Potential impact of large-scale food fortification in Ethiopia - Coverage and knowledge of fortifiable foods

THE PROBLEM

Despite a significant decrease in the prevalence of micronutrient deficiencies between 1990 and 2017, Ethiopia will need a much more substantial reduction of micronutrient deficiencies; currently, micronutrient deficiencies are among the top five causes of years lived with disability (YLDs) [1]. Recognizing the high burden of micronutrient deficiencies, the Ethiopian Government has shown commitment to fortify salt with iodine, vegetable oil and wheat flour with micronutrients [2]. Understanding whether the food vehicle is widely consumed, reaches the most remote and vulnerable, is critical for fortification programs to have impact. The impact of the intervention depends on coverage and consumption especially among the highly vulnerable populations. Unfortunately, quantitative data that provides this information is lacking and is urgently needed.

Therefore, the main aim of this study was

Figure 1: Photo credit: https://themedicationinsider.com/what-makes-a-food-enriched-or-fortified/

- To assess the consumption of fortifiable foods
- To estimate the coverage and potential impact of the current mandatory legislation at the national and subnational levels.

METHODOLOGY

A cross-sectional survey was conducted across ten regions and two city administrations in Ethiopia, focusing on food consumption and nutrition knowledge among women of reproductive age (15–49 years). Of 16,084 eligible households, data from 15,812 were complete and included in the analysis. Fortification coverage was assessed using the Fortification Assessment Coverage Toolkit (FACT). The Lives Saved Tool (LiST) was applied to model the impact of wheat flour fortification on folic acid and zinc reach, childhood mortality, and stunting reduction. Estimates covered the initial implementation year (2022), projected outcomes for 2023, a 10% annual scale-up from 2024–2029, and universal coverage (90%) by 2030. Coverage by wealth quintile was also analyzed using the national wealth index.

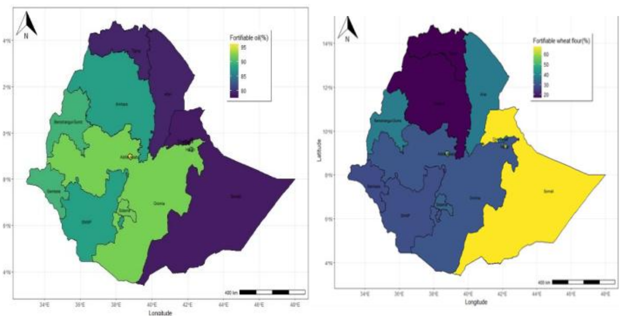
KEY FINDINGS

1. Coverage of Fortifiable Foods

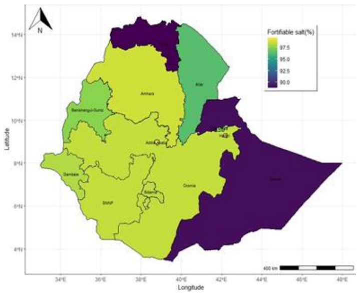
Edible Oil: National coverage is high at 89%, ranging from 77.5% (Dire Dawa) to 96% (Addis Ababa). Urban households (93.4%) consume more than rural ones (87%).

Wheat Flour: National coverage remains low (<30%), with highest consumption in Somali (67.5%) and Harari (63.5%), and lowest in Tigray (17%). Its limited reach reduces its impact on micronutrient deficiencies.

Salt: Fortifiable salt is widely consumed (97.8%), with slightly lower coverage in Tigray (88.8%), Somali (89.1%), and Afar (96.3%).



Edible oil **Fortifiable wheat**



Salt

Figure 2: Coverage of fortifiable edible oil, wheat and salt by region, Ethiopia 2023

2. Disparities by Residence, Wealth, and Education

Oil and Salt: Coverage remains high across all socioeconomic groups, with minor differences.

Wheat Flour: Urban households (44%) and wealthier families (50%) have significantly higher access than rural (23%) and poorest households (22%).

Awareness: Household heads with higher education, urban residence, and greater wealth show stronger awareness of food fortification.

3. Impact of Wheat Flour Fortification (LiST Model)

In 2023, fortification with folate and zinc saved an estimated **167 and 1,499 child lives**, and **averted 302 and 406 stunting cases**, respectively, compared to 2022. With a projected 10% annual coverage increase (2024–2029), benefits will grow steadily.

Zinc shows greater impact on child mortality; **folate** is more effective in reducing stunting.

Universal coverage by 2030 could more than double these outcomes.

4. Public Health Implications

- **Edible oil and salt:** offer strong potential to improve vitamin A and iodine status due to wide coverage.
- **Wheat flour fortification**, while impactful, remains inequitable—especially among rural and low-income populations.

Key Recommendations

Expand Wheat Flour Reach: Integrate fortified wheat flour into government programs targeting vulnerable populations to ensure equitable access. Education campaigns are essential to raise awareness and boost consumption.

Support Wheat Flour Production: Increase domestic production through incentives and promotion to enhance its role in preventing zinc and folate deficiencies.

Advance Salt Fortification Research: Conduct studies on the biological efficacy of adding nutrients like folate to salt to expand its impact.

Strengthen Policy and Coordination: Enhance policy support, stakeholder collaboration, and monitoring systems to scale fortification efforts and reduce micronutrient deficiencies.

Broaden Fortification Platforms: Incorporate fortified grains into safety net, school feeding, and university programs to reach more people and align with national health goals.

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FURTHER INFORMATION

This brief is based on a research paper published on https://doi.org/10.1111/mcn.70055. The full paper also is available on the NIPN website (http://www.nipn.ephi.gov.et/). Detailed descriptions of methods and findings are included in the research paper.

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