AFFORDABILITY OF NUTRITIOUS COMPLEMENTARY FOODS IN **SOUTH AFRICA**

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WHY DOES AFFORDABILITY OF COMPLEMENTARY FOODS MATTER IN SOUTH AFRICA?

South Africa is an upper-middle-income country with a population of 58 million, 40% of whom live under the poverty line (1–3). Only 5% of the population is employed in the agriculture sector, which accounts for only 3% of GDP (4). While smallholder farming is relatively uncommon, a recent study found that households engaging in subsistence agriculture are more likely to be food secure (3). South Africa's GINI coefficient (a measure of inequality) is continually among the highest globally, and it is estimated that over 70% of wealth in the country is owned by the wealthiest 1% of society, making it one of the least equitable countries in the world (3). In part due to these persistent inequalities, health and nutrition outcomes remain poor among a substantial proportion of the population. Child undernutrition is widespread, with 27% of children under five stunted and 49% of children aged 6–23 months not consuming an adequately diverse diet (5).

Many children in the complementary feeding period (ages 6–23 months) in South Africa do not consume enough vitamin A, calcium, or animal-source protein, which hinders growth and development (6). 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 South Africa are rich in nutrients lacking in young children's diets. However, resource-constrained households (the lowest spending 40–50%) struggle to afford enough of these nutritious foods to meet even 50% of their under-two children's dietary requirements for energy and calcium.
- Around 15–20% of households face affordability barriers to meeting young children's protein requirements through animal-source foods.
- 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 to meet 100% of needs.
- The most affordable foods to fill nutrient gaps are **chicken** (protein, energy), **tinned small fish** (protein, calcium), **peanut butter** (energy), **dried beans** (energy), **beef liver** (vitamin A), **chicken liver** (vitamin A), **carrots** (vitamin A), and **milk** (calcium).
- 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 2014–15 Living Conditions Survey (LCS) (7), we divided 3,303 households with children under two[1] 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, vitamin A, and calcium for their under-two children through specific foods. Specific foods were chosen because of their nutrient content and availability in South Africa. 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 (8). 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 reported by Statistics South Africa and the National Agricultural Marketing Council (9,10). If a household's re-allocable food expenditure exceeded the total weekly cost of a food portion for all uchildren under two in that household, then that food portion was considered affordable.

HOUSEHOLD EXPENDITURE AND CONSUMPTION PATTERNS

On average, households spent 30% of their total expenditures on food. Average food expenditure in the lowest decile was almost five times lower than in the average household and 14 times lower than in the highest decile. Few households in South Africa produce food for their own consumption, so it is likely that the majority of food consumed comes from purchases for most households (3,7). Households with children under two years old allocated most of their food expenditure to cereal products and *meat, fish, and eggs* (Figure 1), both of which were also consumed by over 85% of

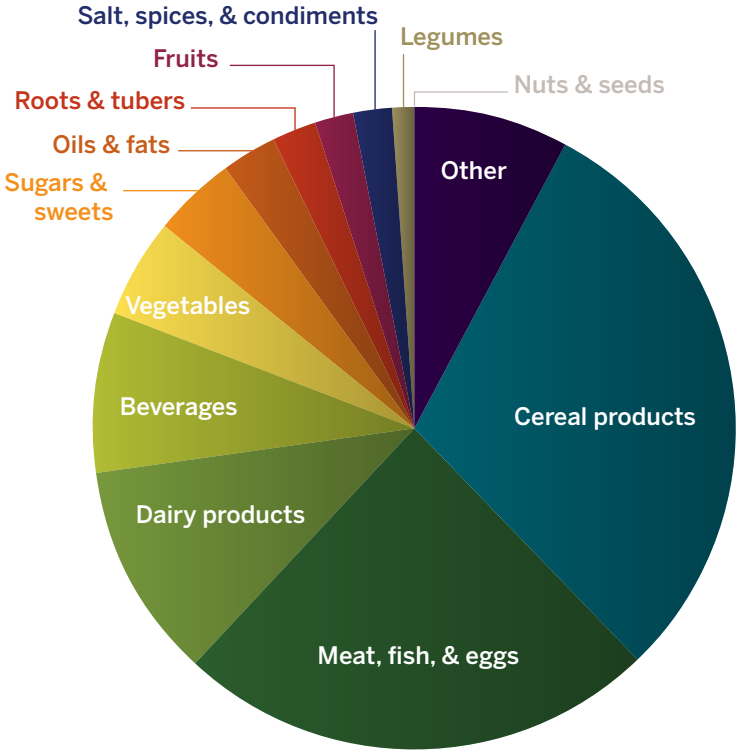

Figure 1. Breakdown of total food expenditures

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.

households in the past two weeks. Bread (87%), maize (47%, in the form of mealie meal/maize flour), and rice (34%) were the most frequently consumed cereal products in the past two weeks. Two-thirds of households consumed chicken, and around one-third consumed eggs, beef, or some type of fish (mostly canned) in the past two weeks. Dairy products, including milk (48%), yogurt (24%), and sour milk (maas) (18%), and vegetables were each consumed by 72% of households in the past two weeks, but about half as much money was spent on vegetables (5%) as dairy products (11%).

AFFORDABILITY BY NUTRIENT

Energy

Almost no households in the bottom four deciles and few in the bottom five are able to meet 50% of their young children's energy needs from the examined nutritious foods at current prices (Table 1). Peanut butter and dried beans, the most affordable nutritious foods to meet energy needs, are only available to most households in deciles 6–10. Most households (except in the two lowest deciles) can afford enough maize porridge to meet energy needs. However, 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

Almost all households in the lowest food expenditure decile and second-lowest decile are unable to meet 50% of young children's protein requirements from animal sources. Chicken and tinned fish are the most affordable animal sources of protein but are only affordable to most households above decile two. Other animal sources of protein, including eggs, sour or fresh milk, and beef are only affordable to most households above decile four. Even if the prices for chicken and tinned fish were halved, these foods would be unaffordable to households in the bottom decile. Households may also not be able to purchase the relatively small quantities of chicken, eggs, and tinned fish required to meet protein needs. For example, tinned fish comes in tins that are a minimum of 125 g, and chicken may only be purchasable in packs containing larger quantities (over 100–200 g), but weekly portion sizes for these two foods are below 20 g; this analysis thus assumes that other members of the household are consuming the remainder. These purchasing constraints may decrease the actual affordability of these items. Conversely, households may also be able to save money by purchasing some items in bulk, however many households, especially in rural areas, do not have access to refrigeration, which would make bulk purchasing infeasible.

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 or chicken liver to satisfy 50% of vitamin A needs. Most households in the bottom decile and almost all in deciles 2–3 and higher can also meet Vitamin A needs with carrots and spinach.

Calcium

Meeting calcium needs is challenging for most households in the lowest five deciles and many in the sixth. Tinned small fish and milk[3] are the most affordable sources of calcium while spinach is the least affordable and is even unaffordable to some of the highest-spending households.

3 It is recommended that children under 12 months of age do not consume milks (flavored or plain) (11).

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[4]										
	Peanut butter										
	Dried beans										
	Chicken										
	Sour milk (maas)										
	Tinned fish										
	Fresh milk										
	Eggs										
	Beef										
Protein	Tinned fish										
	Chicken										
	Eggs										
	Sour milk (maas)										
	Fresh milk										
	Beef										
Vitamin A	Beef liver										
	Chicken liver										
	Carrots										
	Spinach										
	Fresh milk										
	Eggs										
	Sour milk (maas)										
	Mango										
	Tinned fish										
Calcium	Tinned small fish										
	Fresh milk										
	Spinach										

Key[5] ■ Unaffordable ■ Moderately affordable ■ Affordable

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

5 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 calcium and animal-source protein in South Africa cannot be affordably filled by all households. Meeting protein needs through animal-source foods is challenging for 15–20% of households. The lowest spending 40–50% of households cannot afford to meet 50% of young children's energy and calcium needs through the nutritious foods studied here. These households rely on the cheapest available staple foods and struggle to meet energy and nutrient requirements. Some households may be able to meet protein and energy needs through current chicken consumption. Although price reductions could help some households access more nutritious foods, the lowest spending 20–35% of households 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, which may be limited in South Africa, 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. **Chicken** (protein, energy), **tinned small fish** (protein, calcium), **peanut butter** (energy), **dried beans** (energy), **beef liver** (vitamin A), **chicken liver** (vitamin A), **carrots** (vitamin A), and **milk** (calcium) 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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