

Improving Child Nutrition through Quality Certification of Infant Foods: Policy Implications of a Scoping Study in Ghana¹

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This scoping study provides a diagnosis and prescription for large-scale improvements in child nutrition, to be achieved through testing and certification of nutrient densities in locally produced fortified infant foods.

PROBLEM

This research finds that locally-made infant foods in the greater Accra region have low availability and uneven quality, which are symptoms of asymmetric information between buyers and sellers. Under current market conditions, families cannot detect the quality of new products so they must rely on the advertising or else use labor-intensive methods to produce foods at home using known ingredients. Low-income households often cannot afford to buy or make enough quality foods to meet their infants' needs, contributing to over 25% of Ghanaian children being physically stunted.

SOLUTION

A remedy for asymmetric information is quality certification, which could improve nutrition by inducing more investment in quality control, wider distribution and more consumption of low cost, high quality products. Introducing quality certification could lead to increased availability and lower cost of high quality foods, for improved child nutrition at market scale.

IMPLEMENTATION

To diagnose the need for quality certification, we used a new kind of survey to measure infant food availability, combined with laboratory tests of the infant foods currently being sold. The observed low availability and uneven quality could be remedied by quality certification. To implement certification in a way that can be monitored and scaled up, we propose a randomized rollout across market locations. A controlled trial of this type would demonstrate whether certification can attract producers and help consumers buy larger quantities at lower cost, and thereby promote market-scale improvements in child nutrition.

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Exhibit 1: The infant food market is now dominated by a heavily-advertised global brand.



Exhibit 2: Local producers make infant foods using various recipes and forms of packaging



Exhibit 3: A variety of local infant foods are occasionally available in popular markets

Summary of the Research

This scoping study provides a diagnosis and prescription for large-scale improvements in child nutrition, to be achieved through testing and certification of nutrient densities in locally produced fortified infant foods. Quality certification would allow new entrants and small producers to compete with heavily advertised global brands, and thereby help families meet more of their infants' nutritional needs at lower cost than is currently possible. Introducing

infant-food quality certification could significantly improve nutrition outcomes at population scale. Doing so in a randomized fashion would allow the impact of those services to be rigorously measured, to construct the most cost-effective package for sustainable replication elsewhere on a fee-for-service basis, either with or without donor support to accelerate its spread in Ghana and elsewhere.

Implementation:

The certification trial we propose, tentatively named the Infant Nutrition Quality Assurance Project (INQAP), would involve the following steps:

- (a) An INQAP board of advisors would determine precise standards for locally-appropriate nutrient densities;
- (b) Current and potential manufacturers of foods that could meet INQAP standards would be invited to enrol those products, based on inspections of their production plants
- (c) The INQAP staff would purchase random samples of enrolled products from targeted markets, and contract with laboratories for measurement of nutrient densities;

- (d) Manufacturers of acceptable products would be given "INQAP OK" stickers to place on the acceptable products' packaging, with a clearly printed expiration date.
- (d) The INQAP staff would conduct a randomized rollout of "INQAP OK" publicity services at selected marketplaces, with billboards and other signage, mobile demonstration teams and promotional discount vouchers.
- (e) Producers' and consumers' responses to the certification labels and publicity services would be monitored through market and household surveys at the target locations.

Quality certification could improve nutrition at population scale, by inducing more private investment in quality control, wider distribution and more consumption of low-cost, high quality complementary foods.

Research Results: Product Availability and Nutrient Density

To diagnose the need for quality certification, our research uses a novel survey of infant food availability by neighbourhood across the greater Accra region, and uses laboratory tests to measure nutrient density in the few products that are now available. We found low availability and uneven quality, which are symptoms of asymmetric information. The remedy is quality certification, which could improve nutrition by inducing more investment in quality control, wider distribution and more consumption of low-cost, high-quality products. To implement quality certification in a way that can be monitored and scaled up, we propose a randomized rollout across market locations. This would permit rigorous evaluation of its impact on prices, quantities and child health outcomes, and replication of the experiment on a fee-for-service basis in other markets.

The infant foods whose quality would be certified are cereal-based complements to breast milk, which must have unusually high nutrient density and digestibility to meet the needs of infants from about 6 to 24 months of age. During this period of transition from exclusive breastfeeding to the family diet, infants need high quality foods made with expensive ingredients and careful processing. Potential buyers cannot observe these qualities either before or after consumption, because nutrient densities are not detectable without laboratory tests, and the low bodyweights, stunting and ill-health of infants who are fed low-quality foods could have been due to many other factors as well.

Under current market conditions, families cannot detect the quality of new products so they must rely on the advertising, high prices and fancy packaging of established brands, or else use labor-intensive methods to produce foods at home using known

ingredients. Low-income households often cannot afford to buy or make enough high quality foods to meet their infants' needs, contributing to over 25% of Ghanaian children being physically stunted. Introducing quality certification would lead to increased availability and lower cost of high-quality foods, for improved child nutrition at market scale.

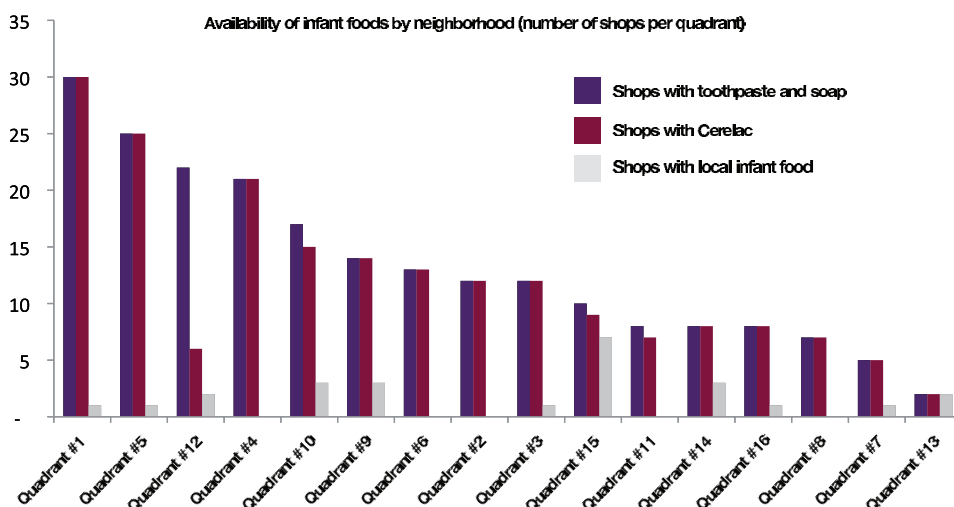
To assess the degree of need for quality certification, we designed and conducted a new kind of survey to measure infant food availability in greater Accra, and we also conducted laboratory tests of every kind of infant food we found. To judge producers' and policymakers' receptiveness to the idea of quality certification, we interviewed all of the local manufacturers we could identify and a wide range of other stakeholders.

We then randomly surveyed 200 retail establishments and submitted samples in anonymous numbered packages to a commercial food testing laboratory in the United States. We had a total of 14 samples, including one of Nestlé's Cerelac. Tests were conducted for macronutrients (total calories, protein, fats and carbohydrates), key micronutrients (iron and zinc), and a potential anti-nutrient (that would limit digestibility). These tests showed 3 out of 13 samples to have similar nutrient densities as Cerelac, while most had less than two-thirds of its protein, fats and/or micronutrients.

Alongside our availability survey and laboratory tests, we also conducted semi-structured interviews with the managers of nine infant-food manufacturers, and the founders of eight emerging local infant food makers. In each case, we described the possible intervention and asked whether they might want to enrol their products in a randomized trial of quality certification services. All of them expressed keen interest in doing so.



Exhibit 4: Our availability survey shows limited supplies of competing infant foods in many neighborhoods.



Note: Quadrants were randomly generated and are shown ranked by commercial density, defined as number of shops selling both toothpaste and soap in that quadrant. Five of the 16 quadrants had no local infant foods available at all, and a further five quadrants had only one shop with any local infant food. Cerelec was available in almost all shops, regardless of density; quadrant #12 was the only location where many shops sold toothpaste and soap but not Cerelec.

Exhibit 5. Marketed infant foods have widely varying nutrient densities.

Sample	Calories	Macronutrients (g/100 g)			Minerals (mg/100g)		
	(kCal/100g)	Protein	Fat	Carb.	Iron	Zinc	Phos.
1	101%	119%	105%	95%	95%	62%	110%
2	100%	129%	103%	93%	95%	70%	114%
Cerelec	100%	100%	100%	100%	100%	100%	100%
4	99%	163%	97%	86%	153%	68%	118%
5	97%	108%	77%	104%	61%	48%	64%
6	97%	81%	78%	109%	53%	65%	99%
7	97%	109%	77%	104%	65%	55%	80%
8	97%	76%	76%	110%	27%	52%	89%
9	97%	110%	75%	103%	55%	54%	79%
10	95%	186%	81%	82%	129%	54%	102%
11	94%	48%	53%	122%	66%	34%	54%
12	94%	131%	59%	101%	117%	60%	111%
13	93%	92%	48%	113%	28%	51%	79%
14	92%	77%	38%	119%	11%	43%	49%

Note: Data shown are densities in dry matter only, as a percentage of Cerelec's densities.

Further reading

For an early market experiment on infant food quality certification in Africa, see W.A. Masters and D. Sanogo (2002), 'Welfare Gains from Quality Certification of Infant Foods: Results from a Market Experiment in Mali,' American Journal of Agricultural Economics, 84(4): 974-89. For a recent survey of quality certification in general, see D. Dranove and G.Z. Jin (2010), 'Quality Disclosure and Certification: Theory and Practice,' Journal of Economic Literature, 48(4): 935-63.

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