

**Feasibility and cost of nutritionally adequate complementary feeding:
Role of breastmilk, family foods and supplementation in 114 low- and middle-income countries**

Late-breaking poster abstract for Micronutrient Forum, revised 26 August 2023

Topic: Designing Enabling Environments for Micronutrients
Subtopic: Cost-effectiveness of delivering micronutrient interventions at scale
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Objectives

Meeting infant requirements after six months requires complementing breastmilk with diverse family foods, but diets of older children and adults typically have insufficient nutrient density to meet infant needs. This study uses global data on variation in availability, price and composition of available items to identify where, when and at what cost infant needs could be met with family foods, at all levels of breastmilk intake, without and with provision of a high-density nutritional supplement.

Methods

We used retail prices for 943 family foods commonly consumed in 114 low- and middle-income countries in 2011 and 2017, coupled with food composition data and dietary reference intakes, to compute least-cost diets for children aged 6-9, 9-12, and 12-24 months, based on lower and upper bounds on 27 nutrients for health and also upper bounds on volume of 30 food categories for digestive capacity, with energy levels based on the median body weight of the WHO reference healthy population in each age-sex group. We then compared that business-as-usual benchmark to the feasibility and cost of meeting needs when infants consume 20g/day of a small-quantity lipid-based nutrient supplement (SQ-LNS).

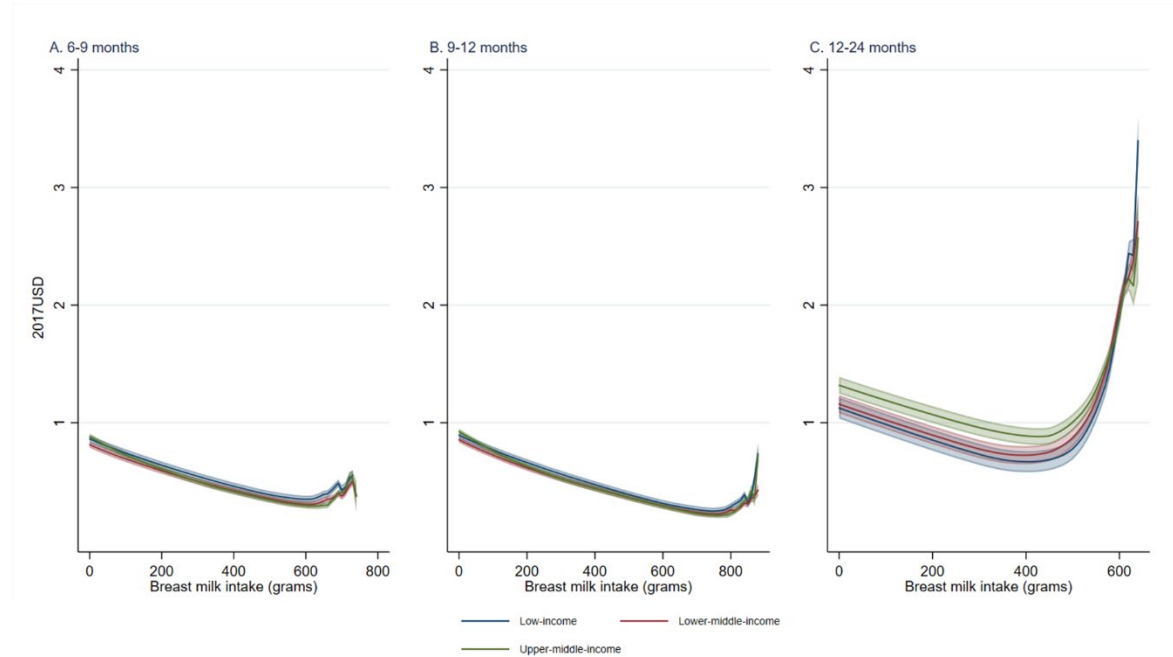
Results

Nutritionally-adequate complementary feeding at any level of breastmilk is often infeasible due to the limited mix of foods reported to be available in local markets, and even where sufficiently nutrient-dense items are known to be available they are often unaffordable due to daily costs between \$1 and \$4 per child. Providing SQ-LNS allows nutrient adequacy to be reached in all countries using universally available family foods at less variable costs, down to \$0.5/day at 6-12 months with 650g of breastmilk at 6-9 months and 750g at 9-12 months. For infants aged 12-24 months more solid food is needed and there is greater variation in minimum costs, which average \$0.8/day with 450g of breastmilk.

Conclusions

Obtaining sufficient nutrients from commonly consumed family foods to meet infant needs may be infeasible and is often unaffordable in many food environments. Using a nutrient-dense supplement such as SQ-LNS starting at six months of age to complement continued breastfeeding and family foods would allow caregivers to meet infant nutrient needs with locally available items at much lower and less variable cost than is possible using only commonly consumed family foods.

Fig 1. Cost of the least expensive foods for nutrient-adequate complementary feeding of infants at 6-9, 9-12 and 12-24 month of age in 114 low- and middle-income countries, with 20g/day SQ-LNS



Note: Data shown are mean and 95% confidence interval across countries for the minimum cost per day of meeting dietary reference intakes for a healthy child at each age in months, using commonly consumed family foods whose prices were reported to the International Comparison Program for 2011 and 2017. Costs without SQ-LNS are not shown here because meeting nutrient needs was often infeasible. Where feasible, costs without SQ-LNS averaged \$1 to \$4/day and were near the bottom of that range at 550 g/day of breastmilk.