Food Fortification in Tanzania

Opportunities and need

Anna Verster,
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Acknowledgements to the Flour Fortification Initiative, UNICEF, Micronutrient Initiative, WHO, CDC Atlanta, Sue Horton, Joe Mulinare, Scott Montgomery and many other colleagues who shared ideas with me at various occasions
Vitamin and Mineral Deficiencies are severe problems in Tanzania causing a heavy burden of disease and disability as well as exacting a heavy economic toll
National Vit A Survey 1997

Severe public health problem

Percentage (%)

Children
(serum retinol)

Women
(breastmilk retinol)

24

69

Prevalence of night blindness in women in most recent pregnancy in last 5 years (TDHS, 2004-5)
Prevalence of anaemia in children and women (TDHS, 2004-5)
Neural Tube Defects, NTD’s

- These are serious birth defects
  - spina bifida and anencephaly

- NTD’s are a significant cause of perinatal mortality

- NTD’s affect > 300,000 newborns yearly worldwide

- Limited data available suggest rates in Tanzania are high (3.02 per 1000 live births)

- Using folic acid can prevent 50 -70% if taken before and in first weeks of pregnancy

Joe Mulinare, CDC Atlanta
Eradicating Vitamin and Mineral Deficiencies helps achieve the UN Millennium Development Goals

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote general equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
Anemia is associated with 17% lower productivity in heavy manual labour, 5% lower productivity in other manual labour, and an estimated 4% loss of earnings due to lower cognitive skills.
In one study in India, eliminating anemia was associated with a 5.8 percentage point increase in school participation, and a 20% decrease in absenteeism.
Promote gender equality and empower women

- Improved Iron Status
- Increased Productivity, Work Capacity And Cognition
- Increased Participation Of Women

Some actions to achieve MDG:
- Increase female role models
- Increase formal and non formal education of girls
- Support women's entrepreneurship
Reduce Infant Child Mortality
Improve Maternal Health

Iron Benefits:
- ↓ Anemia
- ↓ Perinatal and Maternal Mortality

Zinc Benefits:
- ↑ Immune Function
- ↓ Mortality Esp. Under 2

Folic Acid Benefits:
- ↓ Neural Tubes Defects
- ↓ Mortality Under 5
Combat HIV/AIDS, malaria and other diseases

- Improved Vitamin and Mineral Status
- Improved Immunity
- Improved Resistance to Infection
Benefit:cost of iron interventions

- Benefit:cost ratio ranges from 3:1 to 11:1 for physical productivity alone (median 6:1)
- Ratio ranges from 4:1 to 14:1 (median 9:1) when including cognitive effects
- Therefore iron interventions are very high priority

Sue Horton, 2008
Benefit:cost of folic acid fortification

• Sayed et al, *Birth Defects Research* 2008
• South Africa began fortification 2003
  – 1.5mg/Kg wheat flour, 2.21mg/Kg maize meal);
  – 22 large millers account for 85% maize, 17 mills 95% wheat
• Neural Tube Defects fell 30.5%
• Benefit:cost 46:1 (hospital cost saved)
• Similar study Chile 10:1

Sue Horton, 2008
Fortification is supported by Leading Economists

<table>
<thead>
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10 Development Challenges

- Diseases
- Malnutrition and Hunger
- Air Pollution
- Sanitation and Water
- Conflicts
- Subsidies and Trade Barriers
- Education
- Terrorism
- Global Warming
- Women and Development
Eight world-renowned economists
* Denotes Nobel prize winner
## Top solutions – renowned economists

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<td>8. Increase and improve girl’s schooling</td>
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Advantages of Food Fortification

• Delivery system is usually in place
• It is feasible to fortify with several micronutrients
• If properly regulated and monitored it is a safe intervention
• Most cost effective and sustainable than other strategies
Benefits of Flour Fortification

- A staple food consumed by large segments of the population
- Can provide several micronutrients without product changes
- Technologically feasible to fortify
- Successful experiences in many countries in reduction of anemia and iron deficiency and reduction of neural tube defects
The Case for Flour Fortification

Loss of vitamins and minerals during milling of wheat

Fortification replaces nutrients lost during the milling process and can add other vitamins and minerals. Why not use fortification to address micronutrient deficiencies?

Scott Montgomery, Cargill, 2008
Impact on Nutrition Security

*Food Prices Go Up; Nutritional Value Goes Down*

Consumers often give up more expensive proteins, followed by fruits and vegetables.

Eventually the diet becomes heavy in carbohydrates, resulting in empty calories and higher levels of vitamin and mineral deficiency.

This is particularly difficult in vulnerable populations that already have high rates of malnutrition. High food prices only augment existing health problems, and eventually will impact economic security.

Scott Montgomery, Cargill, 2008
Cost to Fortify

Recurring costs of buying quality premix ranges from $1.50 to $6 per metric ton, depending on the type of fortificant.

The cost is miniscule. The benefit enormous. We have acted on this issue both because it is right - and because it presents our business in positive light.

The per person, per year cost to fortify wheat flour may be as little as eight to ten cents, depending on variables such as the average consumption and price of grain.

Philip Purnama, the chief commercial officer of the largest mill in the world.

Scott Montgomery, Cargill, 2008
Millers in Tanzania have already fortified flour in the past for their customers such as WFP.

- In Tanzania, milling industries are sophisticated and fully able to implement fortification of wheat and maize flour. Industries indicated that they were willing to start fortification of maize and wheat flour with multiple micronutrients on a national scale provided the right regulatory environment exists creating a level playing field for all involved.

- In the recent 1st African Flour Fortification workshop in Arusha, millers stressed the need for mandatory regulations that are effectively enforced.
The Minister of Health of Tanzania has already committed to food fortification

- The 46th Conference of ECSA-HC Health Ministers in which Hon. Prof. David H. Mwakyusa (MP), Minister, Ministry of Health and Social Welfare participated adopted resolution ECSA/HMC46/R10 which amongst other items urges Member States
  - to adopt and support implementation of ECSA food fortification guidelines by end of 2009 and
  - to allocate/increase financial resources by at least 20% within the next two years, for nutrition with a focus on micronutrients interventions such as Vitamin A supplementation, iron and folic acid supplementation, fortification and other food-based interventions in health budget/basket funds to ensure sustainability and reduce donor dependence.
FFI and Partners
Second Technical Workshop
on Wheat Flour Fortification:
Practical Recommendations
for National Application
March 30 to April 3, 2008

SUMMARY REPORT

The Fortification Initiative
Second Technical Workshop on Wheat Flour Fortification:
Practical Recommendations for National Application
March 30 to April 3, 2008
Atlanta, Georgia, USA

Nearly 100 leading nutrition, pharmaceutical and health scientists and policy makers from the public and private sectors from around the world gathered for four days to harmonize science for countries considering national wheat flour fortification programs.

This report from the Second Technical Workshop on Wheat Flour Fortification will be a valuable guide for countries planning to implement flour fortification programs, as well as those that are already fortifying flour. We are grateful to the participants of the meeting who so freely shared their expertise and experience and prepared this technical background report and its final recommendations.

Disclaimer:
The selection of the type and quantity of vitamins and minerals to add to flour, whether as a voluntary option or a mandatory requirement, lies with national decision makers in each country. This meeting supported the WHO/FAO Guidelines on Food Fortification with Micronutrients, 2006, which provide a framework for such decisions, and the recommendations of the meeting support the implementation of the guidelines. The recommendations are based on the best available evidence, which includes the input of the workshop participants. However, the meeting did not reach a consensus on all issues.

The findings and conclusions in this report do not necessarily represent the official position of the participating organizations, including the Centers for Disease Control and Prevention.
Food fortification is not the only solution: it should be part and parcel of a national nutrition programme.