COMMUNITY BASED SMALL SCALE FORTIFICATION IN RURAL TANZANIA

Anatoli Rugeikulima1, Barbara Main2, Dr. Zewdie Wolde-Gebriel2
World Vision Tanzania1, World Vision Canada2

Abstract

Background: While malnutrition is decreasing significantly in other developing countries, in Sub-Saharan Africa the number of malnourished people has grown from 170 million in early 1990 to 204 million in 2002. Vitamin and mineral deficiencies affect one third of Sub-Saharan Africans. In Tanzania, where anaemia prevalence was 86% in pre-school children (13% severe) and 76% among women of childbearing age and a slight increase in children under 5 years (U5) from 86.3% to 89.7%, which may reflect the high prevalence of malaria (37%) among U5s, micronutrient deficiencies in women and children in Tanzania, a micronutrient and health program (MICAH) implemented small scale fortification (SSF) of staple crops with a goal to increase acceptance and decrease anaemia. Framework: A pilot small-scale home and community-based fortification project was implemented in 2001 in 10 districts in northern Tanzania, where anaemia prevalence was 86% in pre-school children (13%) and 76% among women of childbearing age. In August 2004, a follow up assessment was conducted to measure progress, including changes in iron deficiency anaemia and community acceptance.

Objectives: 1. To reduce the prevalence of anaemia among women and children living in Tanzania 2. To promote increased use and intake of micronutrients in rural communities especially women and children under five years of age 3. To advocate for scaling up small scale fortification to help address micronutrient deficiencies.

Introduction

While malnutrition is decreasing significantly in other developing countries, in Sub-Saharan Africa the number of malnourished people has grown from 170 million in early 1990 to 204 million in 2002. Vitamin and mineral deficiencies affect one third of Sub-Saharan Africans. In Tanzania, where anaemia prevalence was 86% in pre-school children (13% severe) and 76% among women of childbearing age, lack of centrally processed food vehicles, less developed commercial markets and low consumer awareness and demand have delayed food fortification, despite recognition of its effectiveness as a strategy to address micronutrient malnutrition in developing countries. Small-scale, millers are the main source of milling staple foods for the rural population. This, as part of an integrated approach to decrease the burden of micronutrient deficiencies, in women and children in Tanzania, a micronutrient and health program (MICAH) implemented small scale fortification (SSF) of staple crops with a goal to increase acceptance and decrease anaemia. Framework: A pilot small-scale home and community-based fortification project was implemented in 2001 in 10 districts in northern Tanzania, where anaemia prevalence was 86% in pre-school children (13%) and 76% among women of childbearing age. In August 2004, a follow up assessment was conducted to measure progress, including changes in iron deficiency anaemia and community acceptance.

Methods: Survey results indicated a significant decrease of anaemia from 76% to 49% in women of childbearing age and a slight increase in children under 5 years (U5) from 86.3% to 89.7%. This may reflect the high prevalence of malaria (37%) among U5s. Haemoglobin levels for women increased to 11.8 ± 1.7 g/dL in 2004 from 10.7 ± 2.9 g/dL at baseline and for children U5 to 9.9 ± 2.9 g/dL in 2004 from 8.9 ± 1.8 g/dL at baseline.

Discussion

The Small Scale fortification project has the following general objectives: 1. To reduce the prevalence of anaemia among women and children living in Tanzania 2. To promote increased use and intake of micronutrients in rural communities especially women and children under five years of age 3. To advocate for scaling up small scale fortification to help address micronutrient deficiencies.

Acceptance: The proportion of households fortifying maize flour regularly was 89% of the households interviewed (n=201) during the assessment survey.

Community preference for home-based fortification vs. hammer mills: The assessment shows 49% fortified at home, 31% fortified maize flour at a hammer mill and 17% were using both. Among those who fortify at home and hammer mill, 58% of households interviewed preferred adding premix at home and 42% preferred to add premix at hammer mill.

Prevalence of Anaemia: As part of an integrated approach to address prevalence anaemia among women and children, survey results indicated that there was a significant decrease of anaemia from 76% to 49% in women of childbearing age. Similar improvements were not seen in children under five, as no change in anaemia was observed (88% vs. 90%) despite an increase in mean Hb (8.9±1.8 g/dL to 9.8±1.6 g/dL). Prevalence of malaria was high (17%) among children, while not as high as among women (14%).

Key Results

Specific micronutrient content for premixes

Haemoglobin Levels: Haemoglobin levels for women increased to 11.8 ± 1.7 g/dL in 2004 from 10.7 ± 2.9 g/dL at baseline and for children U5 to 9.9 ± 2.9 g/dL in 2004 from 8.9 ± 1.8 g/dL at baseline.

Discussion

The Small Scale Fortification project advocates for the fortification of all maize flour, in order to reach more vulnerable groups including adolescent girls. While fortification is part of an integrated nutrition and health program, the results indicate the potential of SSF to address anaemia among women. It is likely that the supplements and dietary changes also contributed to decreased anaemia. In children under five, the use of fortified maize flour in combination with supplements (20%, coverage) and dietary changes does not appear to have made a significant contribution in addressing anaemia. This was expected, as levels of fortification were targeted to adult women. More studies need to be done on fortifying special foods at higher levels to meet children requirements.

Small Scale Fortification has been widely accepted by participating communities evidenced by the percentage of households using fortified maize flour and expressed willingness to contribute to the cost of fortification.

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Specific micronutrient content for premixes

Home-based fortification

Gain of fortification

Aims

The project partnered with Tanzania Food and Nutrition Centre (TFNC) to formulate the fortificant, which includes the following nutrients: vitamin A, iron (sodium ferric ethylenediamine tetra acetic acid-EDTA), vitamins B1, B2, B3, B12, folate, vitamin C and calcium. The fortificants are diluted to form the premix, a premix flour to dilute the fortificants. The premix is sold in sachets of 10g and distributed to private mills selected by communities. Most hammer mills are located near the home of the users; on average the maize mill, when used, is used within 30 minutes to one hour of the user’s household. Following frequent breakdown of mills, an additional strategy involving household distribution of the premix commenced. Village Health Workers distributed premix of fortificants to women participating in the program. For home-based fortification, premix users were instructed to add a 10g sachet of fortificant to 1 kg of maize flour and mix well prior to cooking. Distribution of fortificant premix was implemented by 45 mills and Village Health Workers, covering 11,000 households.

In August 2004, a follow up assessment was conducted to measure progress, including changes in iron deficiency anaemia and community acceptance.

Outcomes:

The Small Scale fortification project has the following general objectives: 1. To reduce the prevalence of anaemia among women and children living in Tanzania 2. To promote increased use and intake of micronutrients in rural communities especially women and children under five years of age 3. Advocate for scaling up small scale fortification to help address micronutrient deficiencies.

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