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Leveraging Agricultural Interventions for Improving Nutrition in Egypt

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AGRICULTURAL INTERVENTIONS CAN REDUCE THE BURDEN OF MALNUTRITION

Reducing malnutrition requires commitment from stakeholders, multi-sectoral collaboration, and the effective implementation of large-scale nutrition-specific and nutrition-sensitive programs and policies (FAO 2016; Development Initiatives 2018). Evidence suggests that agriculture is one of the sectors with promising positive effects for tackling malnutrition (Ruel and Alderman 2013). Agriculture can affect nutrition through six main pathways: 1) providing direct access to food from own crop and livestock production; 2) providing a source of income from the sale of commodities produced and from wages for agricultural labor; 3) affecting food prices through the interplay of demand and supply in local, national, and international food markets which influence food affordability and substitution; 4) affecting women's social status and empowerment, which governs their access to and control over resources; 5) affecting women's time use from participation in agricultural work; and 6) affecting women's health and nutrition from engagement in agricultural activities.

While there is broad consensus about the existence of these agriculture-nutrition pathways, there is relatively weak empirical evidence on how to effectively leverage agricultural interventions for improving nutrition outcomes. There is also little empirical evidence on agricultural programs for promoting nutrition-sensitive value chains, such as those for horticultural produce (Ruel, Quisumbing, and Balagamwala 2018). In addition, different agricultural production systems seem to have been neglected by researchers examining the links between agriculture and nutrition. An example is agriculture under full irrigation, which allows for year-round agricultural production, as in the case of Egypt. Furthermore, the success of nutrition-sensitive agricultural interventions in countries in the Middle East and North Africa has not been examined in much depth.

Photo credits: O. Ecker

To narrow this knowledge gap, a smallholder farm household survey was conducted in six governorates in Upper Egypt in April and May 2018 following the winter cropping season.[1] The survey provides comprehensive information on agriculture, nutrition, and health. Specifically, the study sought to identify potential levers and challenges along the agriculture-nutrition impact pathways, with attention to value chain development approaches for promoting horticulture. This policy note presents findings from the survey. It should be useful in the design and implementation of nutrition-sensitive agricultural programs in Upper Egypt.

FARM HOUSEHOLDS IN UPPER EGYPT PURCHASE MOST OF THEIR FOOD AND SELL MOST OF THEIR CROPS

The sample of households surveyed was restricted to farm households with at least one smallholder farmer, that have less than 10 feddans of land, and which have cultivated horticultural crops, i.e., fruits, vegetables, or herbs and spices, in the past. In total, 2,246 households were interviewed. Food consumption accounts for about 60 percent of total expenditures for the interviewed households, with those in the bottom quintile of households based on total household expenditures and consumption per capita devoting 67 percent of their expenditures to food. This high share of food in household expenditures suggests that poverty is prevalent among smallholder farming households in Upper Egypt and that many will have limited financial resources to spend on other necessities and to cope with economic shocks.

The farm households purchase most of the food that they consume rather than consuming what they produce – only 20 percent of the value of the food the survey households consume comes from their own farms. In parallel, farmers cultivate crops almost exclusively for commercial purposes. Only small quantities of produce are kept for own consumption. For vegetables, the lowest marketed share was for onions, at 70 percent. The share

[1] The farm household survey was conducted in six Upper Egypt governorates – Assiut, Beni Suef, Luxor, Menya, Qena, and Sohag. The full study report (El-Enbaby et al. 2019) is available at https://www.ifpri.org/publication/characteristics-smallholder-farm-households-upper-egypt-implications-nutrition-sensitive.

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of the harvest that was sold for other crops ranged from around 83 percent for green beans to 98 percent for marjoram. Moreover, harvests are aligned to market demand rather than home consumption needs. This implies that strengthening through agricultural interventions the own-consumption driven agriculture-nutrition pathway is unlikely to substantially improve the diets and nutritional status of farm households in Upper Egypt. On the other hand, the strong commercial orientation of farm production in the region suggests that access to food markets and the level of food prices, both absolute and relative, are among the more important determinants of food and nutrition security among these smallholder farm households.

Patterns of food consumption and dietary diversity show that smallholder farm households in higher expenditure quintiles have higher household dietary diversity scores than those in lower quintiles. Moreover, better-off households spend more on food from food groups with higher nutritional value, such as animal-source foods, fruits, and vegetables. This reliance of markets for nutritious foods implies that the second agriculture-nutrition pathway driven by farm income generation is likely critical for improving diets and nutrition. This finding provides a nutrition-related rationale for promoting income-generating agribusiness.

BETTER FARMING PRACTICES CAN LEAD TO HIGHER FARM INCOME AND IMPROVED DIETS

It also implies that increasing farm income among smallholder farmers through making farming practices more sustainable and productive may also have a significant potential for improving diets. This could be done through promoting more efficient water use through introducing drip and sprinkler irrigation systems; reforming irrigation-related policies, such as water subsidization policies; and making more efficient use of fertilizer and pesticides, among others.

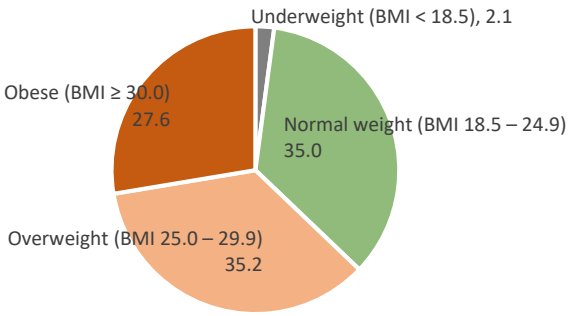
On the other hand, given the minor role of the own-consumption pathway in linking agriculture with nutrition in Upper Egypt, these results also mean that, all things being equal, non-agricultural nutrition-sensitive interventions should be targeted to both farming and non-farming households to improve their diets and nutrition outcomes.

ADEQUATE NUTRITION KNOWLEDGE IS NOT ENOUGH FOR ACHIEVING GOOD HEALTH

Women within the smallholder farm households (around 90 percent of whom are spouses of the main farmers) seem to acquire good general dietary and nutrition knowledge, but with some critical gaps. For example, only one-third of these women correctly reported that reducing sugar and soft-drink intake is important to control body weight. Similarly, very few women noted that lack of physical activity is a key driver of unhealthy weight gain. This suggests that the nutritional impact of nutrition-sensitive agricultural programs could be leveraged by combining them with nutrition education and behavioral change communication interventions (Ruel, Quisumbing, and Balagamwala 2018). Without interventions to improve nutrition knowledge and practices, higher household income may simply result in increased consumption of calorie-dense foods, such as sugary and fatty foods, leading to an increase in overweight and obesity.

High rates of overweight and obesity among women in the sample households are seen. Among 19 to 45 years old women, 35 percent were found to be overweight, and 28 percent are obese (Figure 1). The prevalence of underweight women is low.

Figure 1: Anthropometric measurements of women aged 19 to 45 years



Source: Own estimation, based on farm household baseline survey.
Sample size: 2,471.

WOMEN RARELY ENGAGE IN AGRICULTURE

Only about 12 percent of the spouses of the (exclusively male) farmers surveyed reported engaging in any farming activities, while 84 percent considered themselves to be housewives. Hence, interventions that aim at improving nutrition through increasing women's control over agricultural resources, empowerment in agriculture-related decision making, and time use from participation in agricultural work are unlikely to have a meaningful impact on nutrition in Upper Egyptian smallholder farm households. Thus, the fourth, fifth, and sixth gender-related pathways of leveraging agriculture for improved nutrition discussed earlier appear to be less promising in the context of small-scale agriculture in Upper Egypt, compared to the other pathways.

BEHAVIORAL CHANGE COMMUNICATION TO IMPROVE INFANT AND CHILD FEEDING

There are additional areas where behavioral change communication interventions may contribute to improvements in nutrition. These include infant and child feeding knowledge and practices. For example, even though all of the interviewed women know that colostrum should be fed to newborns, and many of them

Table 1: Anthropometric measurements of children aged 0 to 59 months

Height-for-Age z-score (HAZ), mean (SD)	-0.8 (1.4)
Weight-for Height z-score (WHZ), mean (SD)	0.3 (1.2)
Body mass index z-score (BMIZ), mean (SD)	0.3 (1.2)
Stunted (HAZ <-2.0), %	17.9
Wasted (WHZ < -2.0), %	1.7
Risk of overweight (BMIZ > 1.0), %	27.3
Overweight (BMIZ > 2.0), %	7.3
Obese (BMIZ > 3.0), %	2.8

Source: Own estimation, based on farm household baseline survey.
Sample size ranged from 1,203 to 1,219.

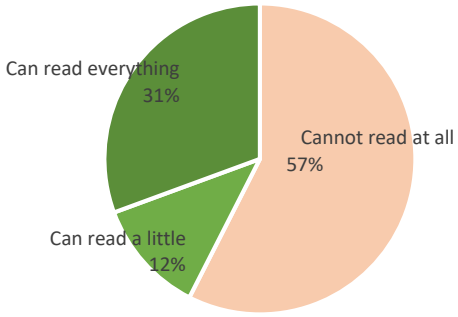
are aware of the key health benefits for their children, less than 60 percent correctly reported that newborns should be breastfed immediately after birth. Women also know about the importance of exclusive breastfeeding, but only about one-third of the children below six months of age in the survey sample were reported to have been exclusively breastfed in their first six months of life.

Child malnutrition—in terms of both chronic undernutrition and overnutrition—is widespread among the farm households surveyed: almost 18 percent of children under five years of age were stunted, and over 25 percent were at risk of being overweight (Table 1). Feeding practices for children 6 to 23 months of age are often inadequate. The diversity of the diet fed to children is limited, meal frequency is largely suboptimal, and few children are fed iron-rich foods.

BEHAVIORAL CHANGE COMMUNICATION CHALLENGED BY LOW LITERACY RATES

A key challenge to any intervention is the low literacy rate among this smallholder population, especially among women. Nearly 60 percent of all interviewed mothers of children under 5 years of age cannot read (Figure 2). Interventions that require reading skills, such as nutrition and health-related information and education provided through phone messages, are likely to have low uptake and hence low impact, even though mobile phone coverage is nearly universal. Face-to-face communication, hands-on training, and picture-based messaging likely will offer more promising results, despite being considerably more resource-intense to implement.

Figure 2: Mothers' reading skills



Source: Own estimation, based on farm household baseline survey.
Sample size: 1,817.

CAREFUL DESIGN OF CONTEXT-SPECIFIC NUTRITION-SENSITIVE AGRICULTURAL INTERVENTIONS IS CRITICAL

The results from our analysis in combination with findings from the research literature provide guidance on how agricultural projects can be leveraged to improve nutrition. This policy note stresses the importance of taking into consideration the target population's characteristics in designing projects to achieve improved nutrition. This is particularly important in identifying the communication tools that can best deliver the information and knowledge required to improve the nutrition of farming households in Upper Egypt.

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