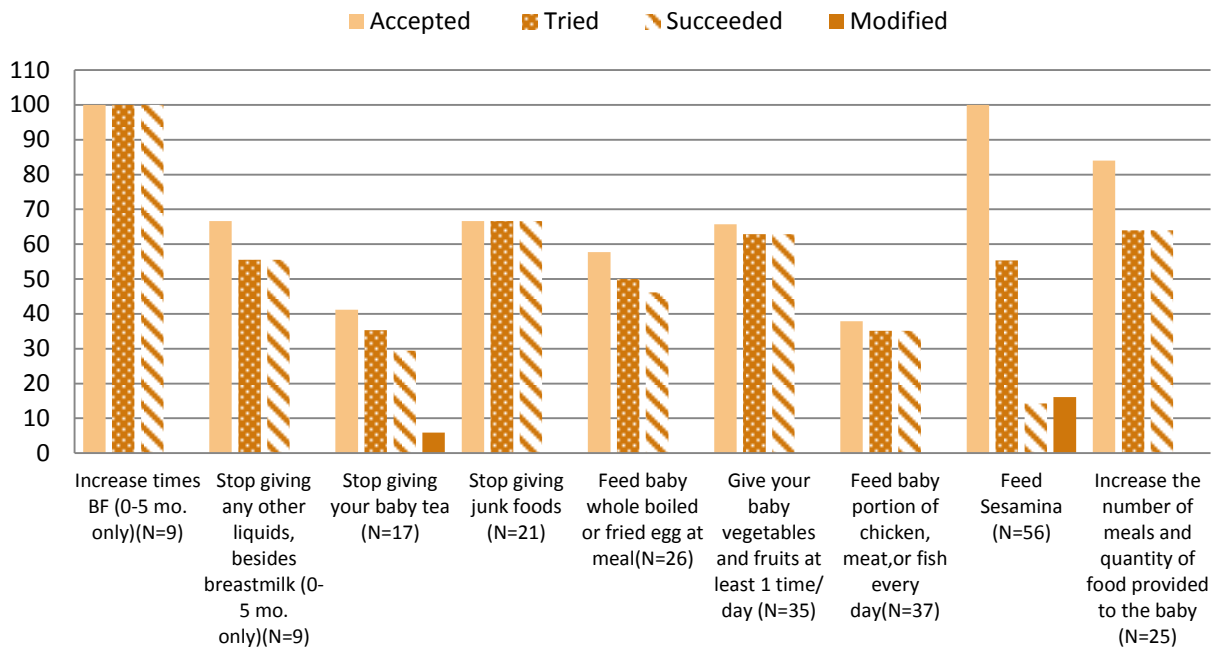
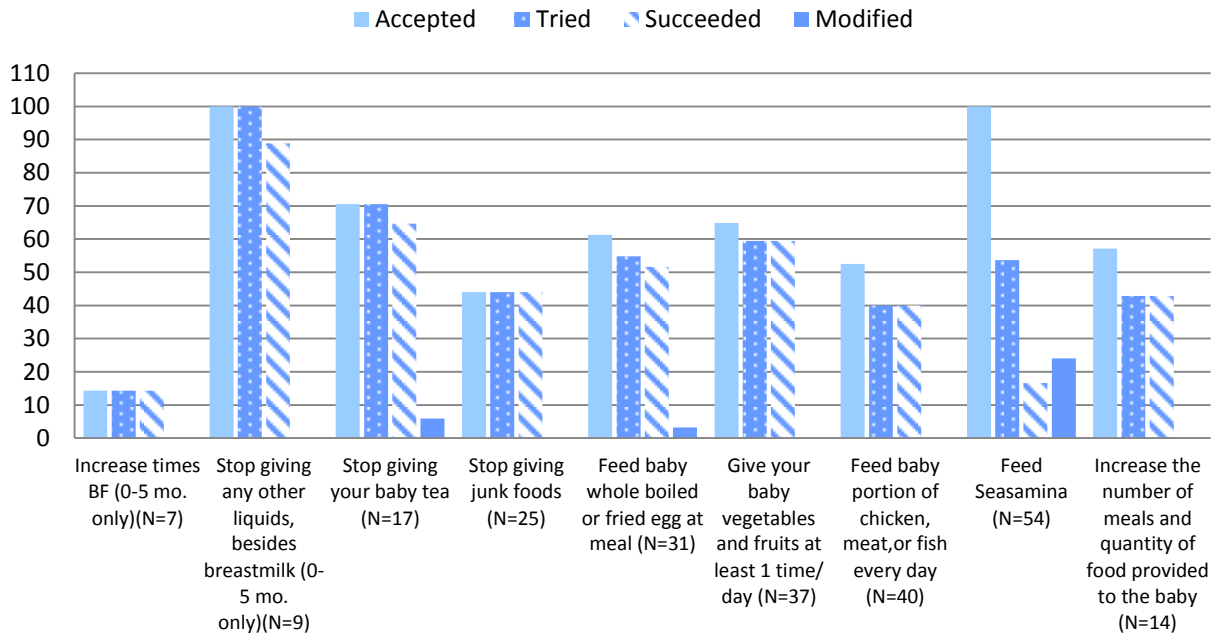



**Figure 5. Upper Egypt -TIPs Main Outcomes by % of mothers with children 0-23 months (N=75)**




* These figures (Figures 4 & 5) illustrate the new IYCF recommendations that were offered to the mother during TIPs visit 2 based on gaps in current IYCF practices and dietary intake identified in TIPs visit 1. The N next to each recommendation represents the number of mothers who were given the proposed recommendation. Accepted recommendations represent the percentage of proposed recommendations that mothers agreed to try during the TIPs visit 2. Tried recommendations are the percentage of proposed recommendations that the mother actually tried. Succeeded is the percentage of proposed recommendations that the mother had tried fully and for which she was satisfied with the results without modification. Modified recommendations are the percentage of proposed recommendations that were modified to fit the specific needs of the mother.

** The sample was restricted to 6–23 month old children (N=60) when providing Tips recommendations for improving dietary intake, since it is recommended that complementary foods are introduced from 6 months of age.

### Most Egyptian mothers participating in TIPs successfully tried IYCF practices with few modifications.

Mothers expressed eagerness for information to improve their knowledge about what and how to feed their children to address multiple feeding problems. Some mothers wrote this information on a piece of paper to share with other mothers in the community.

Mothers were able to accept and try between one and four culturally tailored IYCF practices (with a maximum of four practices), for a 1-week duration. The majority of mothers who *"tried"* the recommendations were successful at carrying out the recommended practices for a 1-week duration. Only a few mothers modified the recommendations, with the exception of *Seasamina*, primarily to accommodate the tastes of the child/if the child preferred the addition of fruits, milk products, or vegetables (see Figures 4 and 5).

Mothers expressed their willingness to try recommended practices that they viewed would positively impact their child's feeding practices. Notably, for nearly all the feeding practices, once mothers accepted and selected the recommendations, most mothers were able to carry out the recommended practices during TIPs for a 1-week duration, with little to no modification of recommended practices. Mothers were motivated by the benefits for the child's health by incorporating these improvements in feeding practices and were equipped/empowered with receiving information on the risks and benefits of feeding certain foods to their children—information about which some mothers expressed lack of awareness previously.

Carrying out particular practices related to preparing food for or feeding the child with greater frequency posed challenges for mothers' existing demands on their time, which may explain the small discrepancies between some mothers accepting a recommended practice and fewer mothers reporting trying the recommendation. Mothers reported barriers "*for carrying out*" an increase in the meals given to their child" were: "*I have no time to cook for* my children," *"I have no free time,"* and *"I felt lazy,"* while others relegated cooking to family members; as one mother stated, *"my mother-in-law cooks, so I don't cook*."

In the following section, **Figures 4 and 5** are described within the context of the TIPs visits in Upper and Lower Egypt, regarding practices that were most frequently proposed, accepted, tried, succeeded in trying, and modified by mothers. The numbers of mothers who were counseled about (i.e., proposed) these recommendations is described. Then, the percentage of women who accepted, tried, succeeded and modified each recommendation, of the mothers that were proposed/ counseled about the recommendation is summarized. We discuss differences between the two regions in how mothers responded to suggested IYCF practices, when applicable. Motivations and modifications of these recommended TIPs practices, by age group, are explained in a latter section of the report.

**Increase the number of times breastfeeding, 0–5 months only:** The practice of increasing frequency of breastfeeding was proposed to 16 mothers. In Lower Egypt, 100% of mothers accepted, tried, and succeeded in carrying out this practice, while only 14% of mothers in Upper Egypt were able to carry out this recommendation. This highlights that more mothers are willing to change the practice than in Upper Egypt. In Upper Egypt, only one mother accepted the recommendation to increase breastfeeding and succeeded in doing so.

**Stop giving any other liquids, besides breast milk, 0–5 months only:** In both Upper and Lower Egypt, the team counseled 18 mothers to stop giving any liquids aside from breast milk. Of the mothers who accepted the practice, more than half (56%) succeeded in Lower Egypt and the majority (89%) succeeded in Upper Egypt. Notably, more women in Upper Egypt were willing to stop giving other liquids prior to 6 months of age than in Lower Egypt.

**Stop giving your baby tea:** Thirty-four mothers of children 6–23 months of age from both Upper and Lower Egypt agreed not to give tea because they were counseled that black tea wasn't nourishing for the child and can cause anemia. Of these mothers, a greater proportion of mothers in Upper Egypt (65%) than Lower Egypt (29%) were able to stop giving tea successfully. Only one mother was unable to try the practice in Lower Egypt.

**Stop giving junk foods:** In Upper and Lower Egypt, 46 mothers of children 6–23 months of age were counseled on ceasing the practice of giving junk foods to their children. Of these mothers, 54% accepted the recommended practice of stopping junk food. Mothers expressed their support for substituting pieces of fruit and date bars for non-nutritive foods, as *"better for my child's health."* Of mothers who were counseled on this practice, more tried changing and therefore halting junk food consumption in Lower Egypt (67%) compared to Upper Egypt (44%). Junk food consumption was higher in Lower Egypt, and all mothers who accepted the practice were successful in carrying out this recommendation, in both Lower and Upper Egypt. Junk foods were withheld for a 1-week period, and in one case the mother reduced the quantity of chips given to her child, with the intention to stop giving chips entirely.

**Feed your baby whole boiled or fried egg at meals:** Of 57 mothers who were counseled to feed the baby an entire boiled or fried egg, about half of mothers (N=34) in Lower Egypt (46%) and Upper Egypt (52%) accepted this recommendation as being feasible to carry out. Of these mothers, most succeeded in feeding the egg. One mother in Upper Egypt added potatoes to the egg.

**Give your child vegetables and fruits at least once per day**: Of the mothers who were counseled on the practice (N=72), a similar proportion (about two-thirds) of mothers in Upper and Lower Egypt accepted, tried, and successfully carried out feeding vegetables and fruits to their children.

**Feed your child a portion of chicken, meat, or fish every day:** There was little difference found in Upper and Lower Egypt between the numbers of mothers trying to incorporate meat into their child's diet. Thirty-seven percent of mothers tried and were able to successfully include meat during the 1-week trial period (35% in Upper Egypt and 40% in Lower Egypt), of the 77 mothers who were counseled on the practice. Mothers were more successful in increasing fruits and vegetables than meats, which are typically eaten by families once to twice a week and are more expensive.

**Feed *Seasamina*, a locally available, complementary food:** *Seasamina*, a local complementary food, was recommended to all mothers to meet poor IYCF practices for children 6–23 months of age, as mothers did not typically prepare foods for their children, limit the variety of foods given, and often delayed feeding family foods. The composition of *Seasamina* is described in **Table 7**; it is made from locally available lentils, flour, and *tehena*, and study nutritionists discussed with mothers how to prepare it for their children.

*Molassena*, another complementary food made from chickpea flour, was also recommended to mothers during TIPs. However, mothers reported that *Molassena* is expensive (at 20 Egyptian pounds per kilo), labor-intensive, and time-consuming to prepare. Mothers must grind chickpeas into flour. This finding was reflected in only a few mothers selecting this recommended practice (data not displayed in Figures 3 and 4).

Our data show that the recommendation to feed *Seasamina* to children 6–23 months of age was the recommended complementary feeding practice most often proposed and accepted by mothers in Lower and Upper Egypt. Of the 56 mothers who accepted the practice in Lower Egypt, about half (N=31) tried the practice; 14% of mothers succeeded in carrying out this practice, and 16%

modified the recommendation. In Upper Egypt, 54 mothers accepted the practice, over half (N=29) tried the practice, and 17% of mothers carried out the practice as recommended. In Upper Egypt, one-quarter of mothers modified the practice. *Seasamina* was one of the few recommendations that was most modified, to suit the needs, tastes, and preferences of the child. Barriers to feeding their children *Seasamina* that mothers reported included *"having no time to cook for children," "feeling lazy,"* and relying on the mother-in-law to cook.

**Increase the number of meals and the quantity given:** For increasing the number of meals and amounts of food given, more mothers in Lower Egypt (64%) than in Upper Egypt (43%) accepted this practice and successfully carried out the practice without modifying the recommendation.

**Table 7. Composition of locally available complementary foods Seasamina and Molassena recommended during TIPs**

| Local Complementary Food Developed by National Nutrition Institute[40] | Ingredients and Preparation | What Some Mothers Liked about Selecting this Recommendation during TIPs | What Some Mothers disliked about Selecting this Recommendation during TIPs |
|---|---|---|---|
| *Seasamina*, lentil- and flour-based complementary food[1] | 3 T. yellow lentils<br>6 T.[1] of wheat flour<br>1 T. *tehena*<br>- Mix lentils and flour with 1½ cups cold water.<br>- Add one T. of vegetable oil or *tehena* after cooling.<br>- Add banana, mashed fruits, juice, cooked or boiled vegetables (e.g., carrot, zucchini, or spinach). | ▪ Affordable<br>▪ Ease in preparation | ▪ Thickness<br>▪ Color of mixture<br>▪ Taste for child |
| *Molassena*, chick pea- and flour-based complementary food[2] | ▪ 1 T. wheat flour<br>▪ 1 t. ground chickpeas<br>▪ 1 t. full cream dried milk<br>▪ ½ t. ground fenugreek<br>▪ Mix with ½ cup cold water, cooked until consistency of rice pudding.<br>▪ Add banana or orange juice to mixture after cooling. | | ▪ Heavy in taste<br>▪ Labor-intensive to prepare<br>▪ Chickpeas are expensive (20 Egyptian pounds per kilogram) |

[1] 380.4 calories, 14.87 grams of protein, 6.81 grams of fat, 64.93 grams carbohydrates, 3.16 mg iron, 6.01 mg zinc (with *tehena*)
[2] 200 calories, 7 grams proteins, 4 grams fat, 35 grams carbohydrates, 1.80 mg iron and 2.31 mg zinc

Mothers preferred *Seasamina* due to its affordability and ease in preparing this complementary food, which uses local ingredients following the instructions given by the nutritionists on the study team. Some mothers modified the practice to accommodate the food preferences of their children with regard to taste, texture, and appearance. Nutritionists on the study team offered suggestions to the mothers to suit the tastes of children in the study, and, by adding vegetables, fruits, and/or milk, juice to the *Seasamina,* to adapt to the likes/dislikes of the child.

**Table 8. TIPs 1, 2, and 3 summarized: Most frequently reported feeding problems, recommended practices, motivations, benefits/reasons for why liked/not liked practices, and modifications (* refers to 0-5.99 months, the first 6 months of life).**

| Main Infant Feeding Problem (TIPs 1) | Age Group (months) affected by infant feeding problem | | | | Recommended Practice for mothers to try (TIPs 2) | Motivation for Trying Practice discussed with mother (TIPs2) | Benefits of Practice(s) Tried/Reasons Cited by Mothers Why She Liked the Practices(s) (TIPs 3) | Any modification to practice (TIPs 3) |
|---|---|---|---|---|---|---|---|---|
| | 0–5* | 6–8 | 9–11 | 12–23 | | | | |
| Mother breastfeeds for a short time only and does not empty both breasts.<br>Mother does not use both breasts at each feeding. | ✓ | | | | Increase the length of each breastfeeding; use both breasts until soft and empty. | ▪ The concentration of your milk increases gradually during the time of breastfeeding; in breastfeeds of a short duration your baby will consumes diluted milk instead of consuming the nutritive one, which affects your baby's growth. | Child becomes full, "satisfied," able to sleep, "stopped crying and no longer had diarrhea." | - |
| Breastfeeding is not exclusive; mother introduces non-nutritive liquids such as water, tea, herbal drinks, soft drinks. | ✓ | | | | Stop giving any other liquids, aside from breast milk. | ▪ All mothers are able to produce enough milk for their babies; the more the baby sucks, the more milk you will produce.<br>▪ Babies who have only breast milk grow much better physically and mentally and get sick less often.<br>▪ Babies need only breast milk to grow well. They do not need water because the breast milk calms their thirst.<br>▪ Your baby will cry less if you breastfeed him more often. | Child no longer has colic, no swelling stomach, health improved, immunity stronger, feels full. | |
| Child consumes tea, made from black tea leaves; mothers often mix tea with milk. | | ✓ | ✓ | ✓ | Stop giving tea and make homemade juices. | ▪ Tea is not suitable for your baby.<br>▪ Tea can cause anemia and prevent iron absorption and calcium absorption (if tea is mixed with milk).<br>▪ Tea causes insomnia, making your baby not sleep well, and affects his health. | "Not nourishing," "causes anemia," "appetite increases," tea "burns iron in food," "child can eat now." | Gave milk instead |

| Main Infant Feeding Problem (TIPs 1) | Age Group (months) affected by infant feeding problem | | | | Recommended Practice for mothers to try (TIPs 2) | Motivation for Trying Practice discussed with mother (TIPs2) | Benefits of Practice(s) Tried/Reasons Cited by Mothers Why She Liked the Practices(s) (TIPs 3) | Any modification to practice (TIPs 3) |
|---|---|---|---|---|---|---|---|---|
| | 0–5* | 6–8 | 9–11 | 12–23 | | | | |
| Child eats junk food, like chips, Store-bought small sponge cakes™, sodas. | | ✓ | ✓ | ✓ | ▪ Stop giving these types of foods or liquids. Instead, give a snack such as half a banana, a piece of sweet potato, a piece of pear.<br>▪ Feed your baby homemade fried potato.<br>▪ Feed your baby natural fresh homemade juices (carrot, tomato, orange). | ▪ These foods are not nutritious for your baby and do not help him grow.<br>▪ These foods contain preservatives, artificial coloring, and food additives, which are harmful to your baby.<br>▪ These types of foods are often full of salt or sugar, which later on may cause some diseases (e.g., hypertension, kidney disorders, obesity, diabetes).<br>▪ They are very expensive. It is cheaper and better to buy an egg or some fruit. | *"Happy he is eating better, improved health, eating more, don't like preservatives in these foods," harmful/bad for health"* | *"I have reduced it a little and gradually will stop"* |
| Baby is not fed eggs or fed only part of egg yolk or white (albumin). | | ✓ | ✓ | ✓ | ▪ Feed your child the whole egg daily; mix it with peeled, mashed beans or mashed boiled potato or with cooked cheese.<br>▪ Feed your baby a boiled or fried egg at any meal. | ▪ Eggs are good for your baby. They will help him grow well.<br>▪ Feed your baby the whole egg; albumin raises baby's immunity and yolk contains vitamin D, which is important for bone and teeth growth, as well as fatty acids needed for the brain development.<br>▪ Eggs will improve your baby's appetite. | *"Nourishing"*<br>*"Good for child's health and growth"*<br>*"Want [to] give nutritious food"* | *"Scrambled the egg, child really loved it and ate the whole egg"* |

| Main Infant Feeding Problem (TIPs 1) | Age Group (months) affected by infant feeding problem | | | | Recommended Practice for mothers to try (TIPs 2) | Motivation for Trying Practice discussed with mother (TIPs2) | Benefits of Practice(s) Tried/Reasons Cited by Mothers Why She Liked the Practices(s) (TIPs 3) | Any modification to practice (TIPs 3) |
|---|---|---|---|---|---|---|---|---|
| | 0–5* | 6–8 | 9–11 | 12–23 | | | | |
| Child is not fed vegetables daily.<br><br>Child is not fed fruits daily. | | ✓ | ✓ | ✓ | ▪ Give your child the same vegetables you cook for the family, mashed (Jew's mellow, spinach, zucchini, okra, carrot, tomato) at least one time per day.<br>▪ Mix the mashed vegetables with the soup (at least 2 tablespoons) to prepare a nourished, semisolid meal for your baby.<br><br>▪ Feed your baby a piece of fruit at least one time per day; for example: apple, pear, orange, guava, tangerine, half a banana etc.<br>▪ You can feed your baby natural fresh homemade juices.<br>▪ Feed your baby *Seasamina* mixed with fruits. | ▪ Your baby needs vegetables.<br>▪ They will improve his appetite and growth and prevent illness.<br>▪ The vegetables contain vitamins and minerals important to your baby, will help prevent and protect from illness, diseases, anemia and support immunity.<br>▪ Vegetables contain dietary fibers that protect your baby from constipation.<br>▪ Fruit will improve your baby's appetite and growth. The fruits contain vitamins and minerals important to your baby, will help to prevent and protect from illness, diseases, and anemia and support immunity.<br>▪ Your baby will like the sweetness of the fruit. | *"Child eats more"*<br><br>*"Good for health of child"*<br>*"health improved"*<br><br>*"Gives immunity to child"*<br><br>*"Has vitamins"* | |

| Main Infant Feeding Problem (TIPs 1) | Age Group (months) affected by infant feeding problem | | | | Recommended Practice for mothers to try (TIPs 2) | Motivation for Trying Practice discussed with mother (TIPs2) | Benefits of Practice(s) Tried/Reasons Cited by Mothers Why She Liked the Practices(s) (TIPs 3) | Any modification to practice (TIPs 3) |
|---|---|---|---|---|---|---|---|---|
| | 0–5* | 6–8 | 9–11 | 12–23 | | | | |
| Baby is not fed chicken, meat, or fish daily. | | ✓ | ✓ | ✓ | ▪ Give your child a portion of chicken or meats or fish once per day (at least 2 heaping tablespoons). Do not give just the broth.<br>▪ Pound or mince the chicken, meats, or fish (be careful to remove bones from fish if necessary) and mix it with rice or mashed vegetables to be suitable for your baby.<br>▪ When you prepare chicken, meat, or fish, pound the baby's portion and then cook it well.<br>▪ When you cook a chicken, keep and prepare the liver for your baby.<br>▪ If the mother does not have a source of chicken, meats or fish daily: Give your baby a recipe (meal) from beans and grains daily; for example, Assuming mixture or peeled mashed beans+ bread, add yellow or unpeeled lentil to beans while cooking it. | ▪ The broth does not help your baby grow and will not fill him up.<br>▪ The chicken, meat, or fish will help your baby be strong and healthy. He will be happier and playful.<br>▪ Your baby needs fish and meat to build his/her body, to protect from anemia or malnutrition, to improve immunity, and to protect him/her from diseases. | *"Child looks forward to eating"*<br><br>*"Accepting/eating foods"*<br><br>*"Slowing down breastfeeding and eating more"* | |

| Main Infant Feeding Problem (TIPs 1) | Age Group (months) affected by infant feeding problem | | | | Recommended Practice for mothers to try (TIPs 2) | Motivation for Trying Practice discussed with mother (TIPs2) | Benefits of Practice(s) Tried/Reasons Cited by Mothers Why She Liked the Practices(s) (TIPs 3) | Any modification to practice (TIPs 3) |
|---|---|---|---|---|---|---|---|---|
| | 0–5* | 6–8 | 9–11 | 12–23 | | | | |
| Child is not fed often enough (< 2 or 3 x per day) and is not fed snacks during the day. | | ✓ | ✓ | ✓ | ▪ Increase food gradually.<br>▪ Increase the number of meals given to the child, from one to two, and then three.<br>▪ Feed your child (6–8 months) at least 2 times a day, or least 3 times per day (9–23 months).<br>▪ Feed your child two snacks between meals.<br>▪ Feed your child one additional snack per day so that he gets at least two per day.<br>▪ Give a banana, piece of mango, piece of apple, pear, an orange. | ▪ Your baby needs to eat more now to grow healthy, taller, play and be active.<br>▪ Your baby will not become constipated. | *"Eating better/ accepting food"*<br>*"Doesn't stay hungry"*<br>*"More she grows, more she eats"* | |
| Child is not fed enough food to eat. | | ✓ | ✓ | ✓ | ▪ Increase gradually the amount of food you give your baby at each meal, until you feed him 8 tablespoons (6–11 months) or 16 tablespoons (12–23 months). | ▪ Your baby is small for his age. He needs more food to grow better and healthier.<br>▪ Enough food protects your baby from malnutrition.<br>▪ Your baby will be happier and you can do your housework with less interruption. | | |

# Chapter 5: Specific Challenges to Infant and Young Child Feeding (IYCF) and Mothers' Reactions to TIPs Recommendations in Egypt

In this chapter we discuss mothers' motivations, reactions to recommended practices after the trial period, and any modifications mothers made to the IYCF practices. In Table 8, we describe the main IYCF problems identified in TIPs 1, the age group affected by the infant feeding problem (0–5, 6–8, 9–11 or 12–23 months). This is followed by the recommended practices for mothers to try and the motivations for trying the practice, which were given in discussions with mothers during TIPs visit 2. The reasons cited by mothers why they liked the practice after a 1-week period (Tips visit 3)and any modifications (TIPs visit 3) are also given. In the following paragraphs, we describe the challenges of feeding children by age group, that were found in the study, not all which are presented in Table 8 or Figures 4 and 5. These figures and Table 8 depict the most frequently reported IYCF problems, and how they were addressed through TIPs.

## SPECIFIC CHALLENGES TO IYCF AND TIPS RECOMMENDATIONS

### IYCF Children 0–5 Months Old - in the first 6 months of life

The challenges in feeding children 0–5 months (i.e.0-5.99 months) of age include: 1) mothers giving other liquids, aside from breast milk, especially herbal drinks and teas; 2) insufficient frequency of breastfeeding; 3) breastfeeding of short duration that was not sufficient to satiate the child's hunger; and 4) incorrect positioning of baby on the breast (not all shown in Figures 4 and 5 and Table 8). These IYCF practices did not vary by region. Some mothers also mentioned introducing yogurt and/or commercial infant cereal prior to 6 months of age, so mothers were advised not to introduce food early.

Table 5 shows some of the recommendations given during TIPs to address these challenges, including "*stop giving any other liquids aside from breast milk,"* was followed by discussing with mothers why they would want to adopt these practices for 1 week with the motivation(s) for adopting them (e.g., "*Babies having only breast milk grow better physically and mentally and get sick much less"*). Mothers were counseled to offer both breasts at each feeding and breastfeed until both breasts are soft and empty. During the study, it was emphasized the more the mother breastfeeds, the more milk she will produce and her baby will also get more milk and will be satisfied, and cry less.

### IYCF Children 6–8 Months Old

The main feeding problems identified in children 6–8 months of age were: 1) the introduction of *"light"* foods of only limited variety, leading to low calorie and energy intake; 2) lack of animal-source foods, fruits, and vegetables; and 3) inclusion only occasionally of part of the egg or dairy products. Limited variety of foods meant small amounts of foods, as most mothers were fearful of introducing foods that may cause illness or difficulty with digestion, while others mothers placed an overreliance on breastfeeding, which replaced food or delayed introduction of food. Mothers began to introduce junk food (chips), continued to give herbal drinks/teas to address illness, and routinely gave their children black tea and juices.

Advice given during TIPs to address feeding challenges were: 1) give your baby fruits and vegetables at least once per day; 2) give your child a portion of chicken and/or fish daily, and give your child egg at meals; 3) stop giving your baby black tea; 4) give your child dairy products; and 5) stop giving your child junk food. Mothers were advised to incorporate *Seasamina*, the local complementary food, to increase and diversify food intake.

### IYCF Children 9–11 Months Old

Mothers continued to express tentativeness in introducing different foods to children 9–11 months old, as revealed in the TIPs findings. Mothers supported the gradual introduction of a limited range of foods.

The main TIPs recommendations to address these challenges in children 9–11 months old were: 1) give a portion of meat/fish intake daily; 2) give fruits/vegetables once per day; 3) give a boiled or fried egg; and 4) increase the number of meals given to the baby (feeding frequency was inadequate and quantities of food were less than 8 tablespoons at each meal); 5) stop giving junk food, as issues of dietary quality remained as non-nutritive foods were given; and 6) give *Seasamina*.

## IYCF Children 12–23 Months

There were multiple challenges to child feeding in the second year of life, as the range of foods given to the child expanded to incorporate family foods, such as boiled vegetables, potatoes, rice, pasta, some lentils/*tamaiya*, and simmered vegetables, with occasional meat and fruit/vegetable. The challenges to IYCF in 12–23 month old children were: 1) chicken, meat, or fish was given only occasionally; 2) there was little to no vegetable intake; 3) junk food intake dominated the diet of children during this period of life and replaced other nutritive foods; and 4) intake of liquids and black tea was common and frequent. In addition, the quantities of food given continued to be substandard, and fewer than threemeals per day were given.

The main TIPs recommendations to address these challenges in children 12–23 months old were: 1) give a portion of meat/fish intake daily; 2) give fruits/vegetables once per day; 3) give a boiled or fried egg; and 4) increase the number of meals given to the baby (feeding frequency was inadequate and quantities of food were less than 16 tablespoons at each meal); 5) stop giving junk food, as issues of dietary quality remained as non-nutritive foods were given; and 6) give *Seasamina*.

### Most mothers liked the TIPs recommendations– after 1 week trial period – and dietary intake improved at TIPs visit 3, with few modifications.

At the end of the 1-week trial period (TIPs visit 3), **mothers eagerly discussed why they liked these practices aimed at improving IYCF and talked about the benefits of TIPs**.

- For breastfeeding, stated that children, 0–5 months of age were *"satiated," "stopped crying,"* and *"no longer had diarrhea"* when they were breastfed for a longer duration with both breasts. Mothers relayed that their children *"no longer had colic"* and had *"improvements in health"* when mothers stopped giving other liquids. Only one mother who had difficulty with the TIPs recommendation mentioned that her child liked to eat yogurt at night, and the mother continued giving the yogurt to her child.
- Mothers of 6–23 month old children relayed unifying themes that children were eating well, and expressed that recommendations for feeding *"nutritious food"* resulted in *"improved health"* of their children. After following TIPs recommendations, mothers reported that children were *"actually eating," "accepted food,"* and *"health improved: it helped him grow."*
- Mothers also relayed that they were surprised that their child *"likes to eat"* and *"gets full and falls asleep easier"* after increasing the number of meals they gave to their child. Mothers noticed that when they fed their children, the children were more satisfied, and remarked their child *"was happier"* and *"eats more."*
- Mothers understood nutritious foods to be nourishing and *"full of vitamins and nutrients"*
- Meat and fish give the child strength, which included offering ground meat to children or liver with simmered vegetable soup. Mothers noted that by offering meats/fish, *"liver has iron and prevented anemia"* and that these foods *"strengthen the child."*
- Mothers expressed happiness that their children were eating and consume greater quantities of fruits and vegetables, and eggs. Mothers relayed that their child accepted the food given to them, dispelling the belief that mothers cannot give a wider variety of foods to children.
- Mothers also remarked that they didn't like preservatives in junk foods that are harmful/bad for health, which motivated mothers not to feed these foods. Regarding junk food, mothers were concerned

and wanted to *"avoid harm"* to their children; reducing preservatives in the child's diet strongly resonated with mothers. Mothers were motivated and *"stopped giving any food of any kind with preservatives."* Mothers also remarked that the amount of food children eat increases and this is *"more economical,"* and the child *"eats better than before,"* noting marked improvements in appetite when junk food was withheld from children for 1 week. One mother noted, *"I reduced [potato] chips and will gradually stop it."* Another mother had difficulty reducing candies/sweets, but was able to slowly wean her child from sweets.

- Mothers recognized following counseling that black tea is *"not beneficial," "creates anemia,"* and *"is dangerous for the child."* After eliminating black tea intake, a few mothers noted their child had *"regular bowl movements."* In Upper Egypt, one mother had trouble reducing tea intake and gave anise herbal tea instead.
- Some mothers expressed that their child liked *Seasamina* and that "the mixture is healthy," "it has a nice appearance and is appetizing," and "he loved it/ she liked it," "ate and was nourished by it" while other mothers expressed that the child "refused to have it," "he didn't like the taste/appearance," and "didn't eat much of it."

### Dietary intake at TIPs visit 3 improved and mothers expressed a desire to continue the recommended practices

At the third TIPs visit following counseling and mothers trying recommended practices for a 1-week period, improvements in fat, energy, calcium, iron, and vitamin A (slightly improved) were found in non-stunted children. For stunted children, improvements were found in energy, fat, vitamin A, vitamin D, calcium, and iron. Energy increased slightly as a result of increasing the number of meals and amounts given; the greatest increase was in children 9–11 months old, as 41% more children met the nutrient requirement and there was an increase in median caloric intake of 143 calories after the mothers tried the new nutrition practices. In addition, after the third visit, most mothers expressed their desire and commitment to continue the recommended practices in their daily lives, beyond the 1-week TIPs trial period, as they noted improvements in children's health, including improved appetite, sleep, and less crying and illness.

### Modifications to TIPs were few, except for *Seasamina*

There were few modifications to TIPs recommendations (i.e., giving soup instead of vegetables or adding potatoes to eggs), aside from *Seasamina*. Mothers accommodated their child's food and taste preferences by modifying the *Seasamina* recipe. For example, mothers added vegetables such as carrots or squash and orange to make the *Seasamina* colorful and appealing to the child, as the color of this local complementary food appeared *"gray"* to mothers and children. Some mothers prepared the *Seasamina*, depending on the child's taste preferences, and added juice or fruits such as strawberries or orange, or milk. Some mothers replaced flour with crushed rice or small pasta. For fat content, mothers used oil or *samna* (" boiled clarified butter") interchangeably. Some mothers others added lentils, carrots, sugar, or egg yolk or potatoes to the *Seasamina*. Another mother replaced oil with *samna* and added an orange.

# Chapter 6: Discussion of Findings

This operations research study addresses behaviors, perceptions, and cultural beliefs on infant and young child feeding in the first 2 years of life and how these factors influence actual practices. The study also elucidates the role of health care providers, grandmothers, and fathers in advising and providing support to mothers' practices and associated beliefs. In this chapter we summarize findings and provide key counseling messages for improving IYCF.

## PERCEPTIONS OF GROWTH AND RELATED FACTORS, INCLUDING AVIAN INFLUENZA

Mothers relayed their knowledge about how to care for children, hygiene, and feeding children nutritious foods, which they had learned from the SMART project. In general, most mothers perceived their children to be healthy. However, some mothers, health care providers, and grandmothers believed stunting is hereditary. The limited understanding of the causes of poor growth was evident, as a child's growth was often not perceived to be related to poor IYCF practices and/or illness. General education for mothers, other caretakers, and health care providers on what causes poor growth and the link between feeding, illness, and stunting is needed. Another recommendation is that health care providers need to be trained to correctly monitor children's growth, and to use this information to advise mothers on how best to feed and care for their children during the first 2 years of life.

In Lower Egypt, the 2006 avian influenza outbreak may have been one of the factors that contributed to the documented rise in stunting between the 2005 and 2008 EDHS. Mass removal of chicken and eggs was carried out during the outbreak. In this study, study participants did not relate how feeding children less eggs and chicken, and replacing these foods with other less nutritive foods, could affect child growth. Reduced consumption of poultry, meat, and eggs, especially by children, was relayed by fathers and grandmothers in our study. This is confirmed by reports that have documented reduced dietary diversity, specifically household consumption of animal-source foods, eggs, poultry, red meat, and milk/milk products, which were replaced with beans, lentils, and chickpeas during the avian influenza.[11,17,18] An overreliance on cereals and tubers was also documented during this period of time.[11] This behavior was a reflection of increased food prices and fear that family members, especially children, could be infected by avian influenza.[18] Many women also raised chickens and lost income, which reduced their financial independence and their ability to take care of household needs. Relying on and negotiating limited financial resources with their husbands was a source of tension and intra-household conflicts.[18] This may have further impacted the care and well-being of young children and therefore growth. Other factors that were thought to explain the rise in stunting were: quality of anthropometric data collected in the past surveys and reporting of children's ages.[16]

## BREASTFEEDING PRACTICES

### Breastfeeding initiation was delayed in most mothers due to prelacteal feeding

Delayed initiation of breastfeeding is common in Egypt, as evidenced by the EDHS, and supported by our study findings. In the stunting study, the majority of mothers with children less than 6 months of age gave prelacteal liquids after birth. Locally produced pre-packaged herbal drinks and herbal teas (e.g., anise,

fenugreek, caraway), were commonly believed to soothe and calm a crying or "colic" baby after birth. Immediately after birth, mothers and babies are routinely separated in facility-based deliveries, which are a barrier to skin-to-skin contact, immediate and exclusive breastfeeding, and mother-infant attachment. Doctors prescribe herbal drinks as mothers recover from childbirth, which delays breastfeeding initiation from several hours to a few days.

## Mothers are committed to breastfeed, but exclusive breastfeeding is hindered through cultural barriers

Egyptian children are breastfed on demand, and mothers understand the benefits of breastfeeding. However, mothers do not breastfeed their children frequently enough and the duration of breastfeeding is short. Mothers introduce liquids and foods too early, and children receive liquids or *"light foods"* such as yogurt, biscuits, and potatoes. Only one-quarter of mothers exclusively breastfed their infants. Many mothers perceive that either they do not have enough breast milk and/or their breast milk is of inferior quality and seen as *"too thin"* or *"weak"* or *"light."* Perceptions of insufficient breast milk are an impetus for early introduction of foods and continued feeding of liquids to satiate their child's hunger. Due to perceptions of insufficient milk, food is introduced as early as the first month of life (i.e., giving biscuits with milk), while light foods are commonly given at 3–5 months of age. The mother or family member assumes that children cry from hunger and that it is related to the inability of mothers to produce enough milk to satisfy the child.

## Continued breastfeeding until 2 years of age is not practiced

The study found that a motivation for continuing to breastfeed for 2 years was the guidance from the Holy Quran, as mothers were adamant regarding their desire to follow the recommendations to feed for 2 years that are stated in Muslims' holy book. However, despite this belief, mothers wean their infants prior to 2 years of age, and all children (N=30) were weaned at 18–23 months of age. Mothers feared breast milk is *"poisonous"* or *"harmful,"* and said that if a mother is pregnant, *"a child needs to eat solid food more than breastfeeding at this age,"* and *"breastfeeding too long with affect the child's intelligence."*

## Complementary feeding – Meeting nutrient intake requirements

This study revealed the gap between the nutritional content of young children's diets and their nutritional requirements. This gap can be addressed through locally available foods that are already prepared for family members in the household. In Lower Egypt, stunting was seen in all age groups (6–8, 9–11, and 12–23 months of age), with multiple feeding problems—no meat/fish vegetable, fruit (6–17 months), and only part of the egg, with small amounts of food given. Mothers withheld food or fed less, and nearly all stunted children were reported to have frequent illness. In Upper Egypt, no stunting was found in all age groups but children 9–11 months old. Children were not fed meat or fish (6–8 months only), and frequently consumed tea or canned juice. Both areas noted limited quality, quantity, and diversity of foods.

Nearly all children lacked sufficient fat and sufficient energy (all in first year, half in second year of life). Children suffered from multiple micronutrient deficiencies, with three-quarters below recommended intakes for zinc, iron (all age groups except 12–23 months), and, to a lesser extent, calcium, where deficiency was found in 9–11 months only. Egypt is a dairy-consuming society; yogurt and white cheese are common complementary foods, which explain why most children met their calcium requirement. Stunted children also suffered from multiple nutrient deficiencies, but to a greater extent and severity than non-stunted children, consumed junk food, and half were frequently ill (Lower Egypt only). Gaps in nutrient intake, identified in our 24-hour recall data, stemmed from mothers feeding children trivial amounts of food, which included little meat/fish intake and little to no fruit and/or vegetable intake, combined with limited diversity of foods and infrequent meals. This finding is supported by our food frequency data, which highlight heavy intake of starches—such as bread, macaroni, and rice—and high junk food consumption.

Protein requirements were met in nearly all children due to frequent intake of lentils or fava beans ("*foul*"). Chicken meat or liver or fish, though available, are either not given to children or fed in very small quantities. Children aged 6–11 months met their nutrient requirements for vitamin A, D, and folate. However, older children, in their second year of life, did not meet these nutrient needs—37% for vitamin A, 46% for vitamin D, and 100% for folate respectively. Children are often covered in clothing in predominantly Muslim societies, such as in in Egypt, and/or often advised by mothers or other family members not to play outside, which may explain their vitamin D deficiency. Some children in the first year of life were given vitamin A-rich foods, such as green leafy vegetables prepared as part of family meals food (such as "*molokhaia,*" also known as Jew's mallow, and spinach and okra), while others ate whole or partial egg.

At the third TIPs visit (see Table 10 in the Appendix), following counseling and mothers trying recommended practices for a 1-week period, improvements in fat, energy, calcium, iron, and vitamin A (slightly improved) were found in non-stunted children. For stunted children, improvements were found in energy, fat, vitamin A, vitamin D, calcium, and iron, with fewer children below nutrient requirements. Energy increased slightly due to increasing numbers of meals and amounts given. The greatest increase was in children 9–11 months old, as 41% more children met the nutrient requirement, an increase in median caloric intake of 143 calories, following trying new nutrition practices.

Calcium and iron increases may have been due to *Seasamina*, though changes in iron were found in a limited number of children—possibly due to few mothers accepting and trying to stop giving black tea to children, a common practice. Little changes in zinc, as meat is eaten by the family 1 or 2 times a week, made it difficult to meet the zinc requirement, although fish is more affordable. Strategies to help mothers give pounded chicken liver as often as possible, as done in TIPs, it may be feasible, as it is economical, and is sold in pieces by weight. Fat intake can be improved also by providing ground fresh peanuts, added to *belila and mhlabia*.

**We discuss some potential ways to achieve promising changes that improve dietary intakes and key counseling messages, by age group.**

## CHILDREN, 6–11 MONTHS OF AGE

As with children 6–8 months of age, quantity, quality, and frequency of intake were not optimal, Mothers give very small quantities of *"simple and light"* foods, continuing to rely on herbal teas and drinks, and introducing junk foods. This finding is confirmed by EDHS 2008 data, which show that slightly less than half of children 9–11 months old consume junk foods.[16] Although some mothers introduce more variety at this age, others limit the types of food children should eat—delaying introduction of "heavy" foods to 1 year of age out of fear of illness or restrict meat intake.

Encouraging gradual increases in amounts of food, by tablespoon, to up to ½ cup per meal, can help mothers to see that children can tolerate larger quantities of food. Having a separate plate facilitates seeing how much the child is eating as well as encouraging the child to finish his/her food, which can be reinforced by the support of other caretakers, like grandmothers or sisters-in-laws. There are several ways to address the trivial amounts of food given, and poor diversity in these young children, through the following messages.

### Key Messages for Children 6–11 Months of Age

Messages should center on increasing the dietary quality, quantity, and frequency of foods that are eaten in this age group, while maintaining breastfeeding for a sufficient amount of time and frequency:

- Continue to maintain breastfeeding, feeding from both breasts, extending feeding times until both breasts are empty.
- Stop giving your child liquids, such as juices and herbal teas/black teas. Feed fruits instead of juices and teas, which reduce the appetite of the child for solid food.

- Feed your child nutritious snacks such as orange, sweet potato, carrot, and *belila* with carrots and orange instead of sugary biscuits, Store-bought small sponge cakes or chips, which are expensive, and have preservatives, coloring, and food additives that can be harmful for your child. Sweetened foods and candies can cause obesity and teeth caries, and suppress the baby's appetite, so he/she will refuse other foods.
- Increase the amount of what you feed your child from 1–2 tablespoons to up to ½ cup (8 tablespoons) and feed your child more often. Give food on a separate plate, to see the quantities. Your child will be happier, will eat more, and have a good appetite.

- Increase the variety of foods you give your child; yogurt and white cheese and other light foods are good, but are not enough for your child to grow well. Your child is ready to digest other foods and will have a good appetite:
  - Feed different types of soft, mashed foods, including available fruits and mashed vegetables, which are family foods (including spinach, zucchini, okra, carrot), or fresh tomato or cucumber at least once per day.
  - Give ground chicken meat or liver, mixed mashed vegetables and rice, and a little oil/*samna* daily. If chicken meat or liver is not available, the child can eat mashed beans or lentils with bread.
  - Prepare eggs in different ways by frying, boiling, or scrambling them and feed once per day, as eggs help growth and improve appetite.
  - Prepare and feed *Seasamina*, a soft local complementary food, and add fruits/ vegetables or lentils/beans to help your child have enough nutritious food.

## CHILDREN 12–23 MONTHS OLD

Nearly half of children are weaned in the age group. Discussing with mothers how continued breastfeeding, along with feeding solid foods, is important for the child's health and mental and physical development is critical. During the second year of life, it is important to maintain both frequency and quality. Dietary diversity is better in this age group but there is room for improvement. The variety and amount of food increased in this age group, which may be due to greater intake of junk food, especially in Lower Egypt.

Junk food consumption is pervasive in the second year of life, increasing with age and peaking in children 18–23 months old. This finding is confirmed by EDHS 2008 data—73% of children 12–23 months of age consumed foods with oil/fat/butter and half consumed sugary foods.[16] Mothers perceive "junk foods" to be easy to give to children, and essential complementary foods. Mothers responded well to TIPs and substituted sugary biscuits, and store-bought small sponge cakes with fruit or sweet potato, convinced of the harmful effects of junk foods (e.g., preservatives, lack of nutrients) and their children's positive reactions to eating fruit instead. Fruit, and sweet potato were all acceptable substitutes for non-nutritive foods in both Upper and Lower Egypt. Mothers and other household members said they were glad to know that they could buy less-expensive foods and that young children should not receive tea.

Along with reducing junk food intake, mothers should be encouraged to add more diversity to the diet, adding animal-source foods and preparing *Seasamina*, according to children's tastes. Meat is eaten only once a week. Affordable and available animal-source foods are chicken liver, sold by weight, or eggs, which are cheaper than chicken and red meat or fish. Some mothers feed chicken liver, and eggs; therefore, ground liver and fried or scrambled whole eggs could be given with greater frequency and/or increased quantity.

There is a heavy reliance on liquids—herbal teas, juices, and black tea. Liquids can suppress appetite for solid foods and cause loss stools. A few studies in the U.S. have linked excessive intake of juice with short stature and obesity and failure of children to thrive.[35,36] Along with increased intake of a diversified range of foods, mothers should be taught to reduce liquid intake and give fruits instead. Tea interferes with the absorption of iron and zinc, exacerbates existing deficiencies.

Mothers need help assessing the amount of food that is given to the child at mealtimes, and offering food on a separate plate can help them ascertain how much the child is eating. Mothers were happy about the children's improved appetite, as children were not hungry, with increased quantities and frequency of meals.

## Key Messages for Children 12–23 Months of Age

- Continue to breastfeed your child until 2 years of age, which will help your child to grow and develop her/his intelligence.
- Stop giving junk foods, which are not nutritious, do not help your child to grow, and are expensive. It is cheaper and better to give a piece of fruit, sweet potato, or pear as snack. Furthermore, preservatives, coloring, and food additives can be harmful for your child. Sweets and candies can cause obesity and teeth caries, and suppress the baby's appetite, so he/she will refuse other foods.
- Stop giving your child black tea, which can cause anemia, prevent iron from absorbing, and cause insomnia so your child will not sleep well. Herbal teas and juices reduce your child's appetite for solid foods.
- Increase the variety of foods you give your child to help your child grow well, in good health, and give him/her an appetite:
  - Feed different types of available fruits and vegetables, like family foods, at least once per day to protect your child from illness.
  - Give dairy products and a portion of ground chicken meat, red meat, fish, or liver, once per day. If these foods are not available, the child can eat mashed beans or lentils with bread—foods that can make your child strong.
  - Prepare eggs in different ways by frying, boiling, or scrambling eggs and feed them to your child once per day, as eggs help growth and improve appetite.
  - Prepare and feed *Seasamina*, a soft local complementary food, and add fruits/ vegetables or lentils/beans to help your child have enough nutritious food.
- Increase the amount of what you feed your child by 1–2 tablespoons up to up to 1 cup (16 tablespoons) and feed your child more often. Give food on a separate plate, to see the quantities. Your child will be happier, will eat more, and have a good appetite.
- Increase how often you feed your child (meals) at fixed times of the day, so your child will eat more and have a good appetite to grow well.

## FEEDING CHILDREN DURING AND AFTER ILLNESS

We did not conduct TIPs with sick children; however, mothers did discuss how they feed children during times of illness. Three children were sick in the 24 hours before the interview—two with fever and one with cough and diarrhea. Guidance for feeding during and following illness is needed to improve IYCF. Mothers mistakenly believe that they must withhold food during illness to prevent further illness, and over-rely on breast milk, when mothers should Increase fluid intake during illness and encourage the child to eat a variety of soft and nutritious foods. After illness, give food more often than usual and encourage the child to eat more. The following points need to be reinforced with mothers when their children are ill:

- Mothers should continue to breastfeed more frequently when children are sick.
- Mothers should feed children small portions, frequently, to fight infection.
- Herbal teas will not be able to fight illness as well as foods that are *"nourishing"* and *"full of nutrients."*
- During the recovery period, for 2 weeks following illness, children can return to a normal diet and receive greater quantities of foods.

# Recommendations

The information collected from this study demonstrates that TIPs is a powerful methodology, as mothers are able to try practices new to them, which were feasible, tailored, culturally appropriate and affordable. Despite poor infant and young child feeding practices, specific, targeted counseling messages given to women through TIPs demonstrate women's ability and willingness to make feasible changes in feeding practices. Women were excited and happy as recommended changes in feeding resulted in improvements in their children's sleep, better appetite, and less illness. Mothers were empowered to improve their child's dietary intake, and marked improvements in nutrient intake were shown, even after only 1 week of adopting new IYCF practices.

This study also revealed the limited understanding of the causes of poor growth was evident in these communities, as a child's growth was often not perceived to be related to poor IYCF practices and/or illness. General education for mothers, other caretakers, and health care providers on what causes poor growth and the link between feeding, illness, and stunting is needed.

Within the context of the SMART project which has provided messaging on breastfeeding, nutrition counseling, as well as growth monitoring, preliminary counseling messages developed from this study were incorporated into the SMART project to improve breastfeeding practices and complementary feeding, including avoidance of junk food disseminated through community health workers. However, these messages were incorporated towards the end of the project. Though mothers' knowledge of IYCF has seen some improvement, operational implementation of the IYCF counseling package developed by this study (i.e., using it to train health care providers ), and rolling it out systematically through the public and/or private clinics (i.e., CDAs) should be considered for future activities.

This study recognizes the large gap between current infant and young child practices and optimal practices in Egypt. Therefore by engaging and counseling mothers to select and try a few IYCF practices that are new to them, programming aimed at the community and health facility levels, can help improve IYCF. Health care providers should be trained on how to deliver messages and counsel on IYCF, using the TIPs counseling guide developed from this study, which can be rolled out through the Ministry of Health and community development associations through community health workers, and other providers (doctors, nurses, midwives). Health care providers need to be trained to correctly monitor children's growth, and to use this information to advise mothers on how best to feed and care for their children during the first 2 years of life.

A comprehensive educational strategy aimed at health care providers and community health workers, as well as tailored messages for mothers, grandmothers; fathers, and other caregivers, should strengthen and reinforce optimal breastfeeding and complementary feeding practices, within the context of reducing junk food given to children less than 2 years of age.

**Key Program and Policy Recommendations for Breastfeeding Practices**

- Develop educational materials, based on messages developed in this study through the TIPs Counseling Guide, and addressing the need to strengthen the promotion of exclusive breastfeeding.[34]
- Provide new guidance and train community health workers, doctors, and other health care providers to counsel mothers on prelacteal feeding, insufficient breast milk, and other breastfeeding problems, and encourage mothers to feed on demand and to feed for longer durations of time. This guidance should support and encourage health providers to not prescribe herbal drinks for children less than 6 months of age using messages developed in the TIPs counseling guide.
- Continuing education about the importance of early and immediate initiation of breastfeeding, without the use of herbal drinks/teas, and of not separating the mother and child after childbirth, with support from the Egyptian Lactation Consultant Association (ECLA), may go far in remedying this problem.
- Strengthen knowledge of the benefits of exclusive breastfeeding through mothers' support groups, which can also include grandmothers as a community-wide strategy.
- Identify mothers who breastfeed on demand and exclusively breastfeed, to act as positive influences and champions, to lead mothers' support groups and share their personal experiences and how mothers can address barriers they face.
- Identify additional champions such as community and religious leaders to reinforce messages on exclusive and continued breastfeeding through sermons at local mosques.

**Key Policy and Program Recommendations for Address Complementary Feeding Practices and Reduce Junk Food in Egypt**

- Develop educational materials, based on messages developed in this study through the TIPs Counseling Guide, and addressing the need to strengthen quantity, quality and frequency of dietary intake, along with continued breastfeeding.[34]
  Train community health workers, doctors, and other health care providers to counsel mothers on optimal feeding practices, and have mothers try a few practices new to them.
- Messages on breastfeeding and complementary feeding need to be given to mothers and their families who do not have this information to improve quantity, quality, and frequency of meals, within the context of reducing junk food. These messages should be disseminated through community health workers and health care providers, and reinforced through cooking classes ("educational kitchens") and through maternal and child health clinics.
- Community-level strategies should prioritize educational messages that target mothers, fathers, grandmothers, community health care providers, and community development associations (CDAs) to not feed junk foods—including sugary, salty foods, and soft drinks—to children less than 2 years of age. Families should be advised that junk food is detrimental to the growth of children and the entire family's health and well-being.
- A national policy on junk food should be developed, stating that junk foods should not be given to children less than 2 years of age and junk foods should not be marketed to young children [37]
- Junk foods should have a warning on the package that they should not be given (are dangerous) to children less than 2 years of age and should be given on a limited basis (once a month) to older children.
- *Seasamina* is a promising and nutritious local complementary food that is affordable and available, that can aid in improving dietary intake. Mothers should be taught variations of the recipe, considering mothers' concerns regarding lack of time, as well as children's tastes and perceptions of color and texture.
- Through surveys, like the EDHS, information should be routinely collected on junk food consumption by children under 2 years of age, which captures the wide range of junk foods consumed (e.g., store-bought small sponge cakes, chips, sugary drinks/soda, sugary biscuits). Messages on complementary feeding, to improve quantity of food, dietary diversity, and frequency of meals, could be expanded through community health workers and health care providers.

# Conclusion

Mothers are committed to the care and feeding of young children, but often lack knowledge and feasible solutions to challenges faced in IYCF. This study revealed that mothers were able to stop/reduce prelacteal feeds and early introduction of foods and liquids prior to 6 months of age, which are detrimental to immediate and exclusive breastfeeding practices. Junk food should not be given in the first 2 years of life, with the message focused specifically on not giving biscuits/pre-packaged cookies in Lower Egypt. Mothers were able to substitute non-nutritive foods with available and affordable nutritious foods and were motivated by the cost savings and children's improved health and appetite. The frequency of meals, amount of food given, and dietary quality are poor throughout all age groups. How often a mother feeds the baby, how much and the variety of foods she gives, including a portion of chicken liver, fish, egg (daily or as often as possible), and incorporating beans/lentils to children, vegetables and fruits once per day on a separate plate should be emphasized, as these were feasible solutions for mothers. Mothers should stop giving juices, herbal teas, and black tea, given the overall dependence on liquids rather than solid foods, which suppress appetite. These practices were more challenging to mothers and require more work to understand how to address liquid consumption in young children. *Seasamina* is a promising recipe to adapt and modify as a local complementary food that is an accessible, affordable, and sustainable way to improve children's dietary intake.

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# Appendix: Egypt Stunting Study TIPs Instrument and 24 hour dietary recall and food frequency tables

**Table 9. TIPs Visit 1: 24-Hour Dietary Recall, Lower and Upper Egypt, by Age Group and Stunted vs. Non-Stunted**

| | Estimated Requirements for Complementary Food | | | Lower and Upper Egypt: Stunted Children (N=13) | | | | | | Lower and Upper Egypt: Non-Stunted Children (N=104) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | 6–8.99 months | 9–11.99 months | 12–23.99 months | 6–8.99 months (N=3) | | 9–11.99 months (N=2) | | 12–23.99 months (N=8) | | 6–8.99 months (N=24), 3 children: 2 sick and 1 refused | | 9–11.99 months (N=28) | | 12–23.99 months (N=52) | |
| Feeding Episodes | 2–3 | 3–4 | 3–4 | Median | % below | Median | % below | Median | % below | Median | % below | Median | % below | Median | % below |
| Energy Kcal/day | 615 | 686 | 894 | 270.38 | 100% | 334.53 | 100% | 958.62 | 50% (N=4) | 411.36 | 92% (N=22) | 461.87 | 100% (N=28) | 899.52 | 50% (N = 26) |
| Protein (g/day) | 4.6 | 5 | 6.6 | 15.62 | 67% (N=2) | 16.31 | 0% | 19.01 | 0% | 17.60 | 0 | 17.25 | 0% | 19.90 | 2% |
| Fat (g/day) | 34% of energy (kcal) | 38% of energy (kcal) | 42% of energy (kcal) | 1.38 | 100% (N=3) | 1.70 | 100% (N=2) | 33.65 | 100% (N=8) | 2.45 | 96% (N=23) | 2.95 | 100% (n=28) | 27.25 | 94% (N=49) |
| Vitamin A (µg RE/day) | 6 mo. = 180 | 7–12 mo. = 190 | 12 mo.= 190; 1–3 yrs. = 200 | 442.20 | 33% (N=1) | 260.80 | 50% (N=1) | 158.50 | 63% (N=5) | 453.30 | 4% (N=1) | 464.03 | 0 | 403.86 | 37% (N=19) |
| Vitamin D (ug/day) | 5 | 5 | 5 | 8.43 | 33% (N=1) | 4.37 | 50% (N=1) | 2.97 | 75% (N=6) | 8.94 | 4% (N=1) | 8.94 | 0 | 8.73 | 46% (N=24) |
| Folate (µg/day) | 6 mo. = 80 | 7–12 mo. = 80 | 1–3 yrs. = 150 | N/A | 0 | N/A | 0 | 73.73 | 100% (N=8) | 88.30 | 7% | 107.06 | 0 | 84.81 | 100% |
| Calcium (mg/day) | 6 mo. = 300 human milk; cow milk = 400) | 7–12 mo. = 400 | 1–3 yrs. = 500 | 249.40 | 67% (N=2) | 294.10 | 100% (N=2) | 371.35 | 63% (N=5) | 350 | 38% (N=9) | 322.80 | 75% (n=21) | 494.65 | 31% (N=16) |
| Iron (mg/day) | 0.5–1 yr. = 9.3 1–3 yrs. = 5.8 | 0.5–1 yr. = 9.3; 1–3 yrs. = 5.8 | | 0.90 | 100% (N=3) | 1.10 | 100% (N=2) | 4.05 | 75% (N=6) | 1.55 | 100% (N=24) | 2.20 | 100% (N=28) | 4.90 | 62% (N=32) |
| Zinc (mg/day) | 6 mo. = 6.6 | 7–12 mo. = 8.4; 1–3 yrs. = 8.3 | | 7.40 | 33% (N=1) | 7.50 | 100% (N=2) | 4.20 | 100% (N=8) | 4.55 | 88% (N=21) | 4.48 | 100% (N=28) | 4.55 | 100% (N=52) |

**Table 10. TIPs visit 3: Lower and Upper Egypt , 24-hour dietary recall, by age group and stunted vs. non-stunted**

| | Estimated Requirements for Complementary Food | | | Lower and Upper Egypt: Stunted children (N=12) – 1 missing sick | | | | | | Lower and Upper Egypt: Non-Stunted children (N+104) – 3 missing, 2 sick, and 1 refused. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | 6–8 months | 9–11 months | 12–23 months | 6–8 months (N=2) 1 missing: sick | | 9–11 Months (N=2) | | 12–23 months (N=8) | | 6–8 months (N=24) 3 missing | | 9–11 months (N=28) | | 12–23 months (N=52) | |
| Feeding episodes | 2–3 | 3–4 | 3–4 | Median | % below | Median | % below | Median | % below | Median | % below | Median | % below | Median | % below |
| Energy Kcal/day | 615 | 686 | 894 | 509.36 | 100% (N=2) | 624.60 | 50% (n=1) | 933.63 | 25% (N=2) | 430.30 | 92% (N=22) | 604.66 | 59% (N=17) | 885.96 | 50% (N=26) |
| Protein (g/day) | 4.6 | 5 | 6.6 | 17.97 | 0 | 23.82 | 0 | 19.33 | 0 | 18.26 | 0 | 18.55 | 0 | 20.69 | 0 |
| Fat (g/day) | 34% of energy (kcal) | 38% of energy (kcal) | 42% of energy (kcal) | 3.34 | 50% | 14.39 | 100% (N=2) | 32.30 | 88% | 2.99 | 83% (N=20) | 4.12 | 54% (N=16) | 25.65 | 44% (N=23) |
| Vitamin A (µg RE/day) | 6 mo. = 180 | 7–12 mo. = 190 | 12 mo.= 190; 1–3 yrs.= 200 | 458.80 | 0 | 254.85 | 50% (N=1) | 244.55 | 50% (N=8) | 444.93 | 4% (N=1) | 440.10 | 3% (N=1) | 408.55 | 35% (N=18) |
| Vitamin D | 5 | 5 | 5 | 11.05 | 50% (N=1) | 9.27 | 50% (N=1) | 8.00 | 38% (N=3) | 10.44 | 4% (N=1) | 11.7 | 0 | 8.73 | 38% (N=20) |
| Folate (µg/day) | 6 mo.=80 | 7–12 mo. = 80 | 1–3 yrs. = 150 | N/A | 100% | N/A | 100 | N/A | 100 | N/A | 93% | N/A | 100 | N/A | 98% |
| Calcium (mg/day) | 6 mo. = 300 human milk; cow milk=400 | 7–12 mo.= 400 | 1–3 yrs. = 500 | 324.90 | 50% (N=1) | 381.45 | 50% (N=1) | 432.70 | 63% (N=5) | 405.90 | 25% (N=6) | 406.50 | 48% (N=14) | 435.25 | 69% (N=28) |
| Iron (mg/day) *10% diet bioavail | 0.5–1 yr. = 9.3 | 0.5–1 yr. = 9.3 | 1–3 yrs. = 5.8 | 8.95 | 50% (N=1) | 3.00 | 100% (N=2) | 6.55 | 38% (N=3) | 2.60 | 96% (N=23) | 3.50 | 86% (N=25) | 5.45 | 100% (N=52) |
| Zinc (mg/day) | 6 mo. = 6.6 | 7–12 mo. = 8.4 | 1-3 yrs. = 8.3 | 4.45 | 100% (N=2) | 3.65 | 100% (N=2) | 4.90 | 100% (N=8) | 4.52 | 96% (N=23) | 4.80 | 100% (n=29) | 4.50 | 100% (N=52) |

**Table 11. Food frequency+ table for children 6–23* months in both Upper and Lower Egypt**

| | | Food Items | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Starches | | | Junk Foods | | | | Porridges and Cereals | | | | Legumes | | | Dairy | | | | | Animal Protein | | | | | Fruits and Vegetables | | | | Liquids | | | | | |
| | | | | | | | | | | | | | | | | | Cheese | | | | | | | | | | | | | | | | | | |
| FREQUENCY | AREA | Bread | Rice | Macaroni | Tubers | Potato chips, store-bought small sponge cakes | Biscuits | Sweets and candy | Cerelac | Rice pudding | Mhalibia | Belila | Foul | Lentils | Taamia | Milk | Karees | Processed | White | Yogurt | Meat | Chicken | Fis | Liver | Eggs | Vitamin A rich | Apple | Oranges | Other | Fresh Juice | Canned juice | Tea | Sweetened herbal tea | Soft drinks | Fats and oil |
| < 3 x week | LE | 67 | 12 | 67 | 59 | 63 | 24 | 49 | 19 | 15 | 2 | 4 | 25 | 17 | 25 | 10 | 5 | 30 | 18 | 23 | 17 | 37 | 34 | 50 | 14 | 22 | 35 | 17 | 32 | 15 | 29 | 19 | 13 | 29 | 7 |
| | UE | 30 | 92 | 8 | 28 | 58 | 33 | 14 | 6 | 5 | 6 | 6 | 8 | 0 | 8 | 31 | 42 | 12 | 11 | 8 | 0 | 11 | 0 | 8 | 28 | 3 | 11 | 25 | 11 | 6 | 29 | 5 | 11 | 8 | 3 |
| > 3X week | LE | 18 | 55 | 5 | 17 | 35 | 20 | 9 | 4 | 3 | 4 | 4 | 5 | 0 | 5 | 19 | 25 | 7 | 7 | 5 | 0 | 7 | 0 | 5 | 17 | 2 | 7 | 15 | 7 | 4 | 5 | 3 | 7 | 5 | 2 |
| | UE | 7 | 4 | 0 | 12 | 5 | 8 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 2 | 0 | 7 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 7 | 12 | 5 | 2 | 0 | 3 | 2 | 0 |

LE: Lower Egypt, UP: Upper Egypt

*Total number of children in each area was 60.

+ Frequencies are presented as the percentage of mothers (N=120, N=60 in each site) who indicated feeding their infants the food item either < or > 3 times per week

## TRUNCATED DATA COLLECTION FORM - FIRST HOME VISIT FOR CHILD, 6–23 MONTHS OF AGE

*Introduce yourself to the mother,* Hello, my name is ----. How are you today? How is your family? Can you explain a little about the plans you have for your family and for your baby?

Today, I would like to talk to you about your child's health, growth and what you feed him/her so we can learn about how to improve programs for child health in your community.

*Interviewer: Read the study participant the consent form.*

### Child health and growth

- In your own words, tell me what you think are the characteristics of a 'healthy' child. Probes: How can a child be healthy? What can a mother do to keep her child healthy?
- How can you tell that your child is growing well? Probes: What are the signs of good growth? What do you do to make sure your child grows well? What are the signs of poor growth? What do you do if you think your child is not growing well?
- How has the growth of children in this area changed during the last 6–7 years (since 2005–2006, is there a political event at this time we could use)? Probe: in Lower Egypt - In what ways have these changes been related to the avian flu epidemic?

### Breastfeeding and complementary feeding

Thanks for sharing that information with me. Now I would like us to talk about how you feed your baby.

- I'd like you to think back to when (NAME OF CHILD) was born. Where did you give birth?
- How long after birth did you breastfeed (NAME OF CHILD) for the first time?

**If it took more than 1 hour, ask the mother:**

  - Could you please explain more about that?
  - Would it have been possible to breastfeed within the first hour after birth?
  - What would have needed to happen to make it possible for you to breastfeed for the first time within the first hour after birth?

- Was the baby given (by you or somebody else) anything to eat/drink before you first breastfed her/him?
- **(If yes)** What was given to the baby?
- Could you please explain more about that.....? **(Ask for each food/drink that was given to the baby)**
- Who gave it to him/her?
- How did they give her/him this....? **(Utensil used. Ask for each food/drink that was given to the baby)**
- Who advised you to give this to the baby**? (ask for each food/drink that was given to the baby)**

- What advice would you give a friend about giving food or drink to a newborn before his/her first breastfeeding?

Now, I would like to talk with you about when your first milk came in and breastfeeding your baby in its first month of life.

- When did you first get your first milk (**colostrum**)? Can you explain what it looks like?
- When did you give that first milk to your baby?
- How did you decide that? Who gave you advice? Why was it important or not good to give?
- What did you do with that first milk? How did you decide that?
- Is there anything that would make you change this practice?
- How could this change be easier for you?
- When (**name of child**) was a newborn (**during the first month of life**), how often did you breastfeed her/him during the day? And during the night?
- How did you know when your baby needed to be fed?
- Did your baby was a newborn (**first month of life**) did he/she sleep more than 3 hours at a time?
- Did you ever wake him/her up to breastfeed?
- Did you ever feel your baby was not getting enough nutrition from breastfeeding?
- Why did you think this?
- During that same period, what problems did you have with breastfeeding? (Probe: Sore/cracked nipples, fever, etc.
- How did you solve these problems? Who helped you?

**If the mother does not feed the child other liquids-food yet, please ask:**

- When do you plan to give other liquids to _____?
  - How do you know when to start?
  - What will you give him/her?
  - How will you prepare this?
  - Who advises you on this?
- When do you plan to give ____ solid foods?
  - How do you know when to start?
  - What will you give him/her?
  - How will you prepare this?

## Current feeding practices

Thank you for sharing that information with me. Now I'd like to talk some more about how you feed (**name of child**).

**Ask the mother if still breastfeeds, please ask:**

- I see you are breastfeeding (**name of child**).
  - What motivates you to breastfeed?
  - What problems or difficulties have you had?
  - How did you solve them?
- How often do you breastfeed? How about at night?
- When do you breastfeed? How do you know when to breastfeed your child?
- How do you know your child likes the breast?
- How do you know your child is hungry?
- How do you know that the child has received enough breast milk during one feeding?
- How long do you plan to breastfeed _____?
- What made you think that way?

**If the mother plans to stop breastfeeding her child before 2 years of age please ask:**

- How could you breastfeed up to 2 years? What conditions would you need?
- Who has given you advice on breastfeeding?
- What advice did you receive? What do you think of this advice?

**If the mother no longer breastfeeds, please ask:**

- I see you no longer breastfeed _____. How old was he/she when you stopped breastfeeding?
- Could you please explain to me about your decision to stop breastfeeding?
- Who advised you on this?

### Please use section according to age of the child, below:

**For women with infants 6–8 months:**

- When was the first time you introduced other types of food – other than milk?
- And what was this type of food?
- What are the usual first watery or thin or semi-solid foods?
- What types of foods and liquids including water and drinks do you give to your child now?
- What types of foods and liquids should older children be given?
- Probes: When did you start giving each one? And how did you prepare each one?
- What were your reasons for starting to give it at that time?
- At what age did you start giving your child soup broth or veggies cooked in water
- How did you know that your child was ready to eat soup broth or veggies cooked in water?

- What age did you start giving your child thin food (define in Egypt)?
- How did you know that your child was ready to eat thin food?

**For women with infants 9-23 months:**

- When is the first introduced other types of food than milk?
- And what was this type of food?
- What are the usual first watery or thin or semi-solid foods?
- What types of foods and drinks do you give to your child now?
- Probes: When did you start giving each one? And how did you prepare each one?
- What were your reasons for starting to give it at that time?
- What are the usual first solid foods?
- At what age did you start giving your child solid food?
- How did you know that your child was ready to eat solid food?
- Tell me about the pattern of feeding throughout the day.
  - Probes: How often do you breastfeed during the day and night?
  - How long do you breastfeed each time?
  - How long did you/do you plan to breastfeed? (If she does not breastfeed), what do you give instead of breast milk?
  - How often do you feed your child food during the day?
- How many meals and snacks? How important is it to have a schedule or routine for feeding?
  - Probes: What happens to your schedule/routine (if any) when you must go out (to work, other venue)?
  - How do you feel about that?
- Is the amount of time it takes to feed your child important to you? Why/why not?
- Do you feed your child when she/he is ill? Do you feed the child during the illness? After the illness? Why or why not?

## Advice about breastfeeding and young child feeding

- What kinds of advice have you received about how to feed your child?
  - Probes: Who gave you the advice (find out about peoples' ages, relation to respondent, etc…)?
  - When was the advice given (e.g., before/after birth)?
  - Whose advice about feeding babies do you trust the most?
  - Why?
  - How do you know what advice to keep and what to ignore?
  - Are there any circumstances where you feel either that what you are being told is wrong or that your child needs something different?

## Alternate caregivers

- Tell me about who other than yourself takes care of your baby.
- Probes: When/how often?
- What do others feed the child?
- Under what circumstances do others feed the child?
- How do you feel about it?
- What about in daycare?

## Cues - hunger/appetite/satiety

- Tell me what you have noticed about differences in appetite between children or at different times for the same child?
- Probes: How do you know when your child is hungry? What happens?
- What do you do when you think your child is hungry?
- How do you know when your child has had enough food?
- Do you ever find it difficult to feed your baby? Why or why not?
- What do you do when your child isn't accepting very much food you offer for lunch or dinner, what should happen?
- Probe on pressure/force to eat; not concerned; talk with others, etc.

## Responsive feeding/Styles of feeding

- What foods do you think it's important for your child to eat daily? How do you make sure she eats those foods?
- What are circumstances when a mother/caregiver should insist that a child finishes all her food? How do you feel if your child touches, explores, even plays with food when learning how to eat? How long would you allow this happen?
- What are all the different ways a mother can encourage her child to eat? Probe on strategies, such as helping, verbalization, role playing, pressuring, etc.).
- How do you know when the child is old enough to start feeding herself, at least some foods? Where do you usually sit when you feed the child and where do you place the child?
- Who usually feeds the child – mother, child, grandmother, other? How has this changed over time?