

Worldwide, 77 countries require fortification of one or more types of wheat flour¹, and several countries in the Americas and Africa also fortify maize flour. However, many countries have struggled with how to assess the impact of this public health intervention over time. Some countries have included a micronutrient module when conducting Demographic and Health Surveys (DHS)². However, the DHS and similar large surveys are quite expensive, usually require donor funding, and are only done at five to 10 year intervals. This approach does not allow for more frequent findings on the quality, population coverage and early evidence of the impact of a flour fortification program before investing in an “evaluation study”.

In discussions with country and agency colleagues, representatives of the Flour Fortification Initiative (FFI) and Smarter Futures partner organizations were frequently asked for guidance on “lighter methods for assessing trends in selected impact indicators of a flour fortification program during the early stages of the program and in the interval between the base-line and first impact evaluation study”. Therefore, Smarter Futures contracted Ibrahim Parvanta to develop a guide that would enable countries to assess trends in a limited number of program output and impact indicators in “easy-to-reach” target populations in countries that have embarked on flour fortification.

It is expected that flour fortification, implemented according to the latest guidance of the World Health Organization (WHO)³, will improve the micronutrient status of populations that regularly consume staple foods made of adequately fortified flour. Thus, the purpose of this guide is to provide direction for the development of a feasible and sustainable Fortification Monitoring and Surveillance (FORTIMAS) approach to confirm high population coverage of quality fortified flour (i.e. flour that meets the national standard for added micronutrients) and detect the expected improvements in the micronutrient status of women of childbearing age (the primary target population) over time. Given that the majority of countries add iron and folic acid to fortified flour, the main impact indicators included in this guide pertain to measures of iron and folate status in the target population. However, users of the document may include additional indicators of program impact on the population’s nutrient status based on other micronutrients that might be added to fortified flour.

The purpose of FORTIMAS is to track trends in the effectiveness of a flour fortification program over time in populations documented to regularly consume fortified flour – not necessarily to provide statistically representative cross-sectional estimates of the prevalence of micronutrient deficiencies in the population at any specific point in time. If such information is deemed necessary, statistically representative surveys may be carried out as needed and resources allow. It is also essential that countries take advantage of existing private and public data systems or sources to “triangulate” information on population coverage and impact of fortified flour on a continual basis.

1. http://www.ffinetwork.org/global_progress/index.php, accessed 24 July, 2013.

2. <http://www.measuredhs.com/aboutdhs/>. Accessed 4 February, 2013.

3. WHO. Recommendations on wheat and maize flour fortification meeting report: interim consensus statement. Geneva, Switzerland, 2009. (http://www.who.int/nutrition/publications/micronutrients/wheat_maize_fort.pdf)

The primary aims of the proposed FORTIMAS approach are to:

1. Determine if close to 80% or more of the population is covered by the flour fortification program in a given geographic area over time, based on the quantity of fortified flour produced and imported, and household purchases of fortified flour in sentinel communities.
2. Answer the question, “is the micronutrient status of those who regularly consume sufficient⁴ quality fortified flour improving?”

The non-probabilistic sentinel site data collection approach described in this guide for tracking population coverage and nutritional impact of flour fortification is based on the following concepts:

- a. Industrially milled flour is to be fortified because it has already been determined that such flour is a staple food that is regularly consumed by the vast majority of the population in a geographic area.
- b. Regular intake of fortified flour that contains bioavailable forms of micronutrients, in particular iron, based on the expected per capita consumption of fortifiable (i.e. industrially milled) flour in the geographic area will improve the nutrient intake and status of its population.
- c. When data on the annual quantity of adequately fortified flour marketed in a geographic area complement the finding of high population coverage of the product in selected sentinel communities in that geographic area, it may be assumed that the latter findings are “reflective” of the population coverage trends in the geographic area as a whole.
- d. Sustained high population coverage of adequately fortified flour, combined with declining trends in the prevalence of the target micronutrient deficiency, indicate the likelihood that flour fortification has contributed to the improved micronutrient status of the population.

Although flour fortification is the focus of this guide, the principles and approaches could be used for monitoring and surveillance of other population-wide food fortification and nutrition programs (e.g. salt iodization, vegetable oil fortification, infant and young child feeding interventions, etc.). It would, however, be necessary to define and track appropriate indicators related to product quality, population coverage and impact of each intervention.

The principles and approaches proposed in this FORTIMAS guide on flour fortification could be used for monitoring and surveillance of other population-wide food fortification and nutrition programs.

Finally, users of this guide are encouraged to share their experiences on monitoring and surveillance of flour fortification to the Smarter Futures secretariat in order to improve a future version of this manual.

4. According to the estimated per capita consumption of industrially produced (fortifiable) flour, which should determine the fortification standard.