Flour Fortification Efforts and Impact: A Global Update

Becky Handforth
Europe Associate
Presented 14 June 2012
Ankara, Turkey
What is Flour Fortification?

The process of fortification adds essential vitamins and minerals to flour during the milling process, so staple foods made with the flour are more nutritious.
Flour fortification is viewed as an effective public health measure by the following internationally-recognized entities:

- World Health Organization
- UNICEF
- Copenhagen Consensus Center
- Centers for Disease Control and Prevention
- World Food Program
- Numerous civic and nongovernmental organizations
Flour fortification is recommended as part of comprehensive public health nutrition strategies, which may also include dietary diversification, supplementation and other fortification interventions.
Wheat Flour Fortification Legislation
Status: CEECIS Region
Mandatory Wheat Flour Fortification Legislation: CEECIS Region

Uzbekistan (2005)
Turkmenistan (2006)
Kazakhstan (2009)
Kyrgyzstan (2009)
Moldova (2012)
Planning for Flour Fortification Programs: CEECIS Region

- Conducting national nutrition surveys
- Advocating to key stakeholders
- Forming active national fortification alliances
- Drafting legislation and standards
- Obtaining necessary milling equipment
- Providing technical training to industry
- Planning for effective monitoring systems
Global Wheat Flour Fortification Legislation Status

33 to 68 countries since 2004

Mandatory wheat flour fortification with at least iron or folic acid (updated May 2012)
Positive Impacts of Flour Fortification Programs

• Reduced incidence of neural tube defects, such as spina bifida
• Reduced prevalence of iron-deficiency among the population and prevention of future cases of iron-deficiency anemia
• Provision of essential nutrients necessary for the proper physical and cognitive growth and development in children
• Cost savings for public health care expenditure
Impact of Flour Fortification with Folic Acid: Country Examples

Neural tube birth defects per 1,000 births

All rates are for spina bifida except Iran and Saudi Arabia which are for all neural tube defects.

All data from published sources.
Spina Bifida Incidence:
Oman Ministry of Health Reporting System

Start of national flour fortification program in 1996

Year
Per 1000 births


0 0.5 1 1.5 2 2.5 3 3.5 4 4.5

Per 1000 births

Year

Start of national flour fortification program in 1996
Anemia Trends Among Kuwaiti Females
Kuwait (Sentinel) Nutrition Surveillance System

![Graph showing anemia trends among Kuwaiti females from 2001 to 2010. The graph indicates the percentage of females 14-19 and those 20 and over with anemia. Key events include the start of FF, the use of non-bioavailable iron, and the start of electrolytic iron usage.]

- **Start FF**
- **Used non-bioavailable iron**
- **Start using electrolytic iron**

**Years:**
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010

**Legend:**
- **Females 14-19**
- **Females >=20**
Prevalence of Anemia among Women Seeking Prenatal Care in their First Trimester of Pregnancy: Oman

Source: Personal communication; Ms. Deena Alasfoor, Oman Director of Nutrition
Impact of Flour Fortification: Iron Efficacy Study

![Graph showing impact of flour fortification on iron efficacy. The graph compares the percent of group with IDA (iron deficiency anemia) before and after the study for different types of iron used: Control, Electrolytic, Ferrous Sulphate, and NaFeEDTA.](image)
Cost:Benefit Ratio for Preventing Spina Bifida

Chile

South Africa

United States
Key Points to Remember

- Flour fortification is an effective strategy for addressing micronutrient malnutrition.
- To date, 68 countries have legislation requiring flour fortification of at least one type of commonly consumed flour.
- Flour fortification plays an important role in the reduction of neural tube defects and iron-deficiency anemia along with the prevention of iron-deficiency anemia.
- There are many examples and resources to support your efforts to create sustainable flour fortification programs.