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# Examining factors associated with the rise in stunting in Lower Egypt in comparison to Upper Egypt

UCLAN Nutrition and Nurture in Infancy and Childhood Conference, Grange over Sands, U.K.

June 11, 2013

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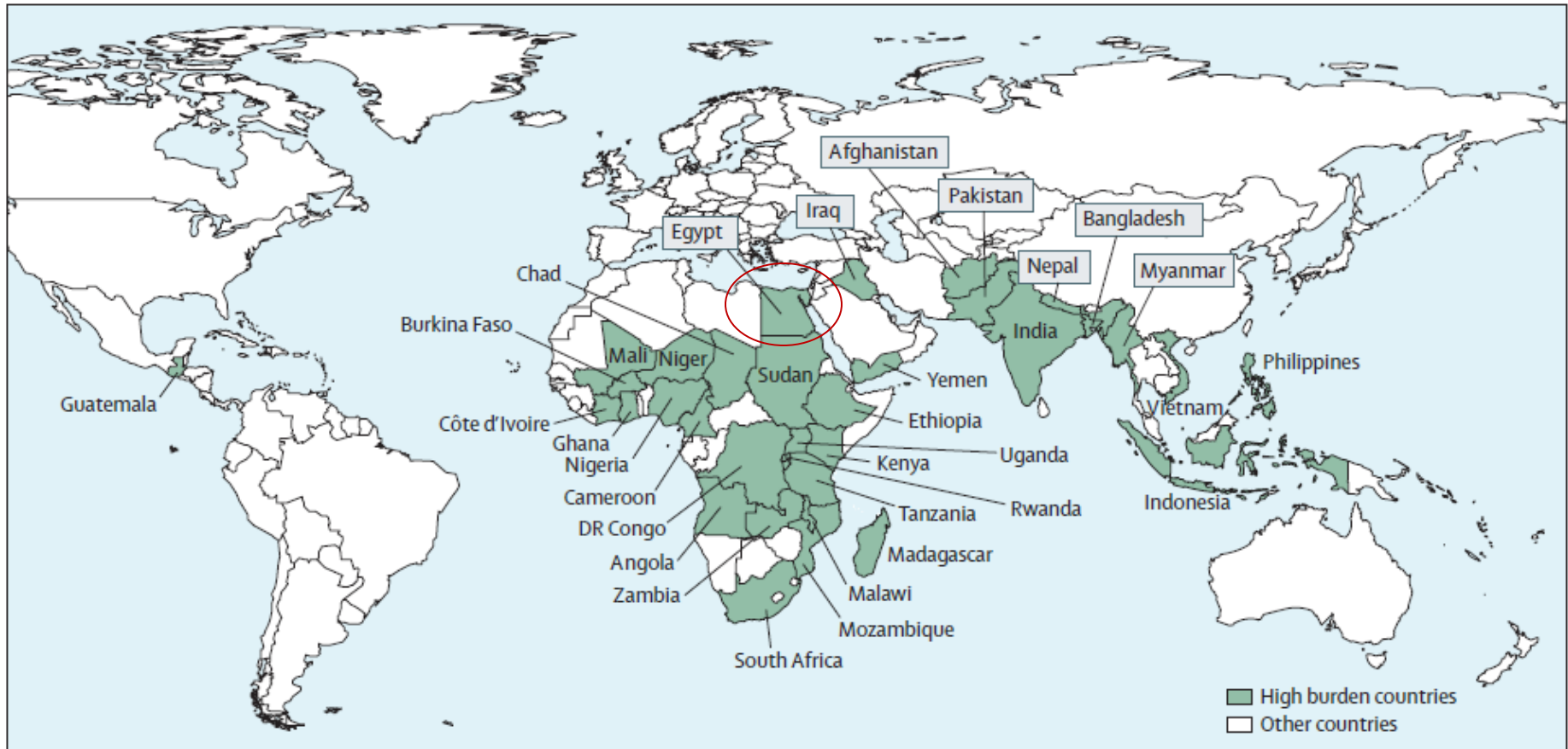


# Acknowledgements:

## Study Team/Collaborators

- Ms. Rae Galloway, Maternal and Child Health Integrated program (MCHIP), United States, Technical Director, Nutrition
- Dr. Sohair Mehanna and Mr. Mohamed Hassan, Social Research Center, American University in Cairo (AUC), local PI
- Dr. Gulsen Saleh, Smart Project nutritionist & local PI
- Dr. Mervat Ahmed Fouad, Dr. Doaa Hamed, Dr. Magda Ramzy, National Nutrition Institute (NNI), Egypt
- Dr. Ali Abdelmegeid, Deputy Director, MCHIP Project Egypt

# 2013 Lancet Nutrition series, Egypt is one of 34 countries that comprise 90% burden of malnutrition



**Figure 3: Countries with the highest burden of malnutrition**  
These 34 countries account for 90% of the global burden of malnutrition.

# Stunting – low height for age is a measure of chronic malnutrition

- Low height for age is a measure of chronic malnutrition or stunting ( $< -2$  SD from median of reference population)
- Better measure of malnutrition on population level because doesn't change with season
- Result of past insufficient/inadequate dietary intake and repeated infection
- Negative impact on life-time mortality, educational outcomes, productivity\*



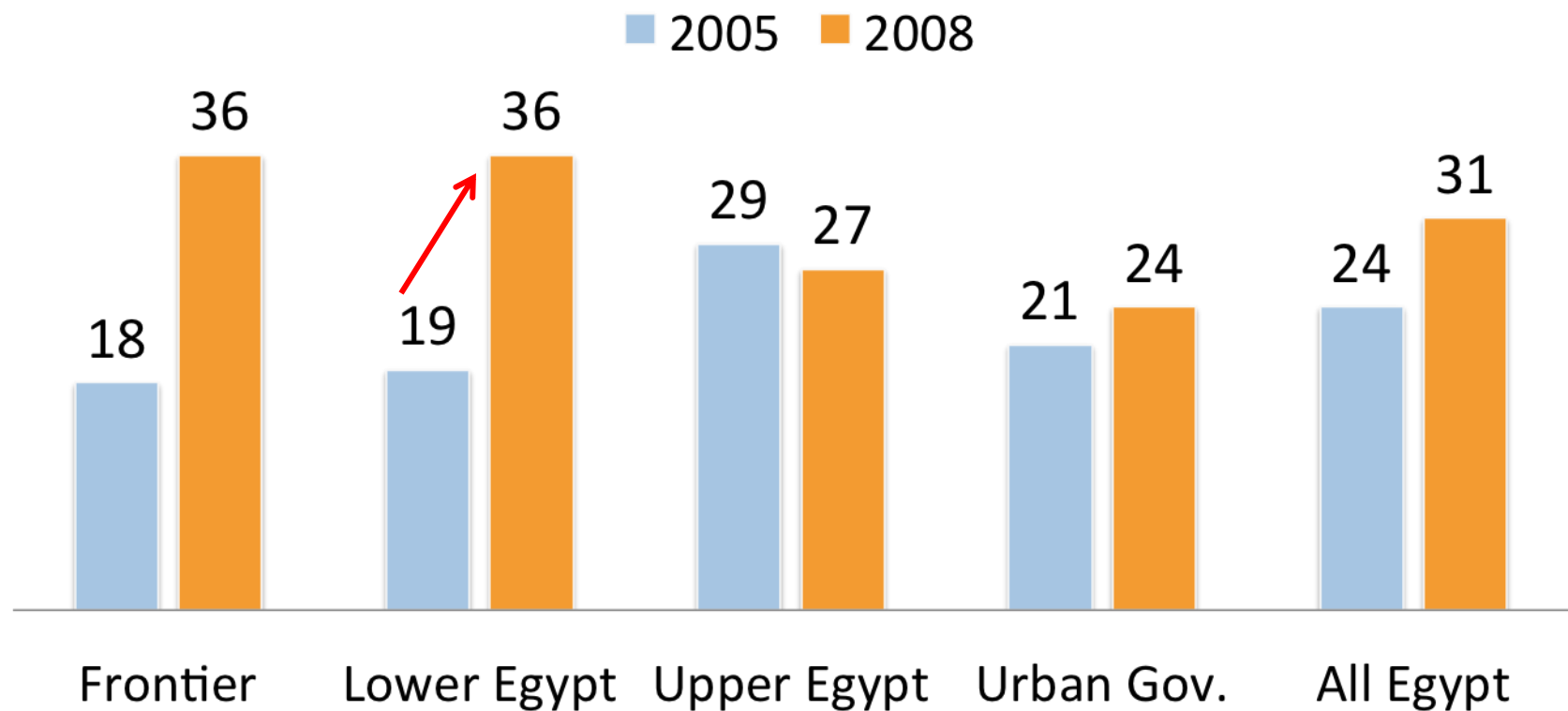
\* Martorell, R. (2008). Malnutrition and hunger. Copenhagen census. Consensus paper 2

# Study Rationale, Objectives, and Methodologies



Rationale: Stunting in children less than 5 years of age has nearly doubled in Lower Egypt vs. Upper Egypt, yet little is known about factors associated with this rise

Egypt Demographic and Health Surveys



# Maternal and Child Health Integrated program (MCHIP) - SMART Project: Working through private sector health care through Community Development Associations (CDAs)

Focus on neglected areas of newborn health and nutritional status of children

Community-based strategies to improve maternal, newborn and child health, nutrition and birth spacing

Strengthen local private CDA clinics, program implementation and delivery of health services

# Prevalence of stunting in Smart project governorates in Lower Egypt is high

National Demographic and Health Survey (DHS), Egypt, 2008

| Governorate        | Prevalence of Stunting (%) |
|--------------------|----------------------------|
| <i>Lower Egypt</i> |                            |
| Qaliobia           | 65                         |
| Sharkia            | 49                         |
| <i>Upper Egypt</i> |                            |
| Assuit             | 33                         |
| BeniSuif           | 28                         |
| Qena               | 28                         |
| Sohag              | 26                         |



# Overall objective for stunting study

- To determine current practices and factors associated with the progression of stunting in Lower Egypt compared to Upper Egypt

# Specific Research Sub-Objectives

1. To examine growth of children in the first year of life to see if there is a “tipping point” to growth faltering
2. To examine barriers and facilitating factors to optimal dietary practices of pregnant women, lactating, non-lactating women
3. To gain an understanding of current feeding practices and problems that can impede dietary intake of children less than two years and determine if mothers can try optimal infant and young child feeding practices that are new to them (Trial for Improved Practices - TIPs)
4. To identify social, cultural and economic factors, that influence infant feeding and care practices including the influence of other family and community members

# How will the information from the study be applied to prevent stunting in Egypt?

- To use information learned from this study to design interventions to prevent stunting in SMART project areas
- To better understand factors associated with stunting so health programs can develop and include targeted interventions and messages to prevent stunting in communities in Egypt

# 4 Part Stunting Study: Focus on Dietary and Qualitative Data from Trials for Improved Practices (TIPs)

\* Data collection completed

Kafr Shokr,  
Qaliobia

Sohag,  
El-Maragha

1. Prospective follow-up of children's growth (birth-12 months) at routine visits

N = 300

Ongoing

2\*  
Maternal diet and weight-gain

N = 120

3. TIPs\*  
Mothers with children less than 2 years

N = 150

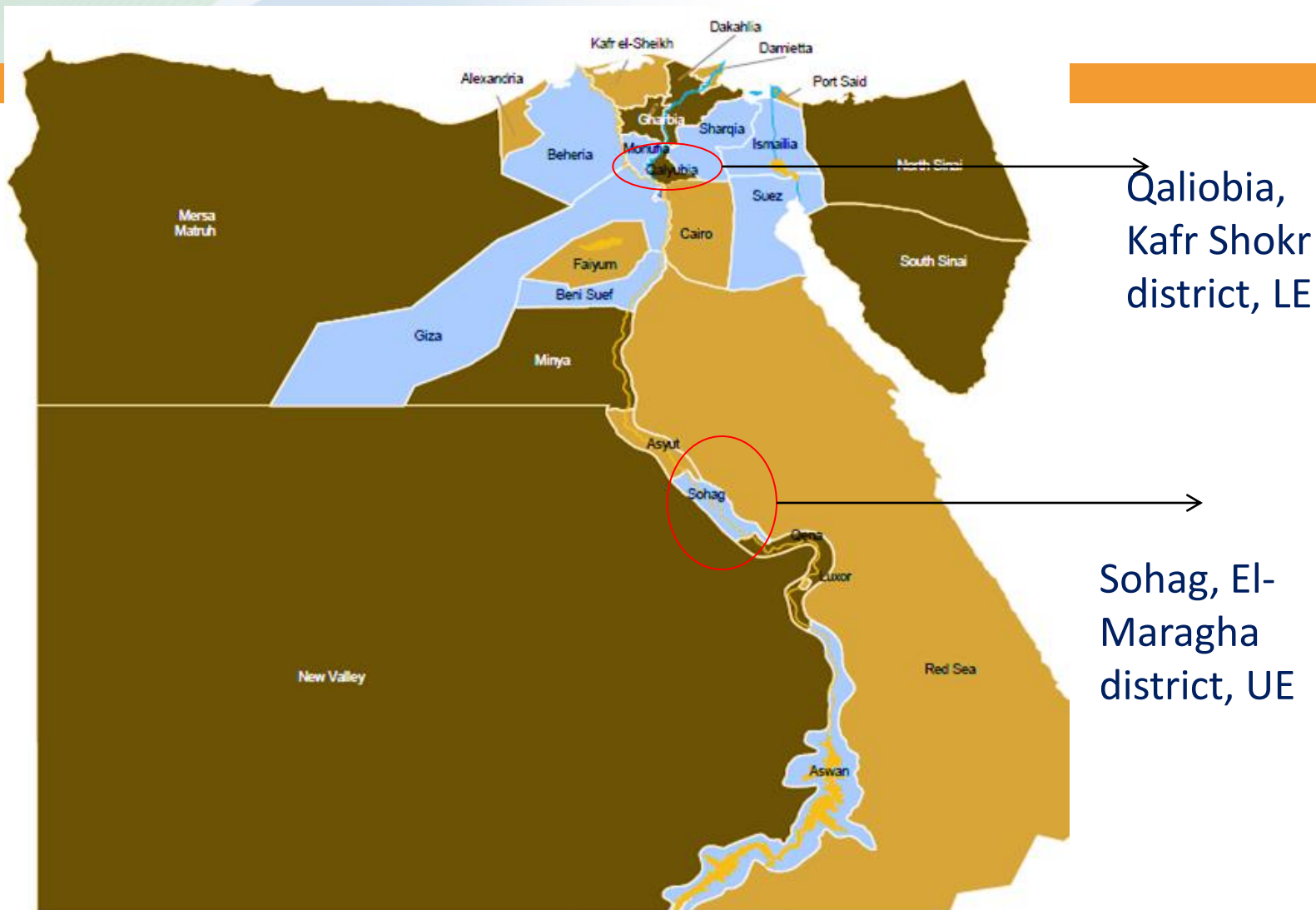
4\*. In-depth interviews on infant feeding with fathers, grandmothers and health workers

N = 40 (each group)

# Study Site and Sampling



# Study sites – Upper and Lower Egypt



# Kafr Shokr District, Qaliobia Governorate, Lower Egypt\*

Population: 42 million, 11.3% poor,  
Muslim

Egypt Delta, north of Cairo

Maize, cotton, wheat, fruits, top  
producer of chicken and eggs; animal  
husbandry

Average family size: 4.06

TIPs sample of mothers:

- 52% secondary education
- 28% college-educated



\*Egypt Human Development Report, 2010, UNDP

# El Maragha District, Sohag Governorate, Upper Egypt\*

Population: 3.7 million, 47.5%  
poor, Muslim

Agricultural – sugar cane,  
grains, clover for animal  
husbandry

Average family size: 4.57

TIPs sample of mothers:

- 56% secondary education
- 15% college-educated



\*Egypt Human Development Report, 2010, UNDP



# TIPs sampling

- 75 children in El Maragha district, Sohag, Upper Egypt
- 75 children in Kafr Shokr district, Qaliobia, Lower Egypt
- Children were selected from age groups:  
0-5.99, 6-8.99, 9-11.99, 12-17.99, 18-23.99
- Every 6<sup>th</sup> child randomly selected from lists of children from Smart project, which reflected the range of households in villages.
  - Lower Egypt – 3 Villages (Kafr Kordy, Kafr Tesfa, Tesfa)
  - Upper Egypt – 5 Villages (El Gherizat, El Shourania; Shandaweel; Nag Abou Awad; Nahiet Amer)



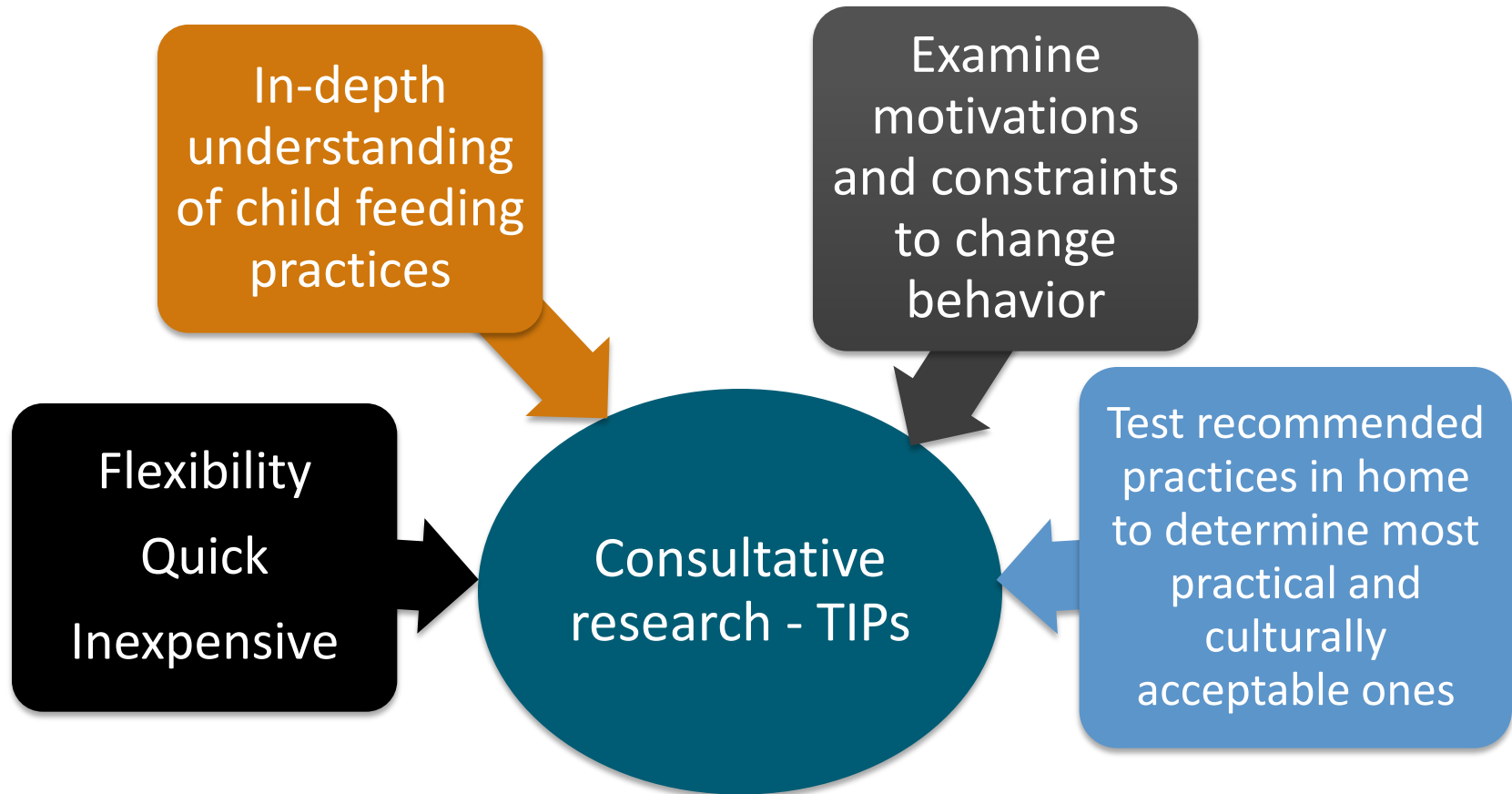
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# Consultative research methods: Using Trials for Improved Practices (TIPs)

# Consultative research with TIPs: Approach to identify simple and effective actions within household to improve children's feeding (Manoff Group, USA)



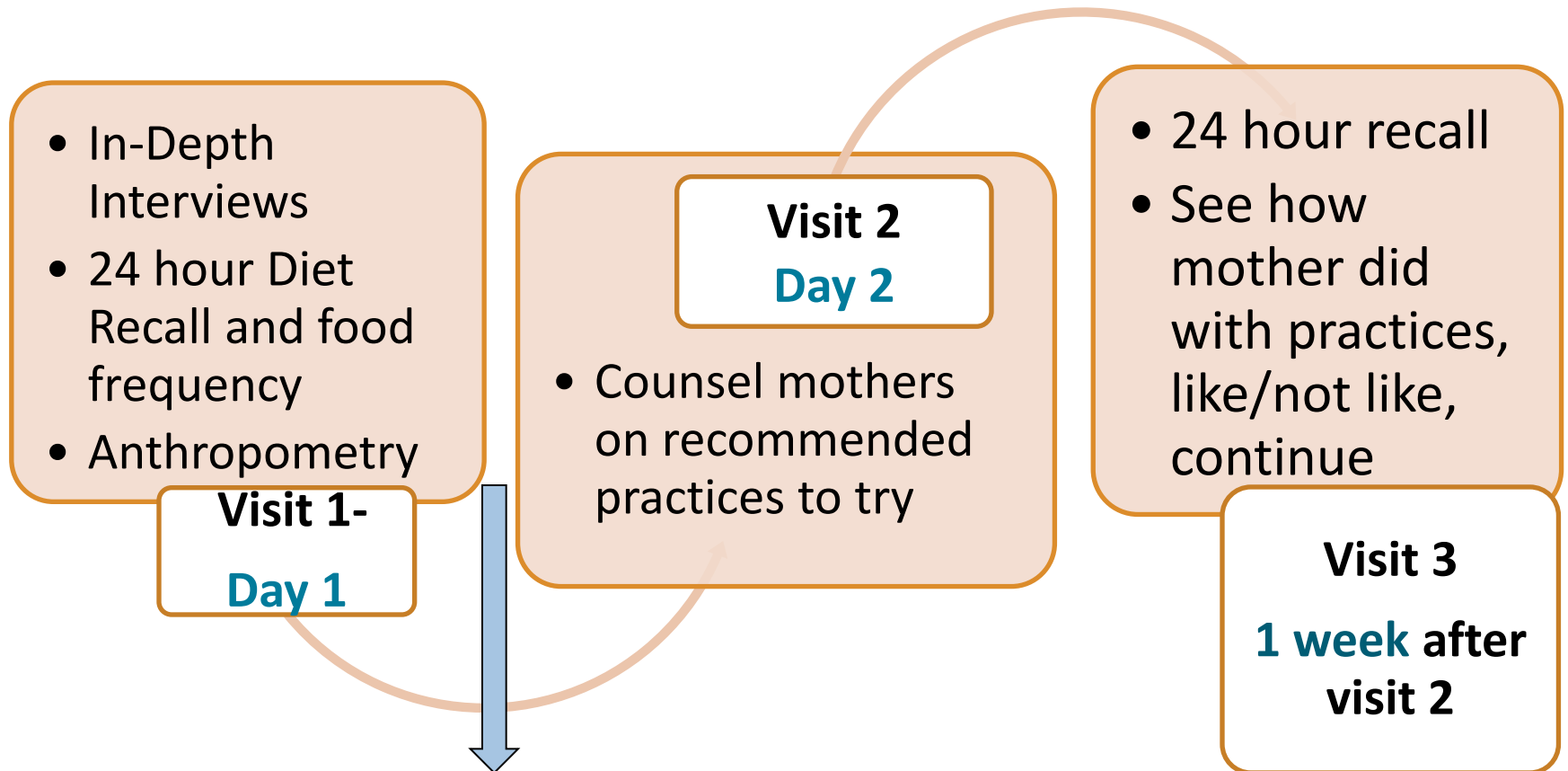
Develop an effective strategy to promote improved child feeding practices for Egyptians

# Trials for Improved Practices (TIPs): all practices should be tested in people's homes before they are recommended



TIPS gives mothers the chance to explore how they can take action themselves to improve their children's health and nutrition.

# TIPS data collection: Three Visits to the mother



Analyze interviews and diet in between Visit 1 and Visit 2, to prepare to counsel mother

# TIPs Preliminary Analysis

## Qaliobia and Sohag



# Mothers value breastfeeding as natural part of motherhood - strengthens the emotional bond & child's physical and mental health and immune system

*“The colostrum came down after 2-3 hours after delivery and I nursed right away as the doctor told me. They say that the child should be nursed right away so that he can feel his mother's love.”*  
{Kafr Tesfa village, Lower Egypt mother}

*“Breastfeeding is good because it prevents illness such as colds and stomach aches.”* {El Gherizat village, Sohag, Upper Egypt.}

*“My sister in law told me that this milk {breast milk} is very nutritive and good for the child's physical and mental health. Nurse the child right away.”*{Shurania village, Sohag, Upper Egypt}.

# All mothers give colostrum and believe breastfeeding helps the child's growth and development

*“I heard that colostrum is very beneficial, so I made it a point to breastfeed right after delivery. I will always breastfeed, that is what I did with all my 3 children. Also my mother and doctor advised me to breastfeed. The doctor said it develops the child's brain and physical body. Mother's milk is nutritive and clean however with artificial milk you don't know if the water used is clean or not.”{Tesfa village, Qaliobia, Lower Egypt}.*





The Qu'ran supports breastfeeding for 2 years - some mothers over-rely on breastfeeding. Other mothers believe breastfeeding longer than 18 months can negatively affect mental development

*“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.” {Tesfa village, Qaliobia, Lower Egypt}.*

*“I plan to wean Ziad after a year and a half because some people said that breastfeeding the child for two whole years or more would affect his intelligence and also the doctor and some neighbors said the same.”{Tesfa village, Qaliobia}.*

Doctors recommend herbal infusions/drinks after delivery, which delay initiation of breastfeeding, especially for women with c-sections in Lower Egypt



# 11.7% of children were stunted in Lower Egypt 10 % of children in Upper Egypt, in TIPs sample

| Age Group (months) | Lower Egypt Qaliobia (# of Stunted total N=60) | Upper Egypt Sohag (# of Stunted total N = 60) | Total |
|--------------------|--|---|-------|
| 6-8.99             | 1  | 2   | 3     |
| 9-11.99            | 3  | 0   | 3     |
| 12-17.99           | 2  | 2   | 4     |
| 18-23.99           | 1  | 2   | 3     |
|                    | 7  | 6   | 13    |

\*All were stunted and normal weight, except 2 overweight

Table 1. Percentage of stunted children below recommended nutrient intakes, according to age (0-6, 7-12, 1-3 years), (N= 13), preliminary analyses

| Variable, from 24 hour recall | % stunted (N= 13) children below WHO & FAO 2004 Requirements* |
|-------------------------------|---|
| Energy kcal/day               | 69  |
| Protein g/day                 | 69  |
| Calcium mg/day                | 62  |
| Iron mg/day                   | 62  |
| Zinc mg/day                   | 39  |
| Vitamin A ug retinol equiv.   | 62  |
| Vitamin D mg/day              | 62  |

\*Human vitamin and mineral requirements, Second Edition, WHO & FAO 2004, Human Energy Requirements, Joint UNU/WHO/FAO consultation, 2001

## Reasons for nutrient deficiencies, dietary patterns in stunted children

- Low protein intake – small amount of various kinds (meat/lentils)
- Low intake fresh vegetables and fruits, especially those vitamin A-rich.
- No intake of eggs, or incomplete egg (either yolk alone or albumin alone).
- Daily intake of junk foods, “chipsy” (store bought potato chips) and “karate” (locally made chips)
- The amount of food is trivial.
- Frequent daily intake of tea.
- Vitamin D: children not play outside/covered





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# Case Study of Stunted Child, Lower Egypt

## 11 month old, Adam

## Feeding Problems (1<sup>st</sup> visit)

- Dietary recall: Intake of 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 fed only egg yolk 4 times a week
- Baby not fed dairy products
- Baby fed less than 8 tablespoons of food at each meal

## Recommended practices (2<sup>nd</sup> 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 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, “sasamina” with vegetables.
- Feed baby whole egg boiled, fried with oil, mixed with mashed potato
- Feed baby yoghurt, cheese daily
- Gradually increase amount of food give baby at each meal to 8 tablespoons

# Motivations – ways to counsel mothers on practices to try

- 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 meats
- Dairy products build bones and teeth so baby can grow strong and better



# What practices did the mother try?

## Did she like and agree to continue with them?

- 2<sup>nd</sup> visit (counseling) – mother agreed to try all proposed practices for 1 week
- 3<sup>rd</sup> visit – Nutrient intakes increased. Mother tried, liked and agreed to continue:
  - Feed baby yogurt daily
  - Fed baby the whole boiled egg daily
  - Made “sasamina” local complementary food (chickpeas, wheat flour, little oil) with replacing flour with well-cooked rice
  - Feed baby spinach with rice
  - Made fresh juice from carrot and orange
  - Fed baby a portion of meat/chicken liver with rice or vegetables

# Junk food consumption is a feeding problem identified in both sites, greater in Lower Egypt



## Feeding Problem

- Baby is fed **non-nutritive liquids or foods** (orange fizzy beverages, chips, twinkies/”nighty”)

## Motivation

- **Not nutritious** for baby, do not help him/her grow
- **Very expensive** – cheaper, better to buy egg or fruit.
- **Preservatives, coloring, and food additives** can be harmful for your baby

## Recommended practices to try

- Give half of banana, a piece of sweet potato or pear as a snack
- Prepare homemade fried potato instead of chips
- Feed natural fresh homemade juices (carrot, tomato, orange)

# Consumption of sugary foods/ candies begins as early as 9 months in Lower Egypt & later at 17 months in Upper Egypt



## Feeding Problem

- Baby consumes a lot of sugary foods and candies

## Motivation

- A lot of sugars are harmful to your baby and may cause obesity and teeth (dental) caries
- Suppress baby's appetite and make him/her refuse other foods

## Recommended practices to try

- Decrease amount of sugar and candies baby consumes
- Give date bars instead of chocolates

# Feeding patterns & differences found between stunted children in Qaliobia vs. Sohag

## Qaliobia, Lower Egypt

- Stunting- all age groups, multiple feeding problems
- No meat/fish eaten, all age groups
- No vegetable and/or fruit consumption, 6-17 months
- Only part of egg given
- Overreliance on breastmilk
- Small amounts /less meals
- Most ill, withhold/less food

## Sohag, Upper Egypt

- No stunting: 9-11 months
  - No meat/fish (only 6-8 months)
  - No vegetables given across all age groups
  - Tea / canned juice
- \* Both areas, quality, quantity, diversity of foods is limited.

# Implications and next steps

- Address misperceptions/ knowledge of doctors
- Counseling information will be used to develop tailored messages for Lower and Upper Egypt
- To document recipes tried and modified by mothers
- Continue to analyze dietary information to understand the pattern of junk food consumption, address household consumption

# Thank you (Shukran)!

