

AFFORDABILITY OF NUTRITIOUS COMPLEMENTARY FOODS IN **ETHIOPIA**

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WHY DOES AFFORDABILITY OF COMPLEMENTARY FOODS MATTER IN ETHIOPIA?

Ethiopia is the second-most populous country in Africa with a population of 105 million people (1), 30% of whom live below the national poverty line (2). Despite having one of the highest rates of GDP per capita growth in the world over the last ten years, Ethiopia remains a low-income country (3,4). The agriculture sector is dominated by smallholder farmers, who are responsible for 95% of agricultural production, but most farmers produce only about half of their food intake requirements (5). Since the 1990s, life expectancy at birth has increased by almost 20 years and under-five and infant mortality have decreased by 30–40% (6–8). Despite these gains, child undernutrition is a persistent problem, with 38% of children under five stunted and 86% of children aged 6–23 months not consuming an adequately diverse diet (9). Limited accessibility and affordability of nutritious and safe foods are primary drivers of the persistently high burden of undernutrition among young children (10).

Many children in the complementary feeding period (ages 6–23 months) in Ethiopia do not consume enough iron, zinc, vitamin A, calcium, and animal-source protein, which hinders growth and development (11). Inadequate physical and economic access is one of the primary barriers to consumption of foods rich in these important nutrients. However, the extent to which affordability is a barrier for specific nutrients, which foods are the most affordable sources of these nutrients, and which households are able to afford them in adequate quantities for young children is unclear. This brief summarizes the affordability of nutritious complementary foods that could fill important nutrient gaps and discusses implications for programs and policy.

KEY MESSAGES

- Several foods commonly available in Ethiopia are rich in nutrients lacking in young children's diets. However, resource-constrained households (the lowest spending 10–20%) struggle to afford enough of these nutritious foods to meet even 50% of their under-two children's dietary requirements for energy, protein from animal-sources, calcium, zinc, and iron.
- While a dietary gap in vitamin A persists, it is not primarily due to affordability: almost all households can afford enough foods rich in vitamin A (dark green leafy vegetables, beef liver, carrots, pumpkin, and chicken liver) to meet 100% of needs.
- The most affordable foods to fill nutrient gaps are **split field peas** (energy, zinc), **lentils** (iron), **dark green leafy vegetables** (iron, calcium, vitamin A), **cottage cheese** (protein), **milk** (protein, calcium, zinc), **beef** (zinc, protein), **beef liver** (vitamin A), **carrots** (vitamin A), **pumpkin** (vitamin A), and **chicken liver** (vitamin A).
- In the short term, providing **transfers** (cash or in-kind) or, for some nutrients, commercial and point-of-use **fortification**, as well as **supplementation** may be necessary to address child undernutrition among **resource-constrained** households. In the medium-to-long term, efforts to promote **home production** of nutritious foods, **lower prices** of these foods, and **raise incomes** are crucial.

METHODS

Using household expenditure data from the 2015–16 Household Consumption and Expenditure survey (HCE) (12), we divided 5,808 households with children under two¹ into deciles based on their current food expenditure, adjusted for household size and composition. This metric corresponds well with food insecurity indicators, as food insecurity is more common in lower-expenditure deciles and less common in higher deciles.² The analysis assumes lower-spending households are more economically constrained and thus less flexible in how they allocate resources devoted to food. Households in the bottom decile (decile 1) are assumed to be able to reallocate only 1% of total food expenditure towards nutritious foods for young children, households in the second-lowest decile (decile 2) 2%, and so on, with households in the highest decile (decile 10) assumed to be able to reallocate 10% of current spending. As nutrients are generally obtained from a combination of foods, we analyzed whether households could afford to meet half of the daily requirements for energy, protein, iron, vitamin A, calcium, and zinc for their under-two children through specific foods. Specific foods were chosen because of their nutrient content and availability in Ethiopia. For protein, only animal-source foods were used since plant sources of protein are generally not complete in essential amino acids critical for child growth and development (13). Maize porridge with sugar was included in the analysis of energy to compare its affordability with more nutritious foods. The analysis calculated the cost of realistic portion sizes required to meet the 50% threshold using price data from the HCE (12). If a household's re-allocable food expenditure exceeded the total weekly cost of a food portion for all children under two in that household, then that food portion was considered affordable.

HOUSEHOLD EXPENDITURE AND CONSUMPTION PATTERNS

On average, households spent 58% of their total expenditures on food. Purchases made up 63% of food expenditures (i.e., total value of food from all sources) while 37% came from own production and other sources. Average food expenditure in the lowest decile was about half of average household expenditure and five times lower than in the highest decile. Households allocated one third of food expenditure to cereal products (Figure 1). Frequently consumed cereals included maize flour, teff flour, pasta, bread, rice, and sorghum flour. All other food categories each made

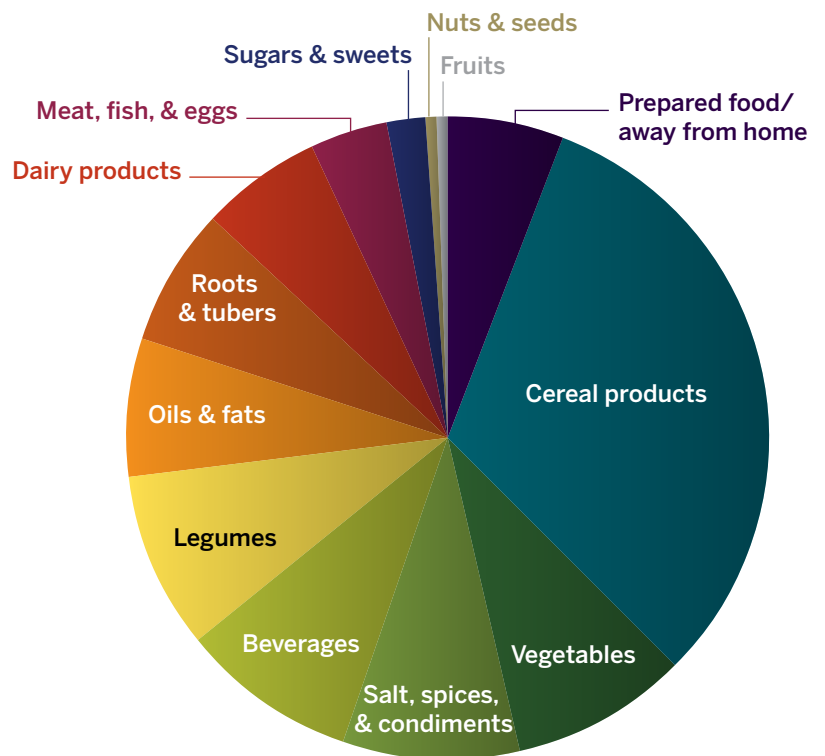


Figure 1. Breakdown of total food expenditures

1 Households with children under two were used because data on children's age in months was not available, and thus households with children in the complementary feeding period (6–23 months) could not be identified.

2 Correlations between current food expenditure and food insecurity indicators were tested using data from Tanzania and South Africa.

up less than 10% of total expenditures, although vegetables and legumes were also very commonly consumed. Consumption of animal-source food was not common, with 41% of households consuming dairy products (mostly cow milk) in the prior week but fewer than one in four households consuming meat, fish, or eggs. Dairy was the only food category for which foods were more often consumed from own production than from purchases.

AFFORDABILITY BY NUTRIENT

Energy

Few households in the bottom four deciles are able to meet 50% of their young children's energy needs from the examined nutritious foods at current prices (Table 1). The most affordable nutritious sources of energy are split field peas and groundnuts, but they are unaffordable to one in three households. Even with price reductions, these foods will remain unaffordable to the lowest-spending 20% of households. While porridge is a more affordable source of energy, it lacks key nutrients unless fortified or prepared with more nutritious foods like milk or eggs, which reduces affordability.

Animal-source protein

Most households in the bottom two deciles and some in the bottom five are unable to meet 50% of young children's protein requirements from animal sources. Cottage cheese is the most affordable source of protein but is only affordable to most households above decile two. Price reductions for cottage cheese could help some households, but even if the price were halved many households in the bottom decile would still be unable to meet protein needs with animal sources. Fresh cow milk,³ beef, and eggs are the next most affordable options and could be purchased in adequate quantities by many households in the fourth decile and above and some in the second and third deciles.

Iron

About half of households in the lowest decile and some in the second are unable to afford 50% of young children's iron requirements through food. Most households in decile three or four and higher can afford to meet 50% of young children's iron needs with Ethiopian mustard greens or lentils. However, this iron is less easily absorbed by the body than that from animal-source foods. Only above decile five can most households afford the necessary quantities of animal-source foods (beef liver) to meet 50% of young children's iron needs. Commercial and point-of-use fortification, biofortification, supplementation,⁴ and increased home production are also options for supplying additional iron to diets.

Vitamin A

Vitamin A only presents an affordability barrier to a small fraction of households in the lowest decile. Almost all households can afford enough beef liver, carrots, mustard greens, pumpkin, or chicken liver to satisfy 50% of vitamin A needs. Milk and eggs are also affordable sources of vitamin A for a large majority of the population above decile two.

3 It is recommended that children under 12 months of age do not consume milks (flavored or plain) (13).

4 Some potential risks have been associated with supplemental iron in children with adequate iron status. Products with low iron doses may be more appropriate in this context.

Calcium

Meeting calcium needs is challenging for most households in the lowest decile. Ethiopian mustard is the most affordable option for meeting calcium needs and is affordable for many households in the second decile and higher. Milk is also an affordable option for some households in the third and fourth deciles and most in deciles 5–10.

Zinc

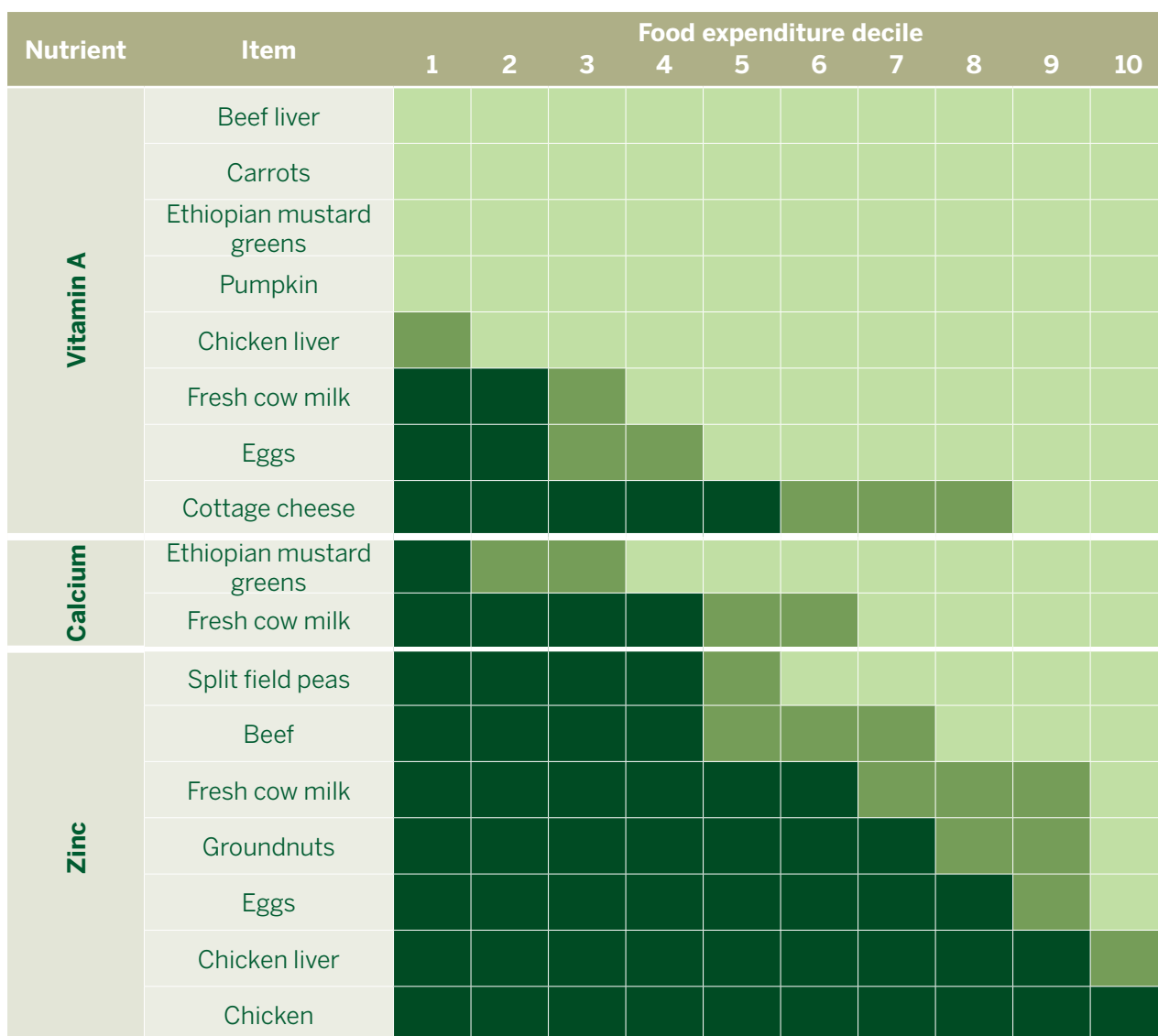
Almost no households in the lowest and second-lowest deciles, and few in deciles three and four, can afford enough zinc-rich foods to meet 50% of young children's zinc needs. Split field peas and beef, the most affordable options, are only affordable to most households in deciles five and above.

Table 1. Proportion of households per decile able to afford foods meeting 50% of daily requirements of children under two

Nutrient	Item	Food expenditure decile									
		1	2	3	4	5	6	7	8	9	10
Energy	Maize porridge ⁵	■	■	■	■	■	■	■	■	■	■
	Split field peas	■	■	■	■	■	■	■	■	■	■
	Groundnuts	■	■	■	■	■	■	■	■	■	■
	Fresh cow milk	■	■	■	■	■	■	■	■	■	■
	Cottage cheese	■	■	■	■	■	■	■	■	■	■
	Eggs	■	■	■	■	■	■	■	■	■	■
	Beef	■	■	■	■	■	■	■	■	■	■
Protein	Cottage cheese	■	■	■	■	■	■	■	■	■	■
	Eggs	■	■	■	■	■	■	■	■	■	■
	Fresh cow milk	■	■	■	■	■	■	■	■	■	■
	Beef	■	■	■	■	■	■	■	■	■	■
	Chicken	■	■	■	■	■	■	■	■	■	■
Iron	Ethiopian mustard greens	■	■	■	■	■	■	■	■	■	■
	Whole lentils	■	■	■	■	■	■	■	■	■	■
	Beef liver	■	■	■	■	■	■	■	■	■	■
	Chicken liver	■	■	■	■	■	■	■	■	■	■
	Beef	■	■	■	■	■	■	■	■	■	■

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5 Recipe yields 100 g of porridge from 93.6 g water, 16.5 g maize flour, and 4.7 g sugar.



Key⁶ ■ Unaffordable ■ Moderately affordable ■ Affordable

6 Unaffordable (affordable to 0–50% of households); Moderately affordable (affordable to 51–90% of households); and Affordable (affordable to 91–100% of households).

CONCLUSIONS

This analysis has shown that complementary feeding gaps in zinc, animal-source protein, calcium, and iron cannot be affordably filled by all households, particularly the lowest-spending 10–20%. These households rely on the cheapest available staple foods and struggle to meet energy and nutrient requirements. Over one in three households cannot afford to meet 50% of young children’s energy and zinc needs through the nutritious foods studied here. Calcium, iron, and animal-source protein remain challenging for 5–15% of households. While a dietary gap in vitamin A persists, it is not primarily due to affordability: almost all households can afford enough foods rich in these nutrients to meet 100% of needs. Although price reductions could help some households afford more nutritious foods, households in the bottom deciles would still be unable to afford the foods they need to feed their children a diet meeting all nutrient requirements. Further analysis is thus needed of the potential for increased home production of nutritious foods and other options, such as commercial and point-of-use fortification as well as supplementation. Transfers (cash or in-kind) could also be useful in the short term for food-insecure households. **Dark green leafy vegetables** (iron, calcium, vitamin A), **split field peas** (energy, zinc), **lentils** (iron), **milk** (protein, calcium, zinc), **cottage cheese** (protein), **beef** (zinc, protein), **beef liver** (vitamin A), **carrots** (vitamin A), and **pumpkin** (vitamin A) are the most affordable nutritious foods to fill gaps in young children’s diets. They should be the focus of initiatives aimed at increasing the production, desirability, and consumption of nutritious complementary foods.

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