Addressing inequities in access to fortified sunflower oil: Costs of small, medium & large-scale fortification in Tanzania

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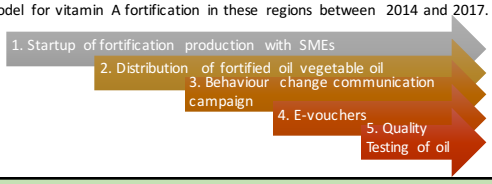
SUMMARY

- The ***MASAVA project*** aims to reduce VAD through sunflower oil fortification with vitamin A by SME oil processors and retailers.
- VAD rates in children are high in Manyara (72.1%) and Shinyanga (71.7%) regions of Tanzania - higher than previously reported.
- The incremental cost of fortification is estimated to range from 0.6% for large-scale (or $0.04 per capita/year) to a high of 22.1% (or $1.51 per capita/year) for small-scale enterprises producing oil in 20L containers compared to the lowest price of unfortified oil.
- Low-cost and available options for fortification equipment and packaging in formats preferred can substantially reduce the incremental cost of SME fortification from $0.51 to $0.10 per litre, if government approves their use and removes a new VAT in order to increase access and affordability in rural and poorer regions.
- Improving access to fortified sunflower oil in rural and poorer regions of Tanzania requires innovation by SMEs and regulators to incorporate low-cost options that suit needs of the most vulnerable households with children and mothers at risk of VAD.

INTRODUCTION

Vitamin A Deficiency (VAD) is attributed with 157,000 child deaths (6-59 months) globally each year (1). In Tanzania, VAD is considered a severe public health problem responsible for a high burden of the child mortality and morbidity. The Tanzania DHS 2010 estimated that the rate of VAD is 38% in children (2). Hunger, lack of food diversity, limited consumption of vitamin-A rich foods and poverty are main determinants of VAD. In Tanzania, Vitamin A is found naturally in some foods but consumption is less than optimal. In Manyara and Shinyanga, Only 51% and 85% children (6-23 months) consumed vitamin-A rich in the past 24 hours respectively (3). 37% and 27% of children (6-59 months) received A supplement in the 6 months prior (i.e. Aug. 2015-Feb. 2016) to survey in Manyara and Shinyanga (3). Fortifying staple foods with vitamins can be an effective vehicle for improving dietary consumption of deficient micronutrients but is often limited to foods produced through large food manufacturers, which are not accessible to poorer and rural households.

The **MASAVA project,** in the Manyara and Shinyanga regions of Tanzania, works with small and medium-sized enterprise (SME) sunflower oil processors and retailers to fortify and distribute sunflower oil with Vitamin-A to households vulnerable to VAD – particularly households with lactating women and young children. The goal of the project is to reduce the prevalence of VAD in these regions, 48% and 42% in 2010 respectively (2) by implementing a sustainable business model for vitamin A fortification in these regions between 2014 and 2017.



RESEARCH QUESTION

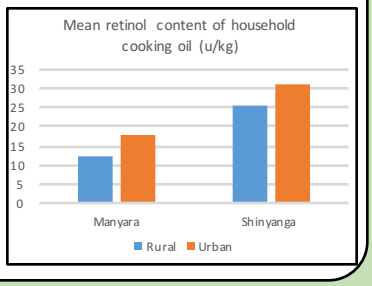
What are the private sector incremental costs (IC) and cost drivers of locally-produced edible sunflower oil fortified with Vitamin A by SMEs compared to large-scale producers?

METHODS

- Fortification trial was a quasi-experimental non-equivalent control group research study design. There were 3 intervention districts and 1 control district in each of the two regions of study. Data collected using baseline and endline household and retailer surveys.
- Using the vitamin A fortification costing framework from Fiedler and Afrida 2010 (4), this costing analysis model used an ingredients approach to estimate the hypothetical costs of fortification for each of a hypothetical small, medium and large-scale enterprise – a low-cost-small-scale scenario - using cost data collected during the retailer and SME surveys (5,6, 7) and data from literature and project reports.

RESULTS

- The baseline data on retinol levels in household cooking oil showed: 1) The retinol content was lower in Manyara compared to Shinyanaga and 2) within each region, rural districts had lower content than urban districts (but only significant for Manyara.)
- As well, in Manyara, only 8% of households reported purchasing a known fortified brand of oil that, whereas in Shinyanga 76% of rural and 96% of urban households did.



RESULTS (Continued)

- The modelled incremental cost (IC) of fortification is estimated at $0.01, $0.16 and $0.28 per litre sold in 20L containers for large, medium and small-scale entreprises compared to unfortified oil.
- This represents a range of 0.66% increase in large-scale oil, or $0.04 per capita per year, to 22.21% increase for small-scale enterprise oil, or $1.51 per capita per year, compared to unfortified.

Type/scale of sunflower oil production	IC per litre	IC per capita/ yr.	Avg. Household Cost /Yr	% Increase
Unfortified (min.)			$34.72	
Large-scale fortified (20L)	$0.01	$0.04	$34.95	0.66%
Medium-scale fortified (20L)	$0.16	$0.87	$39.15	12.78%
Medium-scale fortified (1L)	$0.39	$2.11	$45.47	30.97%
Small-scale fortified (20L)	$0.28	$1.51	$42.43	22.21%
Small-scale fortified (1L)	$0.51	$2.75	$48.74	40.40%
Low-cost medium-scale fortified (hypothetical)	$0.12	$0.62	$37.90	9.17%
Low-cost small-scale fortified (hypothetical)	$0.10	$0.53	$37.41	7.75%

- The largest annuitized cost component of fortification for large-scale enterprises producing oil in 20L is the premix cost (60%) whereas for medium-scale it is premix (31%) and equipment (21%), and for small-scale it is mainly equipment (48%).

Low-cost small-scale scenario

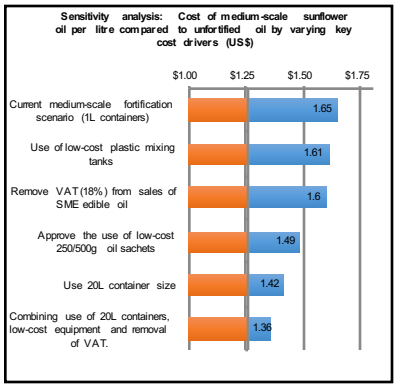
- The packaging cost for 1L containers for small- and medium-scale producers itself can add up to $0.23 cents per litre, or 18% increased cost per litre for small-scale producers. Using 20L containers is the largest factor in increasing costs for SMEs currently.
- Allowing SMEs to distribute sunflower oil in 250g and 500g sachets would reduce the IC per litre by $0.16, and safer for rural households who typically purchase oil by the "scoop".
- Approving SME usage of low-cost plastic or mild steel tank for mixing and removing the 18% VAT on oil would reduce incremental cost by $0.04 and $0.05 per litre.
- All three measures combined could reduce the incremental cost of medium-scale production to only 9% higher than lowest price of oil (270 TSH per litre)

Limitations

- This costing model is preliminary and relies on cost data and assumptions about the production based on project reports and literature. Work underway on costs components and prices of oil and equipment/materials would improve the accuracy. This does not include public sector costs of fortification for advocacy, social marketing, QA and MNE, nor fluctuations in seasonal costs.

DISCUSSION

The incremental cost of fortification is minimal for large-scale producers, similar to the experience in Uganda (4). Knowing that increasing access to SME-produced oil is likely necessary to bridge the urban/rural divide in access to fortified oil, SMEs need to innovate to reduce the high equipment and packaging costs. Removal of the new 18% VAT for SMEs may also help make fortified oil affordable. Reducing costs may be essential for creating the incentive to enter the fortification market, produce affordable product for poorer and rural households that are key to reducing VAD.



Conclusion

Results of costing analysis model emphasize the need for government regulators and SMEs in the sunflower oil industry to consider innovating with low-cost or cost-saving actions to increase equity in access to fortified oil and, ultimately, sustainable reductions in VAD in children and mothers. Endline baseline data will help estimate the impact of the intervention reducing VAD in children and mothers.

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