



LARGE MULTI-COUNTRY INTEGRATED MICRONUTRIENT INTERVENTIONS CONTRIBUTE TO ACHIEVING GLOBAL NUTRITION AND HEALTH TARGETS

K. Siekmans, B. Main, J. Hildebrand, C. MacDonald
World Vision Canada

ABSTRACT

Background: A 1994 World Bank report predicted that millions of lives could be saved by eliminating vitamin and mineral deficiencies. The Micronutrient and Health (MICAHA) Program addressed micronutrient malnutrition in women and children in five African countries between 1996 and 2006. **Aims:** With CIDA funding, World Vision Canada worked with the WV partners in Ethiopia, Ghana, Malawi, Senegal and Tanzania to develop integrated, community owned nutrition and health programs. **Framework:** MICAHA partnered with existing delivery systems within government ministries to improve their capacity to impact health and nutrition. Fortification, supplementation and dietary diversification were implemented to improve dietary intake. Communities were empowered to promote exclusive breastfeeding, animal source foods, household gardens, latrine construction and use, which along with enhanced capacity of health workers, laid the framework for a sustainable nutrition and health infrastructure. Primary health care was improved to reduce the impact of malaria, diarrhea and parasites. Impact was measured through a comprehensive baseline survey of 18,250 households (1996/1997/2003), follow-up survey of 15,500 households (2000/2001) and final survey of 11,650 households (2004/2005/2006). Qualitative and quantitative data were collected on nutrition, health and food security. **Outcomes:** Bitot's spots were reduced from 6.4% to 0% in Ethiopian preschoolers and vitamin A coverage increased from 9 to 70%. Anemia dropped from 43% to 18% in women in Ghana and 72% to 51% in Tanzanian women, and from 75% to 31% in children under 5 in Ghana. In Malawi, Iodine Deficiency Disorder decreased from 16% to 1% and total goitre rate dropped from 19% to 4%. Iodized salt use increased from 38% to 63% in Ghana. Overall nutrition improved with decreased stunting from 43% to 28% in Tanzanian children, decreased wasting from 29% to 13% in Malawian children and decreased wasting from 22% to 9% in children in Ghana. Cost per direct beneficiary per year was as follows: vitamin A supplementation \$0.67; iron supplementation \$2.75; iodized salt \$1.16; community milling \$1.28; malaria control \$6.95; control of other diseases \$2.62. **Implications:** The MICAHA project improved nutritional status of women and children in Ethiopia, Ghana, Malawi, and Tanzania and helped build sustainable infrastructure and capacity for health and nutrition. MICAHA demonstrated how integrated nutrition interventions could impact MDGs. Scale-up of large-scale nutrition interventions like MICAHA offers potential to improve quality of life for women and children.

INTRODUCTION

In 1994, a World Bank study concluded that millions of lives could be saved in developing countries by eliminating vitamin and mineral malnutrition. A staggering one-third of people on earth are affected by micronutrient malnutrition. The impact of micronutrient deficiencies on a country's productivity is huge, costing some countries more than 5% of their GNP in lost lives, disability and productivity. Women and children are the most vulnerable to micronutrient deficiencies because of their increased nutrient needs. Health and food security interventions are less effective in reducing illness and death when micronutrient deficiencies prevail.



Dialogue among World Vision Canada, WV Africa partners and the Canadian International Development Agency (CIDA) took place in late 1995 regarding the opportunity for a large scale, multi-country nutrition program in Africa, and in 1996, the Micronutrient and Health (MICAHA) program was born. Its mission was straightforward:

Use integrated health and nutrition interventions to reduce micronutrient deficiencies among society's most vulnerable members – children under five and women of child-bearing age, including pregnant women.

With funding from CIDA, five African nations were targeted – Ethiopia, Ghana, Malawi, Senegal and Tanzania. From start to finish, MICAHA's positive impact on target communities and populations was well documented. Progress was recorded through a baseline survey (1996/97) of 10,250 households and a follow-up survey repeated in 2000/01 of 15,500 households to determine the impact of Phase 1, and to provide a benchmark to evaluate Phase 2. Finally, surveys took place in 2004/05/06 among over 11,000 households to determine overall program impact. Comparison areas were surveyed in the follow-up & final evaluations to provide coverage for key indicators where the program was not implemented.

PROGRAM OVERVIEW

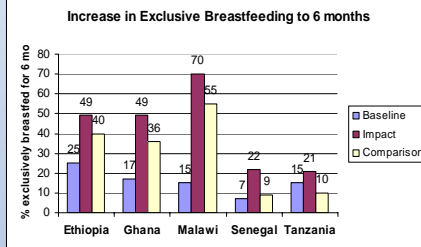
OBJECTIVES	ACTIVITIES	OUTPUTS ¹
1 Increase intake and bioavailability of micronutrients (iron, iodine and vitamin A)	<ul style="list-style-type: none"> •Supplementation •Fortification •Infant & young child feeding •Dietary diversification & modification 	<ul style="list-style-type: none"> Vitamin A Supplementation <ul style="list-style-type: none"> • 1,990,979 VAC to children US • 2,042,105 VAC to school-age children • 93,947 VAC to postpartum women Iron supplementation <ul style="list-style-type: none"> • 85,267 preschool & 21,779 school-age children • 127,014 pregnant & 62,034 lactating women • 66,782 women 15-49 years Dietary intake <ul style="list-style-type: none"> • 64 community mills fortifying staple food • 60,837 new gardens created • 1,165,485 fruit trees planted
2 Reduce the prevalence of diseases that affect micronutrient status (diarrheal, parasitic and vaccine-preventable)	<ul style="list-style-type: none"> •Water and sanitation •Malaria control •Treatment for parasites •Immunization 	<ul style="list-style-type: none"> • 473 protected water points established • 35,437 latrines constructed • 133,339 insecticide-treated nets distributed • 640,634 children de-wormed • 90,828 children treated for schistosomiasis
3 Build local capacity for delivery systems to improve micronutrient status	<ul style="list-style-type: none"> •Train staff & community members •Influence national policy or compliance to policy •MICAHA Guide & lab equipment 	<ul style="list-style-type: none"> • 35,798 staff and volunteers trained • 493 media messages disseminated • Over 16,000 education sessions provided • MICAHA results shared at international fora

¹ Achieved by MICAHA in collaboration with government ministries and communities

CONTRIBUTION TO GLOBAL TARGETS

	OUTCOME			IMPACT				
Vitamin A Supplementation Coverage								
Ethiopia	9%	↑	70%	Children US	6%	↓	0%	Bitot's spots
Ghana	13%	↑	63%	Postpartum women	24%	↓	9%	Low breast milk retinol
Tanzania	26%	↑	83%	Postpartum women	94%	↓	0%	Low breast milk retinol
Iron Supplementation Coverage								
Ethiopia	10%	↑	43%	Pregnant women	N/A		36%	Anemia (Hb<110g/L)
Malawi	49%	↑	51%	Pregnant women	59%	↓	48%	Anemia (Hb<110g/L)
Tanzania	78%	↑	89%	Pregnant women	87%	↓	73%	Anemia (Hb<110g/L)
Senegal**	5%	↑	72%	Pregnant women	81%	↓	65%	Anemia (Hb<110g/L)
Ghana	79%	↑	85%	Children US	75%	↓	31%	Anemia (Hb<110g/L)
Malawi	N/A	↑	68%	Children US	86%	↓	60%	Anemia (Hb<110g/L)
Tanzania	N/A	↑	26%	Children US	88%	↓	75%	Anemia (Hb<110g/L)
Ghana	7%	↑	91%	WCBA	43%	↓	18%	Anemia (Hb<120g/L)
Malawi	68%	↑	72%	WCBA	51%	↓	39%	Anemia (Hb<120g/L)
Iodized Salt Use								
Ethiopia	48%	↓	2%		42%	↓	31%	Total Goitre Rate
Malawi	59%	↑	88%		19%	↓	4%	Total Goitre Rate
Ghana	33%	↑	63%	Households	7%	↓	5%	Urinary iodine <20µg/L
Senegal**	30%	↑	79%		40%	↓	32%	Urinary iodine <20µg/L
Tanzania	41%	↑	72%		5%	↓	0.5%	Urinary iodine <20µg/L
Anemia Prevalence								

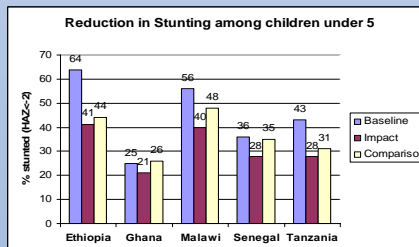
^{*} changes are from follow-up (2000) to final (2004)
^{**} changes are from baseline (2003) to final (2006) for Senegal, Phase 2 only



Quality Complementary Feeding



Growth Monitoring



COST ANALYSIS

Overall cost of the MICAHA program was approximately US \$29 million over 10 years for the five countries. With an estimated reach to over 2.8 million beneficiaries throughout that period of time, the average cost per beneficiary is estimated at \$1.03. More detailed cost analysis by intervention was conducted using activity-based cost data from phase 2. Beneficiary numbers were calculated based on program monitoring data that tracked actual recipients of interventions. Weighted average costs by groups of interventions are presented in the following table.

Interventions (types of beneficiaries)	Average cost per beneficiary receiving the intervention (Range)
Vitamin A Supplementation (postpartum women, US & school-age children)	\$0.67 (0.29, 1.16)
Iron Supplementation (pregnant & non-pregnant women, US & school-age children)	\$2.75 (1.01, 4.87)
Iodized Salt Promotion (households)	\$1.16 (1.09, 1.23)
Community-level – fortification of staple foods (households in selected project areas)	\$1.28 (0.57, 1.32)
Malaria Prevention & Control – ITNs, malaria treatment, IPT (US children, pregnant women)	\$6.95 (2.48, 11.96)
Other Disease Prevention & Control – Hookworm & Schistosomiasis treatment, water source protection, latrine construction, immunization support (US & school-age children, households)	\$2.62 (0.82, 4.39)

IMPLICATIONS

Working in close cooperation with government, non-government organizations (NGO's), and communities, MICAHA built on existing delivery systems within ministries of health, education and agriculture, equipping them to strengthen the coverage and quality of their mandated activities. The foundation for a self-sustaining nutrition and health infrastructure was laid, by empowering communities to take ownership for program activities within their grasp: exclusive breastfeeding, capacity building of community health workers in nutrition and health, establishment of household gardens and revolving funds, and latrine construction.



Quantitative and qualitative program results affirm the contribution of MICAHA's achievements to the Millennium Development Goals and global nutrition and health targets in Ethiopia, Ghana, Malawi, Senegal and Tanzania. MICAHA demonstrated how large-scale integrated nutrition interventions can be effective in improving the nutritional status of women and children, building sustainable capacity for long-term impact on health and nutrition. Scale-up of integrated approaches like MICAHA offers the potential to improve quality of life for women and children.



Sharing MICAHA learning with World Vision and government partners from Africa, Asia and Latin America

Acknowledgements: The MICAHA Project is funded by the Canadian International Development Agency (CIDA) and World Vision Canada (WVC), managed by WVC and implemented by World Vision in collaboration with a number of government institutions, partner NGOs and MICAHA communities.