Food fortification: A multisectoral response to micronutrient deficiency in women and children in Uganda

World Health Organization
REGIONAL OFFICE FOR Africa

Food fortification: A multisectoral response to micronutrient deficiency in women and children in Uganda

Uganda

WHO/AFRO Library Cataloguing – in – Publication

Food fortification: a multisectoral response to micronutrient deficiency in women and children in Uganda

1. Food, Fortified – supply and distribution
2. Food Supply – organization and administration
3. Micronutrients – supply and distribution – utilization
4. Avitaminosis – prevention and control
5. Nutrition Disorders – prevention and control
6. Nutrition Policy – organization and administration
7. Cooperative behavior
8. Socioeconomic factors
9. Organizational Case Studies

I. World Health Organization. Regional Office for Africa

ISBN: 978-92902325-9 (NLM Classification: **QU 145.5**)

Disclaimer:
This report contains the collective views of the drafting team and does not necessarily represent the decisions or the stated policy of the World Health Organization.

Contents

Acknowledgments

This case study was prepared jointly by the Ministry of Health and the Social Determinants of Health Unit, World Health Organization, Regional Office for Africa. Financial support was made available through the *Spanish Core Contribution Grant for Social Determinants of Health (SDH)* received by the Department of Ethics and Social Determinants of Health of the World Health Organization. The overall aim of Spanish Core Contribution Grant for SDH is to strengthen leadership and stewardship role of Ministry of Health to addressing social and economic determinants of health. It supports documentation of country level experiences in using intersectoral actions aimed at addressing the key social determinants of priority public health conditions.

An earlier draft of this case study was included in a special collection of global experiences on intersectoral actions which was widely disseminated during the World Conference on Social Determinants of Health held in Rio de Janeiro, Brazil in 2011. At the country level, the review process leading to the finalization of the case study generated multi-stakeholder policy and strategy discussions on implementing intersectoral actions to address social determinants of health.

The final product is a result of collective efforts of many individuals and organizations. However, the drafting team included David Ouma Balikowa, Health Communication Specialist, Uganda; Dr Paul Kagwa, Assistant Commissioner, Health Services, Health Promotion and Education, Ministry of Health, Uganda; Benjamin Sensasi, WHO Uganda; Dr Patricia Akweongo, University of Ghana.

The overall guidance and technical inputs to the project from WHO Regional Office for Africa are gratefully acknowledged, namely: Dr Tigest Ketsela, Director Health Promotion Cluster; Dr Davison Munodawafa, Programme Area Coordinator, Determinants and Risk Factors; Dr Chandralall Sookram and Mr Peter Phori; and Dr Eugenio Villar, SDH Coordinator in WHO HQ, Geneva. We are indebted to the many people who made valuable inputs throughout the process who cannot be mentioned by name. Last but not least, we express great appreciation for the support received from the Government through the Ministry of Health to conduct this activity.

Abstract

Unable to afford foods rich in vitamins and minerals, 64% of Uganda's population in 2007 comprising women of reproductive age and children under 15 years of age suffered inordinate levels of micronutrient deficiency. Benefiting from a grant from the Global Alliance for Improved Nutrition (GAIN), a National Food Fortification Programme for the enrichment of three widely consumed foods: vegetable oil, maize and wheat flour, was started in Uganda. Under this programme, vitamin A was introduced into vegetable oil processing while a range of vitamins B-12, B-1, B-2, B-6 additives along with zinc, iron, niacin and folic acid was infused in wheat and maize flour milling. A multisectoral approach was adopted to address food fortification with a coordinating body comprising the health, agriculture, education, industry and trade sectors.

With the food fortification programme, 85% of all vegetable oil in the market is now fortified with vitamin A and between 20% and 30% of wheat flour on sale is fortified. Also, a regulation mandating a specified capacity of all edible oils and fats and wheat and maize flours produced in the country to be fortified according to Uganda standards is under way. The achievements of the food fortification programme show that public-private partnerships are possible to address public health problems and multisectoral approaches can be used to address wider social determinants of health.

1. Overview of socioeconomic and health context of Ugandan

Uganda is a landlocked country in the East African region. The country that covers a total surface area of 241 038 km^2 is basically an agrarian economy with over 80% of the population deriving their livelihood from the agricultural sector. Uganda has the third highest population growth rate in the world, with the average Ugandan woman giving birth to almost seven children in her lifetime. Poverty remains endemic in Uganda and the level of per capita income is still very low. Several factors account for the current disparities in the incidence of poverty, including insecurity, climatic variations, HIV/AIDS incidence, type of agricultural activity and the degree of access to infrastructure and social services. Due to climatic changes, a high population growth rate (3.2%), depletion of soil nutrients as a result of land over-use and increased reliance on traditional food crops for income, household food insecurity is on the rise. The majority of households cannot afford micronutrient-rich foods such as fish, eggs, meat and milk.

The country's burden of disease is still enormous. Malaria remains the major communicable disease in Uganda and is responsible for the high infant mortality of 79 per 1000 live births (UBOS, 2007). Maternal mortality stood at 435/100 000 births by 2010. By 2009, up to 1 192 372 individuals had been affected with HIV while 64 016 people had died from HIV/AIDS-related causes (MoH, 2010).

A number of interventions, though limited, have improved Uganda's health situation. Between 1995 and 2005, infant mortality reduced from 85 to 75 deaths per 1000 live births, and under-five mortality from 156 to 137 deaths per 1000 live births. Although wasting increased from 4% to 6%, under-weight prevalence declined from 23% to 16%, and stunted growth from 41% to 32% in the same period (MoH, July 2010).

The burden of disease in Uganda is linked to socioeconomic factors. While the country's population grew from 4.8 million in 1960 to 24.3 million in 2002 (2011 estimates are at 34 million), failure to have corresponding economic growth is accelerating poverty, exposing the poor majority to a host of killer but preventable conditions such as under-nutrition (UBOS, 2007). The Uganda Bureau of Statistics (UBOS) has observed a direct relationship between malnutrition and poverty (UBOS, 2006). Low levels of education (little knowledge of nutrition) and negative cultural beliefs aggravate the problem.

2. Development of food fortification programme and plan in Uganda

In 1995, a survey report indicated that 96% of households consumed iodised salt. On this basis the government decided in 2000 to expand fortification to other food products commonly consumed in the country (UBOS, 2007). An Industry Assessment Report in 2001 then identified maize flour and oil/fat as possible candidates for fortification with vitamins A and B complex and iron (maize) and vitamin A (edible oil and fat) because they are massively consumed.

The MoH (Ministry of Health) in 2002 established a multisectoral National Working Group on Food Fortification (NWGFF) to lead the drive to reduce micronutrient deficiency. A voluntary public-private sector partnership, known as the Strengthening the National Food Fortification Programme (NFFP),was born out of the continued search for ways to increase regular consumption of fortified foods by the most vulnerable groups in the country. In 2007, the Uganda NFFP received a grant of $ 2.4 million from the Global Alliance for Improved Nutrition to fortify vegetable oil with vitamin A; maize and wheat flours with vitamin A, folic acid, vitamins B-12, B-1, B-2, B-6, niacin, zinc and iron.

3. Execution of the food fortification plan

A baseline food consumption survey was carried out in 2008 to study the dietary patterns of women of reproductive age and children aged under 15 years. The study was led by investigators from the Makarere University. Based on the findings of this survey, enriched vegetable oil and wheat flour was to be made available to 7 649 400 and 6 371 460 people at risk per year, respectively. A total of 20 520 000 (80%) and 12 312 000 (43%) people at risk, respectively, were supposed to have been reached by 2011. 220 000 schoolchildren receiving World Food Programme (WFP) supplies were targeted with fortified maize flour. Simultaneously, the participating private maize millers would supply fortified flour on the open market. Participating industries were chosen on the basis of their capacity to produce fortified flour. Where required, necessary equipment and fortificants (premix) were provided free of charge to wheat and maize flour millers.

Several interested parties, both in the public and private sectors, were invited into the project. A National Working Group on Food Fortification (NWGFF) was then formed to plan and coordinate the multisectoral action and promote a true partnership. The implementation was undertaken under five components encompassing health, education, agriculture, industry and trade sectors.

The NWGFF set-up enabled collaboration between experts, policy-makers and law-makers and the public sector. The production and industry component was assigned to the Food Biosciences Research Centre (FBRC) based at the National Agricultural Research Laboratories under the Ministry of Agriculture; food control to the Uganda National Bureau of Standards (UNBS) and the National Drug Authority (NDA) under the Ministries of Industry and Trade and Health respectively; the communication and social marketing component was assigned to the MoH and Uganda Consumer Protection Association (UCPA); and monitoring and evaluation to the Makerere University Department of Food Science and Technology under the Ministry of Education. The partnerships developed exchange of ideas which led to the choice of wheat as a more effective meal to fortify as wheat is widely used to bake bread, cakes, buns, chapatis etc., which have become affordable staples in homes. The alliance exploited networks and built trust which enabled it to convince the private sector that fortification was good for their businesses and the health of their consumers.

An already existing 2004 national food fortification communication strategy was adapted to the micronutrient deficiency effort. The resulting approach mapped activities to raise awareness of food fortification benefits and to disabuse consumer minds about the side-effects of fortified foods.

4. Hypothesis

- Intersectoral action in food fortification can help reduce micronutrient deficiency among women of reproductive age and children under 15 years.

- Public-private collaboration leads to sustainability of food fortification and cost-effective access to micronutrients.

5. Methodology

The study employed a descriptive qualitative method to examine the processes and results of the National Food Fortification Programme. Key informant interviews were conducted with a purposively selected sample of stakeholder respondents involved in the intersectoral food fortification action in the public and private sectors. They included the NWGFF members, participating public actors in health, education, agriculture, trade, industry and justice sectors, and vegetable oil, wheat and maize processors in major urban centres. The sample was purposively selected to capture a range of stakeholders' perceptions across the participating sectors. The interviews were supplemented by a review of legislative, policy and strategic plans as well as monitoring and evaluation reports. The interviews and document reviews collected data on the programme processes and results.

6. Results

The findings from the baseline survey confirmed inadequate intake levels for five vitamins and minerals critical to good health (Harvey et al., 2008). The implementation results showed that up to 85% of the oil in the market was now fortified with vitamin A. An industrial sampling by UNBS in 2010 found average concentration of vitamin A in oil at 6.25mg/100g, while the overall concentration of vitamin A in 817 oil samples in the market during the first two rounds of surveillance was 5.02 mg/100 (Eboku et al., 2011). The findings also indicated that fortification of cooking oil and fat had increased access of the population to vitamin A. It has been possible to achieve such a significant level of fortification because the vegetable oil industry is less fragmented with only four major processors accounting for 85% of the market share.

Only four big wheat millers with a combined market share ranging between 20% - 30% participated, reflecting a similar percentage of flour in the market being now fortified. An industrial and market sampling by UNBS in 2010 found fortified wheat flour in conformity with the standards. However, the millers, who are fortifying, want mandatory fortification for domestically-produced and imported wheat flour.

Some food processors and retail outlets reported an increase in sales as consumers who are aware of the benefits look out for fortified foods. This was true for maize. Despite the industry being fragmented, some stores that specifically stock fortified maize flour reported running out of stock often. They partly attributed this to media announcements which mentioned Maganjo maize flour as among those foods that are fortified. Participating partners in the private sector are continuing to fortify their products at their own cost. They

have now bought the equipment which was lacking, improved the skills of the personnel and are realizing the benefits of food fortification.

The alliance has subsequently established influence in both the public and private sectors which can be used to drive the cause for fortification through improved policies and regulation such as the push for mandatory fortification of selected domestic and imported processed foods.

7. Analysis

Fortified foods have increased access to vitamin A. With the increase in the consumption of vitamins and minerals, it is expected that this would lead to a reduction in micronutrient deficiency in women of reproductive age and children, which consequently would reduce anaemia and mortality in these vulnerable groups.

Food fortification requires public-private partnership which is beneficial as it leads to development of better policies and regulations in both the private and public sectors. Partnerships also lead to cost-effective approaches to producing and marketing fortified foods. This further increases the demand for fortified foods and leads to sustainability among businesses participating in food fortification.

Sustainability of the initiative will be a major challenge with the ending of the project in 2011 and the consequent shortage of funds. But as the findings have indicated, total compliance and sustainability will, as was the case with iodized salt, depend largely on further legislation to make food fortification mandatory. Another critical component will be the consumer demand triggered and sustained by public awareness drive. Food retailers hold a strong position in the food chain. Besides deciding what type of foods to stock, they are a pivotal communication point in influencing the consumption habits. They, therefore, ought to be a key target of communication efforts as the food fortification drive continues.

8. Conclusion

Food fortification with vitamin A and other essential vitamins and minerals is a cost-effective multisectoral approach to improving deficiency in micronutrients for vulnerable populations such as women of reproductive age and children aged under 15 years. However, its sustainability will depend on increased public-private partnership, awareness of the benefits of and demand for fortified foods, plus legislation to make fortification mandatory.

9. References

1. Eboku D, Enaru F, Ssubi J and Ejalu P (2011). Quality of Fortified Foods in Uganda 2010: Preliminary report for: Round 1 & Round 2: Factory and market sampling and analysis. Uganda National Bureau of Standards (UNBS).

2. Harvey Phil, ZoRambeloson and Omar Dary. The 2008 Uganda Food Consumption Survey: Determining the Dietary Patterns of Ugandan Women and Children. A2Z: The USAID Micronutrient and Child Blindness Project, AED, Washington D.C., 2010. The study's principal investigator, Associate Professor William Kyamuhangire, and co-investigators Professor Joyce Kikafunda and Dr. ArchileoKaaya, were from Makerere University Department of Food Science and Technology.

3. Ministry of Health, STD/AIDS Control Programme (2010). The Status of the HIV/AIDS Epidemic in Uganda: HIV/AIDS Control Epidemiological Surveillance Report 2010.

4. Ministry of Health (July 2010). The Second National Health Policy; (July 2010). Health Sector Strategic Investment Plan 2010/11-2014/15.

5. Uganda Bureau of Statistics (1995). Uganda Demographic and Health Survey 1995.

6. Uganda Bureau of Statistics (UBOS) and Macro International Inc. 2006. Uganda Demographic and Health Survey 2006. Calverton, Maryland, USA: UBOS and Macro International Inc.

ISBN 978-92902325-9

World Health Organization

REGIONAL OFFICE FOR Africa