

Fortification as a Strategy to Address Zinc Deficiency in Senegal



Zinc is Essential for Human Health

Who is Most at Risk for Zinc Deficiency?



People in low- and middle-income countries—where diets are predominantly cereal-based and contain limited amounts of animal-source foods—are particularly at risk for zinc deficiency.¹



Infants, young children, and pregnant and lactating women are most vulnerable to zinc deficiency because of their elevated requirements for this essential micronutrient.¹

Zinc is a critical micronutrient for immune function, child health and development, and reproductive health¹. Seventeen percent of the world's population is estimated to be at risk of inadequate zinc intake, which could in part be addressed by zinc fortification of widely consumed foods.

New evidence from a systematic review of 59 studies that assessed biochemical and health outcomes after the provision of a zinc-fortified food or beverage found that fortification with zinc, alone or together with other micronutrients, is an efficacious and effective strategy for reducing the prevalence of zinc deficiency in low- and middle-income countries². In addition, fortification with zinc and other micronutrients may increase child weight, reduce episodes of diarrhea and fever, and improve cognitive function.

Food fortification and zinc deficiency: WHERE DOES SENEGAL STAND?

Senegal has one of the most effective public health nutrition programs in Africa and has led the way for large-scale food fortification interventions in West Africa. Salt iodization was mandated in 2000, and fortification of vegetable oil with vitamin A and wheat flour with iron and folic acid has been mandatory since 2009. All of Senegal's industrially processed wheat flour is fortified with folic acid and iron, reaching an estimated 51.2% of households in 2017³.

Senegal's National Nutrition Development Council (le Conseil National de Développement de la Nutrition or CNDN) is currently implementing its 2017-2021 Multisectoral Strategic Nutrition Plan (Plan Stratégique Multisectoriel de Nutrition or PSMN). One of PSMN's strategic objectives is to reduce the prevalence of micronutrient deficiencies, including zinc, among vulnerable groups by 40% by 2025.

While the country has made significant strides to address micronutrient deficiencies, zinc deficiency remains a critical public health issue in Senegal. The risk of zinc deficiency is considered to be elevated and of public health concern when the prevalence of low serum zinc concentrations is >20%. **From a 2010 national survey (the most recent**



Country context

- ▼ **Population:** 15.9 million people (2018)
- ▼ **Prevalence of stunting:** 17.9% (2019)
- ▼ **Estimated % of population with inadequate zinc intake:** 24% (2018)
- ▼ **Proportion of infants born with a low birthweight:** 18.5% (2019)
- ▼ **Proportion of children aged 0-5 months who are exclusively breastfed:** 42% (2018)
- ▼ **Under-5 mortality rate:** 45.3 per 1,000 live births (2019)
- ▼ **Proportion of children 6-23 months with the minimum acceptable diet:** 8% (2018)

Source: UNICEF. The State of the World's Children: 2019 Statistical Tables [Internet]. 2019 [cited 2021 Nov 4]. Available from: <https://data.unicef.org/resources/dataset/sowc-2019-statistical-tables>.

Food and Agriculture Organization of the United Nations (FAO). Food Balance Sheets [Internet]. 2018 [cited 2021 Nov 4]. Available from: <http://faostat.fao.org>

data available), the prevalence of low plasma zinc concentrations in Senegal was 50% among preschool-aged children and 59% among women of reproductive age.⁴

Senegal's national stunting prevalence is 17.9%, but there are stark regional disparities (9.7% in Dakar compared to 28.7% in Sédhiou)^{5,6}. The estimated proportion of the Senegalese population with inadequate zinc intake (24%) indicates that zinc deficiency is a public health issue.

The need is clear. Large-scale food fortification with zinc is effective, safe, cost-effective—and is a vital and feasible deficiency mitigation strategy for Senegal's policymakers and planners.

Key actions for the Government of Senegal and supporting partners to address zinc deficiency in Senegal through zinc fortification

- ▼ In consultation with the Economic Committee of West African States (ECOWAS) Commission, update the Senegal Bureau of Standards (Association Sénégalaise de Normalisation or ASN) wheat flour fortification standard to include zinc as a nutrient and support an amendment to the 2009 Ministry of Commerce decree regarding the mandatory application of fortification regulations.
- ▼ Support the Senegal Committee for Food Fortification with Micronutrients' (Comité Sénégalais pour la Fortification des Aliments en Micronutriments or COSFAM) efforts to investigate the feasibility of alternative fortification vehicles with broad coverage in the population for the addition of zinc, such as industrially milled rice and condiments.
- ▼ Conduct regular nutrition and/or health surveys that include an assessment of plasma/serum zinc concentrations and/or inadequate zinc intake after the launch of fortified foods with zinc
- ▼ Continue to invest in promoting the consumption of micronutrient-rich foods and optimal Infant and Young Child Feeding (IYCF) practices to expand coverage, especially for women and children.



At current compliance levels, fortifying wheat flour with zinc would cost \$1.40 per year per child aged 6-59 months who achieves adequate dietary zinc intake due to fortification. The total 10-year cost of adding zinc to the current wheat flour premix would only be approximately \$1.3 million⁷.

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About IZiNCG

IZiNCG is the International Zinc Nutrition Consultative Group whose primary objectives are to promote and assist efforts to reduce global zinc deficiency through interpretation of nutrition science, dissemination of information, and provision of technical assistance to national governments and international agencies. IZiNCG focuses on identification, prevention and treatment of zinc deficiency in the most vulnerable populations of low-income countries.

IZiNCG Secretariat

University of California San Francisco
5700 Martin Luther King Jr Way
Oakland, CA, USA 94609

secretariat@izincg.org

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