Food Aid Quality Review Project

Resource Book

The Future of Food Assistance for Nutrition: Evidence Summit II
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FAQR Resource Book

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Advancing Nutrition in the International Food Assistance Agenda: Progress and Future Directions Identified at the 2018 Food Assistance for Nutrition Evidence Summit

Meeting Report

Advancing Nutrition in the International Food Assistance Agenda: Progress and Future Directions Identified at the 2018 Food Assistance for Nutrition Evidence Summit

Lindsey Ellis Green, MA[1], Ilana R. Cliffer, MPH[1], Devika J. Suri, MS, MPH[1], Kristine R. Caiafa, MS[1], Beatrice L. Rogers, PhD[1], and Patrick J. R. Webb, PhD[1]

Background: Global food insecurity persists despite continued international attention, necessitating evidence-based food assistance interventions that adequately address nutritional concerns. In June 2018, the US Agency for International Development's Office of Food for Peace through the Food Aid Quality Review (FAQR) project sponsored a "Food Assistance for Nutrition Evidence Summit" to share evidence relevant to policy and programmatic decision-making and to identify critical evidence gaps.

Objective: This article presents 4 priority areas to advance nutrition in the international food assistance agenda generated through presentations and discussions with the food assistance community at the Evidence Summit.

Methods: Priority areas were identified after the Evidence Summit using a combination of FAQR team discussions, review of presentations and official notes, and supporting literature.

Results: Key priority areas to advance nutrition in the international food assistance agenda are as follows: (1) increase research funding for food assistance in all contexts, paying particular attention to emergency settings; (2) research and adopt innovative ingredients, technology, and delivery strategies in food assistance products and programs that encourage long-term well-being; (3) redefine and expand indicators of nutritional status to capture contextual information about the outcomes of food assistance interventions; and (4) augment communication and collaboration across the food assistance ecosystem.

Conclusions: These priorities are critical in a time of increased humanitarian need and will be key to fostering long-term resilience among vulnerable groups.

Keywords
food aid, food assistance, nutrition, emergency response, humanitarian, development, global health, maternal and child health, malnutrition

AUTHORS: Lindsey Ellis Green, Ilana Cliffer, Devika Suri, Kristine Caiafa, Beatrice Rogers, and Patrick Webb

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CITATION:

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Factors that May Influence the Effectiveness of 4 Specialized Nutritious Foods in the Prevention of Stunting and Wasting in Children Aged 6–23 Months in Burkina Faso

ORIGINAL RESEARCH

CURRENT DEVELOPMENTS IN NUTRITION

Community and Global Nutrition

Factors that May Influence the Effectiveness of 4 Specialized Nutritious Foods in the Prevention of Stunting and Wasting in Children Aged 6–23 Months in Burkina Faso

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ABSTRACT

Background: A trial in Burkina Faso compared the cost-effectiveness of 4 specialized nutritious foods (SNFs) used to prevent stunting and wasting in children aged 6–23 mo.

Objectives: This article explores differences in SNF use that may have influenced effectiveness, specifically in relation to consumption by the recipient child and by any other person (i.e., sharing), other diversion from the recipient child, preparation, storage, and hygiene.

Methods: Subsamples from a geographically clustered, longitudinal trial with random assignment to Corn Soy Blend Plus with oil (CSB+ w/oil), Corn Soy Whey Blend with oil (CSWB w/oil), Super Cereal Plus (SC+), or ready-to-use supplementary food (RUSF) were selected for in-depth interviews, in-home observations, and focus group discussions.

Results: Sharing was common in all arms, with the highest reported in SC+ (73%) and highest observed in CSWB w/oil (36%). Some reported giving the ration away (highest in SC+ at 17%) or using it for other purposes (highest in CSWB w/oil at 17%). The recipient child was observed consuming the ration in 49% of households on average (38–60% by arm in CSB+ w/oil and RUSF, respectively). Qualitative reports of bitterness and spoilage emerged in the CSWB w/oil arm. Most observed households (excluding RUSF) did not prepare porridge daily as instructed (35–46% by arm). Household water samples showed either high-risk or unsafe contamination with *Escherichia coli* (72–78% by arm). Low percentages were observed handwashing (both child and server) before consuming the porridge.

Conclusions: The SNFs were not prepared or served as intended and diversion from the recipient was common. Storage conditions may have resulted in spoilage of the ration containing whey before reaching recipients. This article provides context about factors that may have influenced the effectiveness of these SNFs. Programming and household use of SNFs are as important as their nutrient composition. This trial was registered at clinicaltrials.gov as NCT02071563. *Curr Dev Nutr* 2020;4:nzaa002.

Keywords: supplementary feeding, children under 5, corn–soy blend, lipid-based nutrient supplements, stunting, wasting, specialized nutritious food, Burkina Faso

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All quantitative data used for the publication of this article will be publicly available through the USAID Development Data Library: https://data.usaid.gov. In addition, the study protocol and data can be made available by the corresponding author upon request.

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Abbreviations used: CSB+ w/oil, Corn Soy Blend Plus with oil; CSWB w/oil, Corn Soy Whey Blend with oil; FRF, fortified blended food; RUSF, ready-to-use supplementary food; SC+, Super Cereal Plus; SNF, specialized nutritious food.

Introduction

It is well known that the first 2 y of life is a critical period for prevention of growth faltering through adequate complementary feeding (1–5). A range of complementary feeding strategies, including use of specialized nutritious foods (SNFs), have been shown to improve growth outcomes and reduce child stunting in food-insecure settings (6, 7). But these findings show either modest improvements or mixed evidence, with declining rates of growth still observed among groups that receive food supplementation (8–16). There is growing consensus that supplementary feeding programs providing SNFs must account for the feeding and preparation behaviors within the household that may influence how much and in what way the products are consumed and thus their effectiveness (17). These factors are wide-

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THEMES: supplementary feeding, children under 5, corn–soy blend, lipid-based nutrient supplements, stunting, wasting, specialized nutritious food, Burkina Faso

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Cost-Effectiveness of 4 Specialized Nutritious Foods in the Prevention of Stunting and Wasting in Children Aged 6–23 Months in Burkina Faso: A Geographically Randomized Trial

ORIGINAL RESEARCH

CURRENT DEVELOPMENTS IN NUTRITION

Intervention Program Methods and Outcomes

Cost-Effectiveness of 4 Specialized Nutritious Foods in the Prevention of Stunting and Wasting in Children Aged 6–23 Months in Burkina Faso: A Geographically Randomized Trial

Ilana R Cliffer,[1] Laetitia Nikiema,[2] Breanne K Langlois,[1] Augustin N Zeba,[2] Ye Shen,[1] Hermann B Lanou,[2] Devika J Suri,[1,3] Franck Garanet,[2] Kenneth Chui,[4] Stephen Vosti,[5] Shelley Walton,[1] Irwin Rosenberg,[1] Patrick Webb,[1] and Beatrice L Rogers[1]

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ABSTRACT

Background: There is a variety of specialized nutritious foods available for use in programs targeting undernutrition, but evidence supporting the choice of product is limited.

Objectives: We compared the cost-effectiveness of 4 specialized nutritious foods to prevent stunting and wasting in children aged 6–23 mo in Burkina Faso.

Methods: Four geographic regions were randomly assigned to 1 of 4 intervention arms: Corn-Soy Blend Plus (CSB+) programmed with separate fortified vegetable oil (the reference food), Corn-Soy-Whey Blend (CSWB; a new formulation) with oil, SuperCereal Plus (SC+), and ready-to-use supplementary food (RUSF). We compared the effects of each intervention arm on growth (length-for-age z score (LAZ), weight-for-length z score (WLZ), end-line stunting (LAZ < −2), and total monthly measurements of wasting (WLZ < −2). Rations were ~500 kcal/d, distributed monthly. Children were enrolled in the blanket supplementary feeding program at age ~6 mo and measured monthly for ~18 mo. Average costs per child reached were linked with effectiveness to compare the cost-effectiveness of each arm with CSB+ with oil.

Results: In our sample of 6112 children (CSB+, n = 1519; CSWB, n = 1503; SC+, n = 1564; RUSF, n = 1526), none of the foods prevented declines in growth. Children in the SC+ and RUSF arms were not significantly different than those in the CSB+ with oil arm. Children in the CSWB with oil arm experienced higher end-line (measurement at age 22.9–23.9 mo) stunting (OR: 2.07; 95% CI: 1.46, 2.94) and more months of wasting (incidence rate ratio: 1.29; 95% CI: 1.09, 1.51). CSB+ with oil was the least-expensive ration in all costing scenarios ($113–131 2018 US dollars/enrolled child) and similar in effectiveness to SC+ and RUSF, and thus the most cost-effective product for the defined purposes.

Conclusions: CSB+ with oil was the most cost-effective ration in the prevention of wasting and stunting in this trial. This trial was registered at clinicaltrials.gov as NCT02071563. *Curr Dev Nutr* 2020;4:nzaa006.

Keywords: food aid, children, supplementary feeding, complementary feeding, cost-effectiveness, corn-soy blend, lipid-based nutrient supplements, low-income countries, stunting, wasting

Introduction

Stunting (low height-for-age) and wasting (low weight-for-height) often start during the first 1000 d of life, a critical window of opportunity for growth and development (1, 2). In the period when children are between 6 and 23 mo of age (3), they are no longer sufficiently nourished by breast milk alone and require nutrient-dense complementary foods (3–6). In settings where food insecurity is common, complementary foods are typically inadequate in quantity and quality, so children often experience growth faltering. Interventions that make appropriate

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Program Changes are Effective and Cost-effective in Increasing the Amount of Oil Used in Preparing Corn-Soy Blend Porridge for Treatment of Moderate Acute Malnutrition: An FAQR study in Malawi

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ORIGINAL ARTICLE

Program changes are effective and cost-effective in increasing the amount of oil used in preparing corn soy blend porridge for treatment of moderate acute malnutrition in Malawi

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Abstract
Corn Soy Blend (CSB) porridge is commonly prepared with oil for treatment of moderate acute malnutrition (MAM). A recent review recommended that 30 g of oil be used with 100 g of CSB to increase energy density and micronutrient absorption. This study assessed the effectiveness and cost-effectiveness of program changes aimed at achieving that target oil:CSB ratio in prepared porridge. Caregivers of children in MAM supplementary feeding programs were assigned to three groups: a control group received monthly rations of 1 L oil, 8 kg CSB in bulk, and social and behavior change communication (SBCC); intervention groups received 2.6 L oil, 8 kg CSB provided either in bulk (Group 1) or four 2-kg packages with printed messages (Group 2), and enhanced SBCC emphasizing the target oil:CSB ratio. Compared to the control, both intervention groups had higher mean added oil per 100 g CSB (18 g, $p < 0.01$, and 13 g, $p = 0.04$, higher in groups 1 and 2, respectively), and greater odds of meeting or exceeding the target ratio (28.4, $p < 0.01$, and 12.7, $p = 0.02$, in groups 1 and 2, respectively). Cost per caregiver reaching the target ratio was most favorable in Group 1 ($391 in Group 1, $527 in Group 2, and $1,666 in the control). Enhanced SBCC combined with increased oil ration resulted in increased use of oil in CSB porridge in a supplementary feeding program. Modified packaging did not improve effectiveness. However, both interventions were more cost-effective than standard programming.

KEYWORDS
corn soy blend, food aid, fortified blended food, Moderate acute malnutrition, social and behavior change communication, supplementary feeding

1 | INTRODUCTION

It is estimated that globally, there are more than 33 million children suffering from moderate acute malnutrition[1] (Patel, Sandige, & Ndekha, 2005; Phuka, 2008). Efforts to prevent and treat moderate acute malnutrition (MAM) typically rely on nutrient-dense supplementary foods, including several variations of fortified blended foods, combinations of fortified blended foods with other commodities, and ready-to-use supplementary foods (RUSFs). Corn Soy Blend (CSB) with fortified vegetable oil is one such combination used in United States Agency for International Development (USAID), Office of Food for Peace supported programs to treat MAM.

A recent review of research on supplementary feeding (Webb et al., 2011) recommended that CSB be prepared into a porridge with vitamin A & D fortified vegetable oil at a ratio of 30 g added oil per 100 g CSB (abbreviated 30:100) to increase calorie density, enhance absorption of fat-soluble vitamins, and improve the profile of essential

[1]MAM is defined by the World Health Organization as having a weight for height Z-score (WHZ) < −2 and ≥ −3 with absence of edema (WHO, 2006).

AUTHORS: Beatrice Rogers, Lauren Wilner, Gray Maganga, Shelley Walton, Devika Suri, Breanne Langlois, Ken Chui, Jocelyn Boiteau, Stephen Vosti, Patrick Webb

DATE/JOURNAL PUBLISHED: 2016

THEMES: corn soy blend, food aid, fortified blended food, moderate acute malnutrition, social and behavior change communication, supplementary feeding

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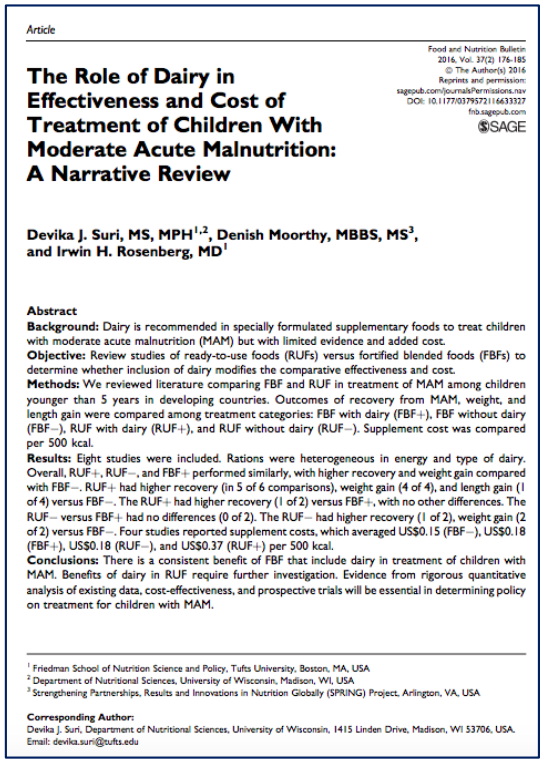
The Role of Dairy in the Comparative Effectiveness and Cost of Fortified Blended Foods Versus Ready-to-Use Foods in Treatment of Children with Moderate Acute Malnutrition: A Narrative Review



Article

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The Role of Dairy in Effectiveness and Cost of Treatment of Children With Moderate Acute Malnutrition: A Narrative Review

Devika J. Suri, MS, MPH[1,2], Denish Moorthy, MBBS, MS[3], and Irwin H. Rosenberg, MD[1]

Abstract

Background: Dairy is recommended in specially formulated supplementary foods to treat children with moderate acute malnutrition (MAM) but with limited evidence and added cost.
Objective: Review studies of ready-to-use foods (RUFs) versus fortified blended foods (FBFs) to determine whether inclusion of dairy modifies the comparative effectiveness and cost.
Methods: We reviewed literature comparing FBF and RUF in treatment of MAM among children younger than 5 years in developing countries. Outcomes of recovery from MAM, weight, and length gain were compared among treatment categories: FBF with dairy (FBF+), FBF without dairy (FBF−), RUF with dairy (RUF+), and RUF without dairy (RUF−). Supplement cost was compared per 500 kcal.
Results: Eight studies were included. Rations were heterogeneous in energy and type of dairy. Overall, RUF+, RUF−, and FBF+ performed similarly, with higher recovery and weight gain compared with FBF−. RUF+ had higher recovery (in 5 of 6 comparisons), weight gain (4 of 4), and length gain (1 of 4) versus FBF−. The RUF+ had higher recovery (1 of 2) versus FBF+, with no other differences. The RUF− versus FBF+ had no differences (0 of 2). The RUF− had higher recovery (1 of 2), weight gain (2 of 2) versus FBF−. Four studies reported supplement costs, which averaged US$0.15 (FBF−), US$0.18 (FBF+), US$0.18 (RUF−), and US$0.37 (RUF+) per 500 kcal.
Conclusions: There is a consistent benefit of FBF that include dairy in treatment of children with MAM. Benefits of dairy in RUF require further investigation. Evidence from rigorous quantitative analysis of existing data, cost-effectiveness, and prospective trials will be essential in determining policy on treatment for children with MAM.

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DATE/JOURNAL PUBLISHED: 2016

THEMES: moderate acute malnutrition, lipid-based nutrient supplements, ready-to-use supplementary foods, fortified-blended foods, children younger than 5 years

ABSTRACT:

Background: Dairy is recommended in specially formulated supplementary foods to treat children with moderate acute malnutrition (MAM) but with limited evidence and added cost.
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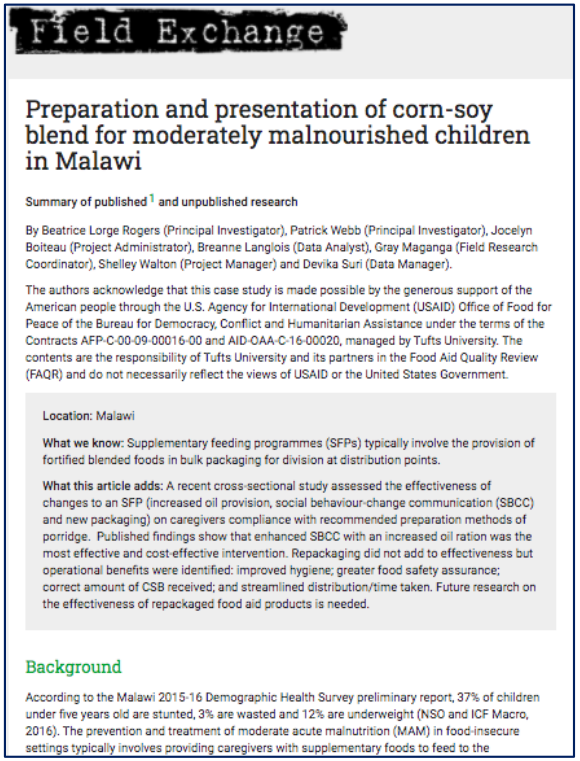
Preparation and Presentation of Corn-Soy Blend for Moderately Malnourished Children in Malawi



Field Exchange

Preparation and presentation of corn-soy blend for moderately malnourished children in Malawi

Summary of published[1] and unpublished research

By Beatrice Lorge Rogers (Principal Investigator), Patrick Webb (Principal Investigator), Jocelyn Boiteau (Project Administrator), Breanne Langlois (Data Analyst), Gray Maganga (Field Research Coordinator), Shelley Walton (Project Manager) and Devika Suri (Data Manager).

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Location: Malawi

What we know: Supplementary feeding programmes (SFPs) typically involve the provision of fortified blended foods in bulk packaging for division at distribution points.

What this article adds: A recent cross-sectional study assessed the effectiveness of changes to an SFP (increased oil provision, social behaviour-change communication (SBCC) and new packaging) on caregivers compliance with recommended preparation methods of porridge. Published findings show that enhanced SBCC with an increased oil ration was the most effective and cost-effective intervention. Repackaging did not add to effectiveness but operational benefits were identified: improved hygiene; greater food safety assurance; correct amount of CSB received; and streamlined distribution/time taken. Future research on the effectiveness of repackaged food aid products is needed.

Background

According to the Malawi 2015-16 Demographic Health Survey preliminary report, 37% of children under five years old are stunted, 3% are wasted and 12% are underweight (NSO and ICF Macro, 2016). The prevention and treatment of moderate acute malnutrition (MAM) in food-insecure settings typically involves providing caregivers with supplementary foods to feed to the

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THEMES: corn soy blend, food aid, fortified blended food, moderate acute malnutrition, social and behavior change communication, supplementary feeding

ABSTRACT: Corn Soy Blend (CSB) porridge is commonly prepared with oil for treatment of moderate acute malnutrition (MAM). A recent review recommended that 30 g of oil be used with 100 g of CSB to increase energy density and micronutrient absorption. This study assessed the effectiveness and cost-effectiveness of program changes aimed at achieving that target oil:CSB ratio in prepared porridge. Caregivers of children in MAM supplementary feeding programs were assigned to three groups: a control group received monthly rations of 1 L oil, 8 kg CSB in bulk, and social and behavior change communication (SBCC); intervention groups received 2.6 L oil, 8 kg CSB provided either in bulk (Group 1) or four 2-kg packages with printed messages (Group 2), and enhanced SBCC emphasizing the target oil:CSB ratio. Compared to the control, both intervention groups had higher mean added oil per 100 g CSB (18 g, $p < 0.01$, and 13 g, $p = 0.04$, higher in groups 1 and 2, respectively), and greater odds of meeting or exceeding the target ratio (28.4, $p < 0.01$, and 12.7, $p = 0.02$, in groups 1 and 2, respectively). Cost per caregiver reaching the target ratio was most favorable in Group 1 ($391 in Group 1, $527 in Group 2, and $1,666 in the control). Enhanced SBCC combined with increased oil ration resulted in increased use of oil in CSB porridge in a supplementary feeding program. Modified packaging did not improve effectiveness. However, both interventions were more cost-effective than standard programming.

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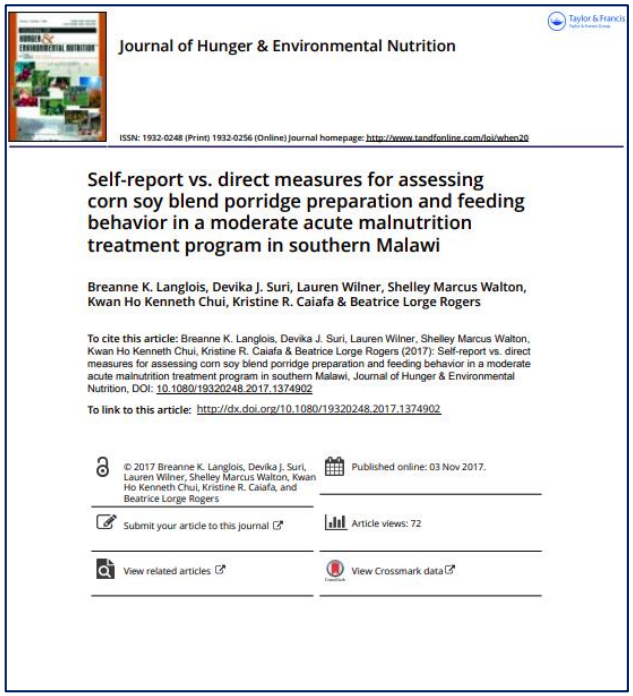
Self-report vs. Direct Measures for Assessing Corn-Soy Blend Porridge Preparation and Feeding Behavior in a Moderate Acute Malnutrition Treatment Program in Southern Malawi



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Self-report vs. direct measures for assessing corn soy blend porridge preparation and feeding behavior in a moderate acute malnutrition treatment program in southern Malawi

Breanne K. Langlois, Devika J. Suri, Lauren Wilner, Shelley Marcus Walton, Kwan Ho Kenneth Chui, Kristine R. Caiafa & Beatrice Lorge Rogers

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AUTHORS: Breanne Langlois, Devika Suri, Lauren Wilner, Shelley Walton, Ken Chui, Kristine Caiafa, Beatrice Rogers

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THEMES: Food aid, corn soy blend, supplementary feeding, moderate acute malnutrition, self-report, in-home observation, sharing, Malawi

ABSTRACT: This analysis assessed whether caregivers' reports about the amount of oil added to corn soy blend (CSB) porridge were consistent with lab analysis and whether reported sharing of CSB porridge was consistent with direct observation. This was a secondary analysis of a feasibility study assessing 2 programmatic changes in a supplementary feeding program for treatment of moderate acute malnutrition (MAM) in southern Malawi. Intervention groups received standard monthly rations of CSB with increased oil along with social behavior change communication (SBCC) to increase the amount of oil added to CSB porridge and reduce sharing. A control group received the standard CSB and oil ration. Self-reported data collected through structured interviews with caregivers were compared with laboratory analysis of CSB porridge samples and in-home observation over a 5-day period. On average, participants overreported the amount of oil used in prepared CSB porridge; self-report tended to be closer than the lab-assessed values to the amount recommended in the SBCC. Self-reported and observed sharing appeared consistent across groups. Overall, the self-reported and direct measures showed the same relationships among the groups. Self-report and objective measures were inconsistent but conveyed the same overall message.

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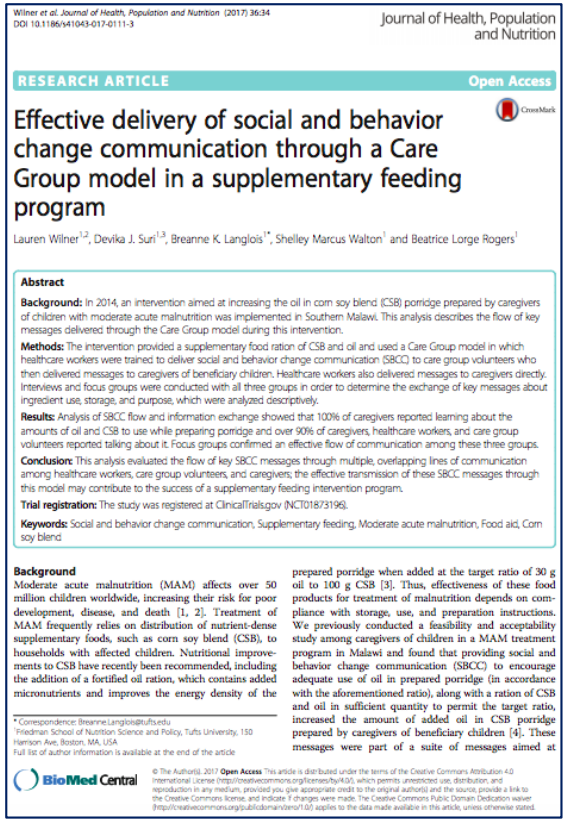
Effective Delivery of Social and Behavior Change Communication through a Care Group Model in a Supplementary Feeding Program



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RESEARCH ARTICLE Open Access

Effective delivery of social and behavior change communication through a Care Group model in a supplementary feeding program

Lauren Wilner[1,2], Devika J. Suri[1,3], Breanne K. Langlois[1*], Shelley Marcus Walton[1] and Beatrice Lorge Rogers[1]

Abstract

Background: In 2014, an intervention aimed at increasing the oil in corn soy blend (CSB) porridge prepared by caregivers of children with moderate acute malnutrition was implemented in Southern Malawi. This analysis describes the flow of key messages delivered through the Care Group model during this intervention.

Methods: The intervention provided a supplementary food ration of CSB and oil and used a Care Group model in which healthcare workers were trained to deliver social and behavior change communication (SBCC) to care group volunteers who then delivered messages to caregivers of beneficiary children. Healthcare workers also delivered messages to caregivers directly. Interviews and focus groups were conducted with all three groups in order to determine the exchange of key messages about ingredient use, storage, and purpose, which were analyzed descriptively.

Results: Analysis of SBCC flow and information exchange showed that 100% of caregivers reported learning about the amounts of oil and CSB to use while preparing porridge and over 90% of caregivers, healthcare workers, and care group volunteers reported talking about it. Focus groups confirmed an effective flow of communication among these three groups.

Conclusion: This analysis evaluated the flow of key SBCC messages through multiple, overlapping lines of communication among healthcare workers, care group volunteers, and caregivers; the effective transmission of these SBCC messages through this model may contribute to the success of a supplementary feeding intervention program.

Trial registration: The study was registered at ClinicalTrials.gov (NCT01873196).

Keywords: Social and behavior change communication, Supplementary feeding, Moderate acute malnutrition, Food aid, Corn soy blend

Background

Moderate acute malnutrition (MAM) affects over 50 million children worldwide, increasing their risk for poor development, disease, and death [1, 2]. Treatment of MAM frequently relies on distribution of nutrient-dense supplementary foods, such as corn soy blend (CSB), to households with affected children. Nutritional improvements to CSB have recently been recommended, including the addition of a fortified oil ration, which contains added micronutrients and improves the energy density of the prepared porridge when added at the target ratio of 30 g oil to 100 g CSB [3]. Thus, effectiveness of these food products for treatment of malnutrition depends on compliance with storage, use, and preparation instructions. We previously conducted a feasibility and acceptability study among caregivers of children in a MAM treatment program in Malawi and found that providing social and behavior change communication (SBCC) to encourage adequate use of oil in prepared porridge (in accordance with the aforementioned ratio), along with a ration of CSB and oil in sufficient quantity to permit the target ratio, increased the amount of added oil in CSB porridge prepared by caregivers of beneficiary children [4]. These messages were part of a suite of messages aimed at

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THEMES: Social and behavior change communication, Supplementary feeding, Moderate acute malnutrition, Food aid, Corn soy blend

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Making Food Aid Fit-for-Purpose in the 21st Century: A Review of Recent Initiatives Improving the Nutritional Quality of Foods Used in Emergency and Development Programming

Review

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Making Food Aid Fit-for-Purpose in the 21st Century: A Review of Recent Initiatives Improving the Nutritional Quality of Foods Used in Emergency and Development Programming

Patrick Webb, PhD[1], Kristine Caiafa, MS[1], and Shelley Walton, MPH[1]; for the Food Aid Quality Review Group

Abstract
Important strides have been made recently in upgrading the global food aid agenda in line with evolving medical and nutrition sciences, operational experience, and innovations in food technology. A 2011 report endorsed by the United States Agency for International Development (USAID) recommended numerous improvements to products intended to support improved survival and nutrition in humanitarian programming, as well as greater rigor and transparency in the research agenda that supports innovations in this critical field. This article reviews progress since 2011 made by USAID, and other global food aid providers, in developing food aid products that are fit-for-purpose and are appropriately formulated to save lives in emergencies and to promote healthy mothers and children in nonemergency contexts. It highlights important modifications and addition made to products and identifies persisting knowledge gaps that should be prioritized in future research.

Keywords
food aid, humanitarian, food technology, nutrition, food assistance, evidence-based

Introduction
As of the end of 2016, the United Nations estimated that 36 countries, including 28 in Africa, were in need of food aid because of major droughts or armed conflicts.[1] Almost 100 million people were at that time receiving urgent life-saving humanitarian assistance, including almost 6 million in the Democratic Republic of Congo, 14 million in the Syrian Arab Republic, and 20 million in Yemen.[2] Millions more faced longer-term health threats in the context of chronic food insecurity, hunger, and persistent undernutrition.[2,3]

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THEMES: food aid, humanitarian, food technology, nutrition, food assistance, evidence-based

ABSTRACT: Important strides have been made recently in upgrading the global food aid agenda in line with evolving medical and nutrition sciences, operational experience, and innovations in food technology. A 2011 report endorsed by the United States Agency for International Development (USAID) recommended numerous improvements to products intended to support improved survival and nutrition in humanitarian programming, as well as greater rigor and transparency in the research agenda that supports innovations in this critical field. This article reviews progress since 2011 made by USAID, and other global food aid providers, in developing food aid products that are fit-for-purpose and are appropriately formulated to save lives in emergencies and to promote healthy mothers and children in nonemergency contexts. It highlights important modifications and addition made to products and identifies persisting knowledge gaps that should be prioritized in future research.

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A review of research methods used to study specialised nutritious foods

Research

A review of research methods used to study specialised nutritious foods

By Kristine Caiafa, Maria Wrabel, Devika Suri, Ye Shen, Shelley Walton, Beatrice Lorge Rogers and Patrick Webb.

All authors are affiliated with the Food Aid Quality Review (FAQR) project at the Friedman School of Nutrition Science and Policy at Tufts University.

The authors are grateful to the U.S. Agency for International Development (USAID) and the USAID Office of Food for Peace (FFP) of the Bureau for Democracy, Conflict and Humanitarian Assistance (DCHA) (AID-OAA-C-16-00028) for funding this activity, and to Beatrice Langlois for her invaluable contributions to the development of this manuscript.

Location: *Global*

What we know: Research on specialised nutritious foods (SNFs) has increased in the past two decades, but this has not resulted in commensurate advances in policies and practice.

What this article adds: The goal of this exercise was to identify key factors in SNF study methodologies that could be strengthened to develop a more rigorous evidence base. A search of the literature and clinical-trial registries was conducted to identify studies using SNFs to influence anthropometric outcomes, and information about the research methods used was collected. Among the 114 studies identified (89 published and 25 ongoing), impediments to a robust evidence base included research bias, heterogeneous study design and insufficiently reported study details. A list of specific actions was developed to be taken by global agencies, research funders, researchers and practitioners to build a higher-quality evidence base for translating research on SNFs into policy and practice. Supplemental tables are included in an online version of this article.

Introduction

Specialised nutritious foods (SNFs), which include lipid-based nutrient supplements (LNSs), ready-to-use therapeutic foods (RUTFs), ready-to-use supplementary foods (RUSFs), fortified blended foods (FBFs), micronutrient powders (MNPs) and locally produced analogs of these products, are food products specially formulated to treat, prevent or mitigate undernutrition. Scientific research on SNFs has expanded rapidly in the past two decades, driven by an intent to improve nutrition outcomes. While much has been learned, global practice standards for using SNFs as a class remain elusive. The challenges inherent in studying these products and a lack of aggregate emphasis on study quality has generated an evidence base considered in recent reviews to be of low or moderate quality (Webb, 2015; Lazzerini *et al*, 2013; Schoonees, 2013).

An excellent model for how to move forward can be found in the methods used to develop standards for the management of acute malnutrition (WHO, 2013; WHO, 2012). These global policies were made possible by corralling a *robust evidence base*, largely through the use of systematic reviews. Similar evidence synthesis for SNFs would require high-quality studies; i.e., using designs that are appropriate to the research question and which mitigate risk of bias and threats to validity, and that are collectively similar enough in study characteristics so that findings are comparable. Research generalisability, or applicability to larger populations from which a study sample is drawn, is also critical to this type of evidence synthesis.

The aims of this review are threefold: first, to identify common methods used in a sample of SNF research; second, to highlight the methods that influenced quality, comparability and generalisability; and third, to propose actions for a stronger evidence base.

Methods

This review included studies based on two factors: 1) the study used an SNF in at least one intervention arm, and 2) the study specified at least one anthropometric outcome. Studies were not excluded based on characteristics of participants, comparisons or study design.[1] Studies published between January 1 2011 and April 1 2017 were identified through searches conducted in English of PubMed and Web of Science in April 2017. These were compiled and screened for inclusion by one analyst; first by title, then abstract, then content. A second analyst independently reviewed any studies in question, first by abstract and then by content. Eighty-nine publications were identified for this review.

Ongoing trials were identified in December 2017 using REFINE (Research Engagement on Food Interventions for Nutritional Effectiveness; www.REFINEnutrition.org), a public platform that maps SNF research. Twenty-five ongoing studies were identified by one analyst, who recorded information from trial registrations and publicly available study protocols.

In preparing this manuscript, the authors followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) checklist (Higgins and Altman, 2008) to the extent applicable.

Findings and discussion

Description of studies

Overall, we reviewed 89 publications and 25 ongoing studies (114 studies total). Based on terminology used in each study, predominant outcomes of interest among studies treating acute malnutrition (n=60) were recovery (as defined by the study) and weight gain. Other studies included stunting as a categorical variable (61%; n=33); height/length-for-age (included in 72%; n=39); wasting as a categorical variable, defined by either mid-upper arm circumference (MUAC) or weight-for-height z-score (WHZ) (44%; n=24); weight-for-age (59%; n=32); underweight as a categorical variable (31%, n=17); linear growth (39%, n=15); birth outcomes (17%, n=9); and biomarkers of undernutrition (20%, n=11). Most studies (87%, n=99) targeted children under five years of age, with focus on multiple sub-groups in that age range.

Research design

Eighty per cent (n=92) of studies were intervention studies, in which investigators assigned (randomly or not) participants to receive a specific intervention. Of these, most (92%, n=88) had multiple study arms. Twenty per cent (n=22) of studies were observational, in which investigators observed the outcomes of participants who had received an intervention not assigned by the investigators.

Studies typically explored one of three questions:

1. Is a given SNF effective at improving nutrition-related anthropometric measures?

[1] See Table 1 in the online version of this article: https://www.ennonline.net/fex/62/specialised-nutritious-foods

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AUTHORS: Kristine Caiafa, Maria Wrabel, Devika Suri, Ye Shen, Shelley Walton, Beatrice Lorge Rogers and Patrick Webb

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ABSTRACT: Specialised nutritious foods (SNFs), which include lipid-based nutrient supplements (LNSs), ready-to-use therapeutic foods (RUTFs), ready-to-use supplementary foods (RUSFs), fortified blended foods (FBFs), micronutrient powders (MNPs) and locally produced analogs of these products, are food products specially formulated to treat, prevent or mitigate undernutrition. Scientific research on SNFs has expanded rapidly in the past two decades, driven by an intent to improve nutrition outcomes. While much has been learned, global practice standards for using SNFs as a class remain elusive. The challenges inherent in studying these products and a lack of aggregate emphasis on study quality has generated an evidence base considered in recent reviews to be of low or moderate quality (Webb, 2015; Lazzerini *et al*, 2013; Schoonees, 2013).

An excellent model for how to move forward can be found in the methods used to develop standards for the management of acute malnutrition (WHO, 2013; WHO, 2012). These global policies were made possible by corralling a *robust evidence base*, largely through the use of systematic reviews. Similar evidence synthesis for SNFs would require high-quality studies; i.e., using designs that are appropriate to the research question and which mitigate risk of bias and threats to validity, and that are collectively similar enough in study characteristics so that findings are comparable. Research generalisability, or applicability to larger populations from which a study sample is drawn, is also critical to this type of evidence synthesis.

The aims of this review are threefold: first, to identify common methods used in a sample of SNF research; second, to highlight the methods that influenced quality, comparability and generalisability; and third, to propose actions for a stronger evidence base.

CITATION: Wrabel, Maria, Kristine Caiafa, Beatrice Lorge Rogers, and Patrick Webb. *Food aid for nutrition: A landscape review of current research and implications for future studies*. Field Exchange 62 (April 2020): 38-40. www.ennonline.net/fex/62/foodaidfornutrition

Food aid for nutrition: A landscape review of current research and implications for future studies

Research

Food aid for nutrition: A landscape review of current research and implications for future studies

By Maria Wrabel, Kristine Caiafa, Beatrice Lorge Rogers and Patrick Webb

All authors are affiliated with the Food Aid Quality Review (FAQR) project at the Friedman School of Nutrition Science and Policy at Tufts University.

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Location: *Global*

What we know: A large body of research exists that examines the formulation and effectiveness of food-aid products tailored to address nutrition problems, such as wasting and micronutrient deficiencies.

What this article adds: A review was undertaken to synthesise a sample of recent research on specialised nutritious foods (SNFs) used to impact nutrition to highlight themes and identify under-researched areas. A standardised search identified 142 manuscripts published between January 2011 and July 2018, and 33 clinical trials active as of July 2018. Study characteristics were collected to identify patterns and themes. Published and ongoing research has been narrowly focused on rural Africa and few studies have examined the use of SNFs in humanitarian crises. Most research has dealt with the absolute or comparative effectiveness of SNF products based on how they are formulated or programmed in addressing a narrow range of nutrition outcomes. More research is needed on SNF programming, particularly in emergency contexts and urban settings, prevention of rather than treatment of nutritional deficits, and poor outcomes. Research is also needed on the cost-effectiveness of alternative programme approaches (especially multi-sector interventions), the long-term nutrition and health impacts of SNFs, behavioural programming components, causes of relapse, and relevant but atypical outcome measures, such as body composition and cognitive outcomes.

Introduction

Advancements in the formulation of specialised nutritious foods (SNFs), including ready-to-use therapeutic foods (RUTFs) and fortified blended foods (FBFs), have revolutionised food aid. This has both derived from and led to an expanding evidence base on these products. In 2011, a review of the United States Government's food-aid agenda undertaken by the Food Aid Quality Review (FAQR) on behalf of the United States Agency for International Development Office of Food for Peace (USAID/FFP) (Webb *et al*, 2011) called for new rigorous research activities to investigate the programming, cost-effectiveness and innovative formulations of SNFs in the context of wider food-assistance strategies. More recently, other entities, including the No Wasted Lives Coalition and the Scaling Up Nutrition movement (SUN), have unveiled research agendas calling for more evidence on key topics, from the role of specific nutrients in preventing and treating undernutrition to intergenerational undernutrition and alternative outcome measures (Webb *et al*, 2017; Caiafa *et al*, 2017; Walton *et al*, 2018). To support these demands for policy-relevant evidence, the current review synthesises published and ongoing research conducted from 2011 until July 2018 to identify common themes and map areas for further exploration.

Methodology

A tailored search of PubMed and Web of Science conducted in August 2018 identified relevant publications from January 1 2011 to July 31 2018.[1] One author compiled and reviewed these, removing duplicates and those not meeting the inclusion criteria,[1] yielding 142 publications for analysis.[2] Ongoing studies were identified through REFINE (Research Engagement on Food Interventions for Nutritional Effectiveness; www.REFINEnutrition.org), a public platform that maps SNF research by routinely searching six international clinical trial registries (available at www.REFINEnutrition.org). REFINE was searched in July 2018, yielding 33 ongoing studies for analysis. Information was then extracted from each publication and clinical trial registry.[3] When multiple publications drew from a single research study, each publication was considered a discrete entry.

Findings: The landscape of food-aid research since 2011

Research context

Of the publications considered, over half (61%) took place in Africa and 39% in Asia.[4] More than half (60%) took place in rural contexts and one quarter in urban and semi-urban settings. Only nine published studies (6%) were conducted in an emergency context, such as after a natural disaster or in a refugee camp. Ongoing trials at the time of review mirror these geographic foci: Africa (52%) and Asia (33%) (Figure 3). Of trial registration records that provided information about the proposed study context (n=12), six are based in rural contexts, four in urban or semi-urban contexts, and two in both rural and urban contexts.

Research objectives and outcomes

Most publications assessed SNF effectiveness in addressing specific nutrition outcomes (75%). Almost half of these studies aimed to treat acute malnutrition (49%), with twice as many focusing on severe acute malnutrition (SAM) compared to moderate acute malnutrition (MAM) treatment (n=30 and n=17, respectively). Of ongoing studies, about half (45%) are effectiveness trials for treating acute malnutrition, among which eight (53%) study SAM treatment, five study MAM and four study both SAM and MAM.

Other common effectiveness study outcomes included linear growth and stunting (40%) and underweight (25%). Few studies assessed cognitive or birth outcomes (only 5% and 4%, respectively); none focused on body composition. This is mirrored in ongoing studies, which predominantly assessed linear growth (39%); birth outcomes (18%); and underweight (18%). A subset of published studies also assessed SNF acceptability (n=39; 27%) and household use (n=28; 20%), while one ongoing study is investigating acceptability of a novel SNF. Only 13 (9%) of publications calculated programme cost-effectiveness for nutrition-related outcomes. Ongoing trials also do not substantially address cost-effectiveness, implying that this evidence base will remain underdeveloped for the foreseable future.

Food aid products

Among publications dealing with product effectiveness (n=106), lipid-based nutrition supplements (LNS) was the most frequently studied SNF (Figure 4). About half examined new SNF formulations (42%). Just over one third com-

[1] See Table 1 in the online version of this article.
[2] See Table 2 in the online version of this article.
[3] See Figure 1 in the online version of this article.
[4] See Table 3 in the online version of this article.
[5] See Figure 2 in the online version of this article.

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AUTHORS: Maria Wrabel, Kristine Caiafa, Beatrice Lorge Rogers and Patrick Webb

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CITATION: Caiafa, Kristine, Maria Wrabel, Devika Suri, Ye Shen, Shelley Walton, Beatrice Lorge Rogers, and Patrick Webb. *A review of research methods used to study specialised nutritious foods*. Field Exchange 62 (April 2020): 41-43. www.ennonline.net/fex/62/specialisednutritiousfoods

Factors that May Influence the Effectiveness of 4 Specialized Nutritious Foods in the Prevention of Stunting and Wasting in Children Aged 6–23 Months in Burkina Faso

ORIGINAL RESEARCH

CURRENT DEVELOPMENTS IN NUTRITION

Community and Global Nutrition

Factors that May Influence the Effectiveness of 4 Specialized Nutritious Foods in the Prevention of Stunting and Wasting in Children Aged 6–23 Months in Burkina Faso

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ABSTRACT

Background: A trial in Burkina Faso compared the cost-effectiveness of 4 specialized nutritious foods (SNFs) used to prevent stunting and wasting in children aged 6–23 mo.

Objectives: This article explores differences in SNF use that may have influenced effectiveness, specifically in relation to consumption by the recipient child and by any other person (i.e., sharing), other diversion from the recipient child, preparation, storage, and hygiene.

Methods: Subsamples from a geographically clustered, longitudinal trial with random assignment to Corn Soy Blend Plus with oil (CSB+ w/oil), Corn Soy Whey Blend with oil (CSWB w/oil), Super Cereal Plus (SC+), or ready-to-use supplementary food (RUSF) were selected for in-depth interviews, in-home observations, and focus group discussions.

Results: Sharing was common in all arms, with the highest reported in SC+ (73%) and highest observed in CSWB w/oil (36%). Some reported giving the ration away (highest in SC+ at 17%) or using it for other purposes (highest in CSWB w/oil at 17%). The recipient child was observed consuming the ration in 49% of households on average (38–60% by arm in CSB+ w/oil and RUSF, respectively). Qualitative reports of bitterness and spoilage emerged in the CSWB w/oil arm. Most observed households (excluding RUSF) did not prepare porridge daily as instructed (35–46% by arm). Household water samples showed either high-risk or unsafe contamination with Escherichia coli (72–78% by arm). Low percentages were observed handwashing (both child and server) before consuming the porridge.

Conclusions: The SNFs were not prepared or served as intended and diversion from the recipient was common. Storage conditions may have resulted in spoilage of the ration containing whey before reaching recipients. This article provides context about factors that may have influenced the effectiveness of these SNFs. Programming and household use of SNFs are as important as their nutrient composition. This trial was registered at clinicaltrials.gov as NCT02071563. *Curr Dev Nutr* 2020;4:nzaa002.

Keywords: supplementary feeding, children under 5, corn–soy blend, lipid-based nutrient supplements, stunting, wasting, specialized nutritious food, Burkina Faso

Introduction

It is well known that the first 2 y of life is a critical period for prevention of growth faltering through adequate complementary feeding (1–5). A range of complementary feeding strategies, including use of specialized nutritious foods (SNFs), have been shown to improve growth outcomes and reduce child stunting in food-insecure settings (6, 7). But these findings show either modest improvements or mixed evidence, with declining rates of growth still observed among groups that receive food supplementation (8–16). There is growing consensus that supplementary feeding programs providing SNFs must account for the feeding and preparation behaviors within the household that may influence how much and in what way the products are consumed and thus their effectiveness (17). These factors are wide-

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Cost-Effectiveness of 4 Specialized Nutritious Foods in the Prevention of Stunting and Wasting in Children Aged 6–23 Months in Burkina Faso: A Geographically Randomized Trial

ORIGINAL RESEARCH

CURRENT DEVELOPMENTS IN NUTRITION

Intervention Program Methods and Outcomes

Cost-Effectiveness of 4 Specialized Nutritious Foods in the Prevention of Stunting and Wasting in Children Aged 6–23 Months in Burkina Faso: A Geographically Randomized Trial

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ABSTRACT

Background: There is a variety of specialized nutritious foods available for use in programs targeting undernutrition, but evidence supporting the choice of product is limited.

Objectives: We compared the cost-effectiveness of 4 specialized nutritious foods to prevent stunting and wasting in children aged 6–23 mo in Burkina Faso.

Methods: Four geographic regions were randomly assigned to 1 of 4 intervention arms: Corn-Soy Blend Plus (CSB+) programmed with separate fortified vegetable oil (the reference food), Corn-Soy-Whey Blend (CSWB; a new formulation) with oil, SuperCereal Plus (SC+), and ready-to-use supplementary food (RUSF). We compared the effects of each intervention arm on growth (length-for-age z score (LAZ), weight-for-length z score (WLZ), end-line stunting (LAZ < −2), and total monthly measurements of wasting (WLZ < −2). Rations were ~500 kcal/d, distributed monthly. Children were enrolled in the blanket supplementary feeding program at age ~6 mo and measured monthly for ~18 mo. Average costs per child reached were linked with effectiveness to compare the cost-effectiveness of each arm with CSB+ with oil.

Results: In our sample of 6112 children (CSB+, $n = 1519$; CSWB, $n = 1503$; SC+, $n = 1564$; RUSF, $n = 1526$), none of the foods prevented declines in growth. Children in the SC+ and RUSF arms were not significantly different than those in the CSB+ with oil arm. Children in the CSWB with oil arm experienced higher end-line (measurement at age 22.9–23.9 mo) stunting (OR: 2.07; 95% CI: 1.46, 2.94) and more months of wasting (incidence rate ratio: 1.29; 95% CI: 1.09, 1.51). CSB+ with oil was the least-expensive ration in all costing scenarios ($113–131 US dollars/enrolled child) and similar in effectiveness to SC+ and RUSF, and thus the most cost-effective product for the defined purposes.

Conclusions: CSB+ with oil was the most cost-effective ration in the prevention of wasting and stunting in this trial. This trial was registered at clinicaltrials.gov as NCT02071563. *Curr Dev Nutr* 2020;4:nzaa006.

Keywords: food aid, children, supplementary feeding, complementary feeding, cost-effectiveness, corn-soy blend, lipid-based nutrient supplements, low-income countries, stunting, wasting

Introduction

Stunting (low height-for-age) and wasting (low weight-for-height) often start during the first 1000 d of life, a critical window of opportunity for growth and development (1, 2). In the period when children are between 6 and 23 mo of age (3), they are no longer sufficiently nourished by breast milk alone and require nutrient-dense complementary foods (3–6). In settings where food insecurity is common, complementary foods are typically inadequate in quantity and quality, so children often experience growth faltering. Interventions that make appropriate

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Impact of stakeholder perspectives on cost-effectiveness estimates of four specialized nutritious foods for preventing stunting and wasting in children 6–23 months in Burkina Faso

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Nutrition Journal

RESEARCH Open Access

Impact of stakeholder perspectives on cost-effectiveness estimates of four specialized nutritious foods for preventing stunting and wasting in children 6–23 months in Burkina Faso

Ye Shen[1*], Ilana R. Cliffer[1], Devika J. Suri[1,2], Breanne K. Langlois[1], Stephen A. Vosti[3], Patrick Webb[1] and Beatrice L. Rogers[1]

Abstract

Background: Multiple specialized nutritious food options are programmed for supplementation in humanitarian and development settings. However, comparative cost-effectiveness evidence is lacking, let alone incorporation of perspectives from uncompensated stakeholders. A Burkina Faso trial evaluated the cost-effectiveness of Corn Soy Blend Plus w/ oil (CSB+ w/oil, reference arm), Corn Soy Whey Blend w/oil (CSWB w/oil), Super Cereal Plus (SC+), and Ready-to-Use Supplementary Food (RUSF) in reducing stunting and wasting among children 6–23 months old. This paper presents cost-effectiveness findings from multiple stakeholders' perspectives, including caregivers and program volunteers.

Methods: An activity-based costing with ingredients approach was used to summarize cost of the 18-month-long blanket supplementary feeding for each enrolled child (in 2018 USD). Time data were collected using self-reported and observational instruments. Cost-effectiveness relative to CSB+ w/oil assessed incremental cost per enrolled child against incremental outcomes: prevalence of stunting at 23 months of age and number of months of wasting. Two combined perspectives were compared: *program* (donor, implementer, and volunteer) versus *program and caregiver* (adding caregiver).

(Continued on next page)

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AUTHORS: Ye Shen, Ilana R. Cliffer, Devika J. Suri, Breanne K. Langlois, Stephen A. Vosti, Patrick Web, and Beatrice L. Rogers

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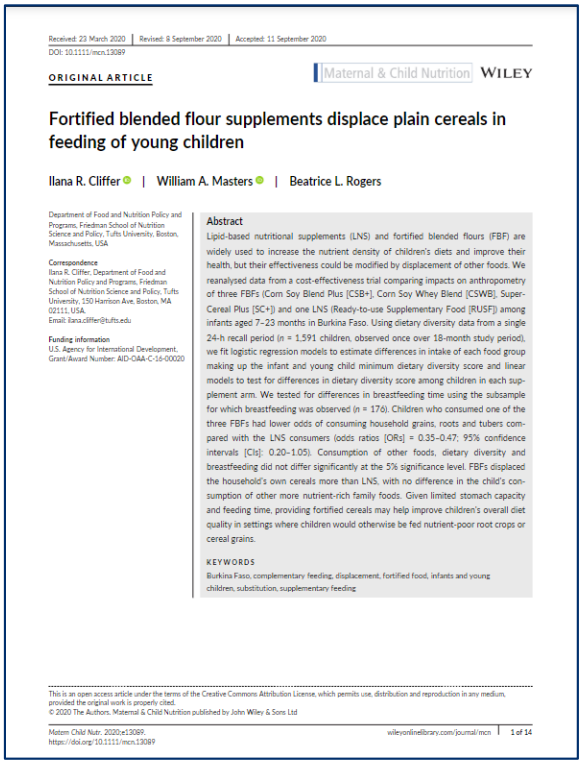
Results: A total of 6112 children were enrolled. While similar effectiveness was found in three arms (CSWB w/oil was less effective), costs differed. Product cost and caregiver time to prepare study foods were major drivers of cross-arm cost differences from the respective combined perspective. The two major drivers were used to construct uncertainty ranges of cost per enrolled child from program and caregiver perspective: $317 ($279- $355) in CSB+ w/ oil, $350 ($327- $373) in CSWB w/oil, $387 ($371- $403) in RUSF, and $434 ($365- $503) in SC+. Cost from program and caregiver perspective was a substantial increase from program perspective. CSB+ w/oil was most cost-effective in reducing stunting and wasting, and this main finding was robust to changing perspectives and all corresponding sensitivity analyses when uncompensated time was valued at minimum wage ($0.36/h). The break-even point for uncompensated time valuation is >$0.84/h, where RUSF became the most cost-effective from the program and caregiver perspective. Relative cost-effectiveness rankings among the other three arms depended on choice of perspectives, and were sensitive to values assigned to product cost, international freight cost, opportunity cost of time, and outcomes of a hypothetical control. Volunteer opportunity cost did not affect arm comparisons, but lack of compensation resulted in negative financial consequences for caregivers.

Conclusions: Evaluating cost-effectiveness by incorporating uncompensated stakeholders provided crucial implementation insights around nutrition products and programming.

CITATION: Shen, Ye, Ilana R. Cliffer, Devika J. Suri, Breanne K. Langlois, Stephen A. Vosti, Patrick Webb, and Beatrice L. Rogers. "Impact of stakeholder perspectives on cost-effectiveness estimates of four specialized nutritious foods for preventing stunting and wasting in children 6–23 months in Burkina Faso." *Nutrtion Journal* 19, no. 20 (2020). https://doi.org/10.1186/s12937-020-00535-x

Fortified blended flour supplements displace plain cereals in feeding of young children



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ORIGINAL ARTICLE

Maternal & Child Nutrition WILEY

Fortified blended flour supplements displace plain cereals in feeding of young children

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Abstract
Lipid-based nutritional supplements (LNS) and fortified blended flours (FBF) are widely used to increase the nutrient density of children's diets and improve their health, but their effectiveness could be modified by displacement of other foods. We reanalysed data from a cost-effectiveness trial comparing impacts on anthropometry of three FBFs (Corn Soy Blend Plus [CSB+], Corn Soy Whey Blend [CSWB], SuperCereal Plus [SC+]) and one LNS (Ready-to-use Supplementary Food [RUSF]) among infants aged 7–23 months in Burkina Faso. Using dietary diversity data from a single 24-h recall period (n = 1,591 children, observed once over 18-month study period), we fit logistic regression models to estimate differences in intake of each food group making up the infant and young child minimum dietary diversity score and linear models to test for differences in dietary diversity score among children in each supplement arm. We tested for differences in breastfeeding time using the subsample for which breastfeeding was observed (n = 176). Children who consumed one of the three FBFs had lower odds of consuming household grains, roots and tubers compared with the LNS consumers (odds ratios [ORs] = 0.35–0.47; 95% confidence intervals [CIs]: 0.20–1.05). Consumption of other foods, dietary diversity and breastfeeding did not differ significantly at the 5% significance level. FBFs displaced the household's own cereals more than LNS, with no difference in the child's consumption of other more nutrient-rich family foods. Given limited stomach capacity and feeding time, providing fortified cereals may help improve children's overall diet quality in settings where children would otherwise be fed nutrient-poor root crops or cereal grains.

KEYWORDS
Burkina Faso, complementary feeding, displacement, fortified food, infants and young children, substitution, supplementary feeding

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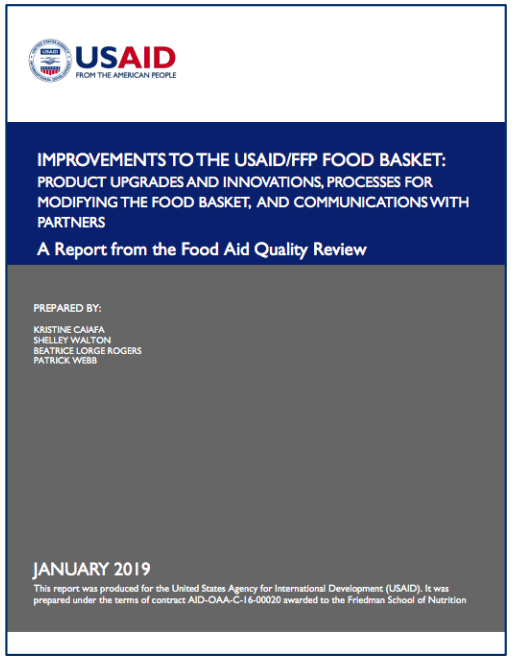
CITATION: Cliffer, IR, Masters, WA, Rogers, BL. Fortified blended flour supplements displace plain cereals in feeding of young children. Matern Child Nutr. 2020;e13089. https://doi.org/10.1111/mcn.13089

FAQR Resource Book
Reports

Improvements to the USAID/FFP Food Basket: Product Upgrades and Innovations, Processes for Modifying the Food Basket and Communications with Partners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IMPROVEMENTS TO THE USAID/FFP FOOD BASKET:
PRODUCT UPGRADES AND INNOVATIONS, PROCESSES FOR MODIFYING THE FOOD BASKET, AND COMMUNICATIONS WITH PARTNERS
A Report from the Food Aid Quality Review

PREPARED BY:
KRISTINE CAIAFA
SHELLEY WALTON
BEATRICE LORGE ROGERS
PATRICK WEBB

JANUARY 2019
This report was produced for the United States Agency for International Development (USAID). It was prepared under the terms of contract AID-OAA-C-16-00020 awarded to the Friedman School of Nutrition

AUTHORS: Kristine Caiafa, Shelley Walton, Beatrice Lorge Rogers, and Patrick Webb

DATE PUBLISHED: January 2019

EXECUTIVE SUMMARY:

Why FAQR Undertook This Activity:

The Food Aid Quality Review (FAQR) is a partner of United States Agency for International Development Office of Food for Peace (USAID/FFP), which seeks to support the agency with actionable recommendations for improving food aid products, programs, and processes. Under contract AID-OAA-C-16-00020, USAID/FFP tasked FAQR with recommending updates and potential improvements to the mix of products available for procurement and use in USAID/FFP programs often called the "food basket". The USAID/FFP food aid programs benefit millions of people around the world, and the aid environment of high demand and limited funding necessitates that the products used are as efficient as possible. Thus, the food basket should contain a diverse range of cost-effective products suited to meet the nutritional needs of recipients, and these products should be programmed as intended.

Conclusions:

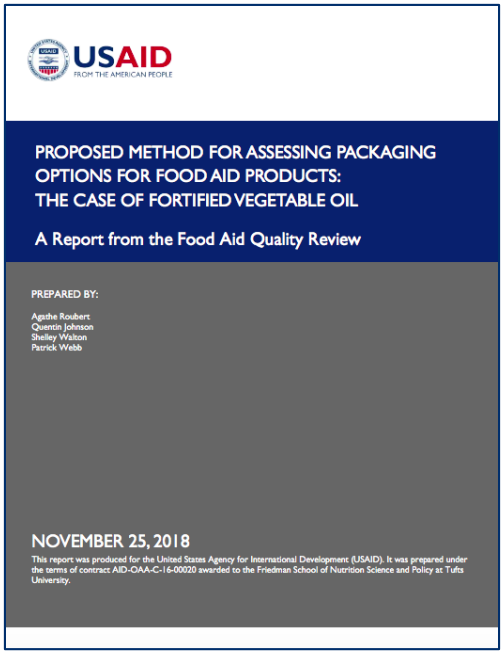
FAQR identified a) upgrades that USAID/FFP can make to existing products, b) cutting-edge research on product formulation and nutrition science, and updates to food standards that should guide product development, c) a process for incorporating additional products into the food basket, and d) strategies for communicating food basket updates and changes to partners.

ACCESS:

https://foodaidquality.org/sites/default/files/publications/IMPROVEMENTS%20TO%20THE%20USAIDFFP%20FOOD%20BASKET%20%28FINAL%20for%20FFP%29%2031%20Jan%202019_DEC%20updated%205.19.19.pdf

CITATION: Caiafa, Kristine; Shelley Walton, Beatrice Lorge Rogers, and Patrick Webb. "Improvements to the USAID/FFP Food Basket: Product Upgrades and Innovations, Processes for Modifying the Food Basket and Communications with Partners." *Report to USAID*. (2019) Boston, MA: Tufts University.

Proposed Method for Assessing Packaging Options for Food Aid Products: The Case of Fortified Vegetable Oil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PROPOSED METHOD FOR ASSESSING PACKAGING OPTIONS FOR FOOD AID PRODUCTS: THE CASE OF FORTIFIED VEGETABLE OIL

A Report from the Food Aid Quality Review

PREPARED BY:

Agathe Roubert
Quentin Johnson
Shelley Walton
Patrick Webb

NOVEMBER 25, 2018

This report was produced for the United States Agency for International Development (USAID). It was prepared under the terms of contract AID-OAA-C-16-00020 awarded to the Friedman School of Nutrition Science and Policy at Tufts University.

AUTHORS: Agathe Roubert, Quentin Johnson, Shelley Walton, and Patrick Webb

DATE PUBLISHED: November 2018

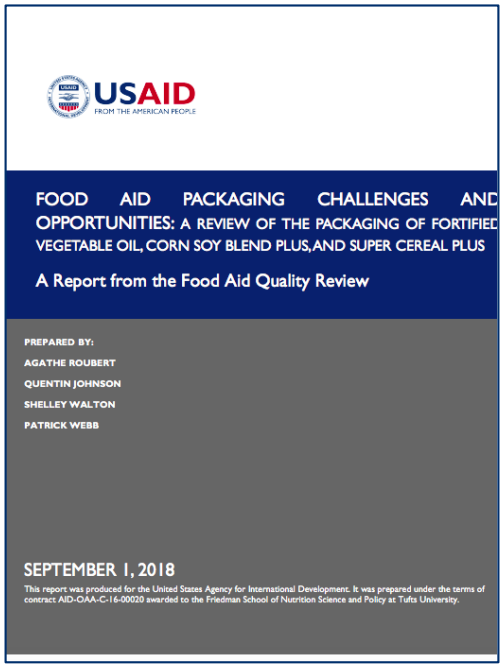
EXECUTIVE SUMMARY:

As an input to USAID's ongoing food aid packaging dialogue with stakeholders on appropriate ways to move forward, this report proposes a comprehensive method to compare packaging options based on their cost-effectiveness. The approach includes an assessment of costs, performance and functionality, and proposes a grading system to identify the most cost-effective option: the packaging technology that best optimizes these three criteria. The approach was tested on the case of Fortified Vegetable Oil (VO). VO is among the main value-added food aid products donated by USAID for both development and emergency programs. In FY 2017, USAID procured 84,092 MT of VO for Title II programs, mostly packaged in four-liter tins (1). However, feedback from field-based partners indicates that this packaging does not provide the performance and functionality needed to ensure that VO reaches food aid recipients efficiently (2). It is estimated that 1 to 2 percent of procured VO are lost, or about $ 1.5 million (3), while up to 10 percent need to be reconditioned (transferred to new packaging to prevent losses due to damage to the original packaging), which could cost an additional $ 2.5 million1,2 (U.S. dollars). Six different types of packaging were evaluated: three different cylindrical tin cans with a plug similar to the closure currently being used, one cylindrical tin can with a plain top without a plug, one rectangular (F-style) tin can with a pullout spout and one plastic (polyethylene terephthalate or PET) bottle. A cost comparison was conducted to assess the impact that packaging would have on operations, packaging, ocean freight, inland transport and storage costs. The total cost of the six packaging options was compared to the estimated average total cost of VO in its current packaging. The performance of the six different packaging options was then evaluated via laboratory testing and functionality was assessed based on handleability, distribution practicality, usage practicality, food safety, packaging reusability and packaging waste generation. The cost, performance and functionality of each packaging option were graded and a cost-effectiveness score was generated. The method proved effective at discriminating packaging options based on their cost-effectiveness and provides a framework to decisionmakers to guarantee that a comprehensive approach is taken when packaging options are evaluated. Moving forward, additional packaging options should be tested following the same method.

ACCESS: https://foodaidquality.org/sites/default/files/uploads/ProposedMethodCompressed.pdf

CITATION: Roubert, Agathe; Johnson, Quentin; Walton, Shelley; Webb, Patrick. 2018. Proposed Method for Assessing Packaging Options for Food Aid Products: The Case of Fortified Vegetable Oil. Report to USAID. Boston, MA: Tufts University.

Food Aid Packaging Challenges and Opportunities: A Review of the Packaging for Fortified Vegetable Oil, Corn-Soy Blend Plus and Super Cereal Plus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FOOD AID PACKAGING CHALLENGES AND OPPORTUNITIES: A REVIEW OF THE PACKAGING OF FORTIFIED VEGETABLE OIL, CORN SOY BLEND PLUS, AND SUPER CEREAL PLUS

A Report from the Food Aid Quality Review

PREPARED BY:
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PATRICK WEBB

SEPTEMBER 1, 2018

This report was produced for the United States Agency for International Development. It was prepared under the terms of contract AID-OAA-C-16-00020 awarded to the Friedman School of Nutrition Science and Policy at Tufts University.

AUTHORS: Agathe Roubert, Quentin Johnson, Shelley Walton, and Patrick Webb

DATE PUBLISHED: September 2018

EXECUTIVE SUMMARY:
In Fiscal Year 2017 (FY 2017) alone, the United States Agency for International Development (USAID) Office of Food for Peace (FFP) provided over 3 million metric tons (MT) of in-kind food aid as part of the global effort to fight hunger and malnutrition (1). However, despite this and other successes, for some time implementing partners and other stakeholders along the food aid supply chain have been reporting challenges related to food aid packaging that may lead to food losses and system inefficiencies. Based on field observations and feedback from implementing partners, losses estimates are typically around 1 percent of total food aid products, which could translate in over US $ 1 million lost every year. Therefore, a food aid packaging review was included in the 2016 scope of work for the Food Aid Quality Review (FAQR) project. This report summarizes top-order challenges linked to the current packaging of three high-value foods — Fortified Vegetable Oil (VO), Corn Soy Blend Plus (CSB+) and Super Cereal Plus (SC+) — and explores potential options for future enhancements. Packaging plays a key role in both ensuring that the foods arrive to the food aid recipients and in maintaining food quality throughout the entire supply chain. But stakeholder feedback revealed problems with the type and size of packaging and concerns over the ability to protect and deliver food as required. Any food losses, quality deterioration, and delays or logistic complications have financial consequences.

ACCESS: https://foodaidquality.org/sites/default/files/uploads/FAQR_PackagingChallengesReport_FINAL%20FOR%20USAID%20APPROVAL_123118.pdf

CITATION: Roubert, Agathe; Johnson, Quentin; Walton, Shelley; Webb, Patrick. 2018. Food Aid Packaging Challenges and Opportunities: A Review of the Packaging for Fortified Vegetable Oil, Corn-Soy Blend Plus and Super Cereal Plus. Report to USAID. Boston, MA: Tufts University.

Food matrices: A Review of Critical Factors Impacting Nutritional Bioavailability


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Food Matrices: A Review of Critical Factors Impacting Nutritional Bioavailability

A Report from the Food Aid Quality Review

PREPARED BY:

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This report was produced for the United States Agency for International Development. It was prepared under the terms of contract AID-OAA-C-16-00020 awarded to the Friedman School of Nutrition Science and Policy at Tufts University.

AUTHORS: Michael Joseph, Sajid Alavi, Quentin Johnson, Shelley Walton, and Patrick Webb

DATE PUBLISHED: 2018

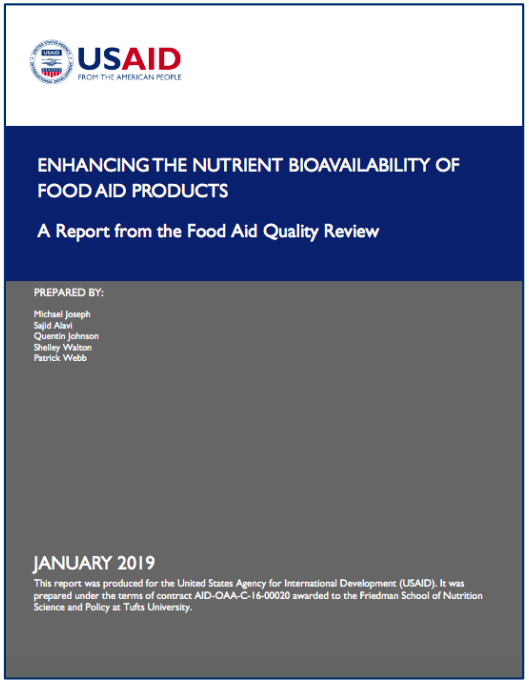
EXECUTIVE SUMMARY:

The bioavailability of nutrients from foods (how the foods get converted and used in the body) forms the crux of "nutritional efficiency." This is important when using food products to address issues associated with malnutrition. Food aid products are designed to provide defined amounts of energy and essential nutrients (in optimal forms) to undernourished populations in developing economies. It is therefore vital for product design to keep up with science and food technology where potential gains in nutrient bioavailability are concerned. Efforts to improve the bioavailability of food aid products could potentially offer enhanced efficacy and cost-effectiveness. This report reviews the existing published and gray literature to determine possible opportunities for improvements to existing products. The review considers ingredients as well as production processes which have some potential to unlock nutrient availability to undernourished consumers. The review finds various elements which affect the food matrix and thus the bioavailability of nutrients. These factors can be majorly divided into: i) ingredients; and ii) processing. The primary reason or the most common reason attributed to the factor affecting nutrient bioavailability is the presence of phytate and other antinutritional factors in the cereals and legumes which constitute a considerable share of food aid product portfolio. The antinutritional factors are present in raw as well as processed foods. The other factors related to ingredients which influence the food matrix and therefore influence nutrient bioavailability from food aid products are: protein quality, shelf life, micronutrient forms and nutrient interactions. For example, processing impacts and modifies the food matrix and milling removes most antinutritional factors present in grains and legumes. Extrusion processing increases the starch digestibility and contributes in preparing a less sticky porridge which has better chances of nutrient bioavailability. Additionally, there is a need to quantify and correlate the bioavailability of nutrients from food aid products in terms of in vitro and in vivo tests to present a costeffective prediction of bioavailability from the different preparations of food aid products. Some non-food factors related to health and sanitation of the recipients of food aid was also found to play a critical role in nutrient absorption from the food matrices. Further interaction with food aid industry stakeholders, commercial food technologies and operationally-informed nutritionists is warranted to discuss and prioritize options with a view to their adoption to enhance USAID's evolving food aid product portfolio.

ACCESS: https://pdf.usaid.gov/pdf_docs/PA00TRDW.pdf

CITATION: Joseph, Michael; Alavi, Sajid; Johnson, Quentin; Walton, Shelley; Webb, Patrick. 2018. Food matrices: A Review of Critical Factors Impacting Nutritional Bioavailability. Report to USAID. Boston, MA: Tufts University.

Enhancing the Nutrient Bioavailability of Food Aid Products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ENHANCING THE NUTRIENT BIOAVAILABILITY OF FOOD AID PRODUCTS

A Report from the Food Aid Quality Review

PREPARED BY:

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JANUARY 2019

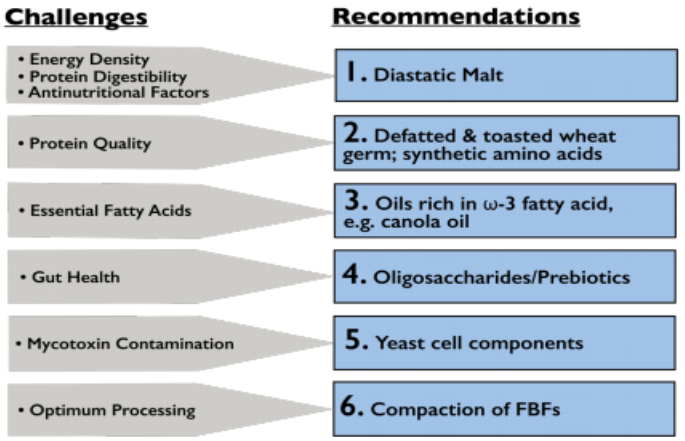
This report was produced for the United States Agency for International Development (USAID). It was prepared under the terms of contract AID-OAA-C-16-00020 awarded to the Friedman School of Nutrition Science and Policy at Tufts University.

AUTHORS: Michael Joseph, Sajid Alavi, Quentin Johnson, Shelley Walton, and Patrick Webb

DATE PUBLISHED: January 2019

EXECUTIVE SUMMARY:

Food aid products designed to achieve nutrition goals remained largely unchanged over many years until the publication of a 2011 report called Improving the Nutritional Quality of U.S. Food Aid: Recommendations for Changes to Products and Programs. That report made numerous recommendations relating to specialized food aid products, most of which have been put into use. In a second phase of work, it was decided that a new focus on nutrient bioavailability was needed. This report presents findings and recommendations in the nutrient bioavailability domain. It includes a literature review to understand current thinking on nutrient bioavailability through a food matrix lens. In addition, it includes feedback from consultations with experts and meetings with stakeholders on practical aspects of improving the food aid products' nutrient bioavailability. Food aid products are formulated with the objective of treating or preventing different forms of undernutrition but studies which examine foods' nutrient bioavailability as a contributing factor to the overall health outcome have rarely been investigated. This report, which is part of work under the Food Aid Quality Review (FAQR) project funded by USAID's Office of Food for Peace (FFP), is to review the role science plays in food matrices by impacting the nutrient bioavailability. This report explores the different components of the food matrix's specialized nutritious food aid products and considers its effects on the nutrients consumed. The goal is to identify areas of improvements. A snapshot of challenges and recommendations is provided to the right.

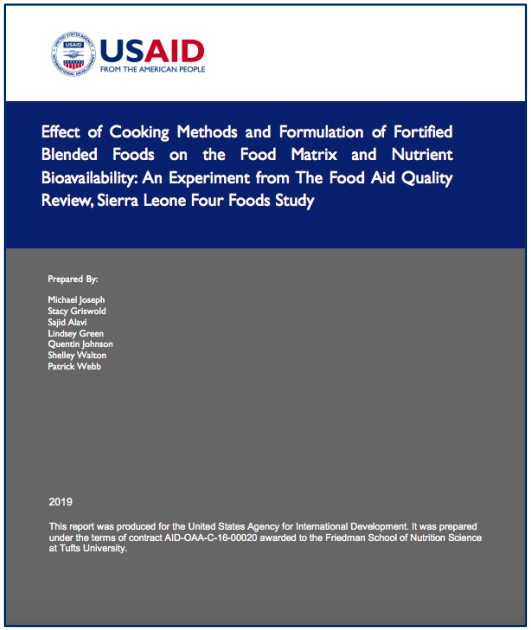


ACCESS:

https://foodaidquality.org/sites/default/files/uploads/Enhancing%20the%20Nutrient%20Bioavailability%20of%20Food%20Aid%20Products%20%28FINAL%20for%20FFP%29%2031%20Jan%202019_updated%205.17.19.pdf

CITATION: Joseph, Michael; Alavi, Sajid; Johnson, Quentin; Walton, Shelley; Webb, Patrick. 2019. Enhancing the Nutrient Bioavailability of Food Aid Products. Report to USAID. Boston, MA: Tufts University.

Effect of Cooking Methods and Formulation of Fortified Blended Foods on the Food Matrix and Nutrient Bioavailability: An Experiment from The Food Aid Quality Review, Sierra Leone Four Foods Study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Effect of Cooking Methods and Formulation of Fortified Blended Foods on the Food Matrix and Nutrient Bioavailability: An Experiment from The Food Aid Quality Review, Sierra Leone Four Foods Study

Prepared By:

Michael Joseph
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Patrick Webb

2019

This report was produced for the United States Agency for International Development. It was prepared under the terms of contract AID-OAA-C-16-00020 awarded to the Friedman School of Nutrition Science at Tufts University.

AUTHORS: Michael Joseph, Stacy Griswold, Sajid Alavi, Lindsey Green, Quentin Johnson, Shelley Walton, and Patrick Webb

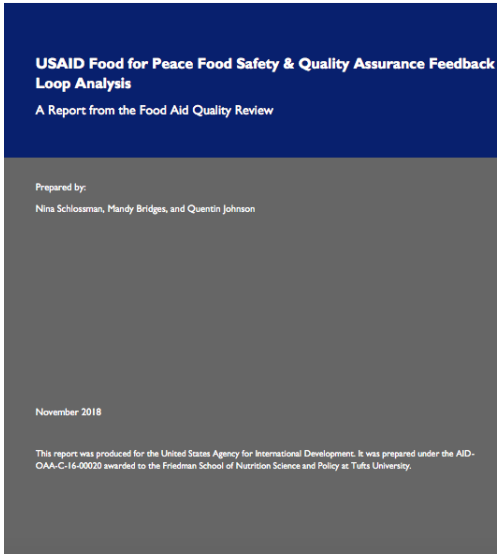
DATE PUBLISHED: 2019

EXECUTIVE SUMMARY:
Understanding the role of food matrices1 and nutrient bioavailability in food aid products is important to assure that the products are efficient in providing the maximum possible nutritional benefit to recipients. In order to explore the role of food matrices on the health outcomes of food aid recipients, three isocaloric fortified blended foods (FBFs) being used in the Food Aid Quality Review (FAQR) field study in Sierra Leone were tested for differences in food matrices, measured by formulation and viscosity of porridges, when prepared by the caregivers of study participants. The Sierra Leone Treatment of Moderate Acute Malnutrition (MAM) Four Foods study was designed to determine the relative effectiveness and cost effectiveness of four supplementary foods in the treatment of MAM in children ages 6 to 59 months. Three FBFs are being studied: Corn Soy Whey Blend (CSWB) and Corn Soy Blend Plus (CSB+), both prepared with fortified vegetable oil (oil) and Super Cereal Plus with amylase (SC+A). Standardized preparation methods for the porridges, developed from field observations, were replicated in laboratory settings to collect data on the changes in the viscosity of the porridge that occurred during cooking. When cooked, CSB+ and CSWB were more viscous than SC+A due to differences in formulation. The higher viscosities lead to thicker porridges. The thicker porridges are harder to consume or sip out of a cup, leave more residue in the cup and provide a satiated feel for a longer period of time. All of this predisposes the children in the CSB+ and CSWB groups to ingest less of these porridges and/ or other foods that they will normally consume during the course of the study. On the other hand, caregivers might dilute these thick porridges by adding more water than recommended during cooking in order to make them thinner, which in turn will reduce the concentration of nutrients that can be consumed by the children in one serving. This too will have an unintended negative impact on the outcomes. Also review of the formulation of the FBFs indicated that the inclusion of dairy proteins in CSWB and SC+A may improve linear growth, compared to CSB+. These two FBFs also have twice the level of micronutrients as compared to CSB+.

ACCESS:
https://foodaidquality.org/sites/default/files/publications/Effect%20of%20Cooking%20Methods%20and%20Formulation%20of%20Fortified%20Blended%20Foods%20on%20the%20Food%20Matrix%20and%20Nutrient%20Bioavailability-%20An%20Experiment%20from%20The%20Food%20Aid%20Quality%20Review%2C%20Sierra%20Leone%20Four%20Foods%20Study%20%28FINAL%20for%20FFP%29.pdf

CITATION: Joseph, Michael; Griswold, Stacy; Alavi, Sajid; Green, Lindsey; Johnson, Quentin; Walton, Shelley; Webb, Patrick. 2019. Effect of Cooking Methods and Formulation of Fortified Blended Foods on the Food Matrix and Nutrient Bioavailability: An Experiment from The Food Aid Quality Review, Sierra Leone Four Foods Study. Report to USAID. Boston, MA: Tufts University.

USAID Food for Peace Food Safety & Quality Assurance Feedback Loop Analysis


USAID Food for Peace Food Safety & Quality Assurance Feedback Loop Analysis

A Report from the Food Aid Quality Review

Prepared by:

Nina Schlossman, Mandy Bridges, and Quentin Johnson

November 2018

This report was produced for the United States Agency for International Development. It was prepared under the AID-OAA-C-16-00020 awarded to the Friedman School of Nutrition Science and Policy at Tufts University.

AUTHORS: Nina Schlossman, Mandy Bridges, and Quentin Johnson

DATE PUBLISHED: November 2018

EXECUTIVE SUMMARY:

In 2017, approximately $2.9 billion was spent on 3.1 million metric tons of international food aid by the United States Agency for International Development (USAID) Office of Food for Peace (FFP) to support global emergency and development activities, and international food assistance programming in 53 countries. The food aid supply chain is long and often harsh on products. Maintaining safety and high quality of products throughout is paramount and historically has been done effectively. USAID is focusing on making its food safety and quality assurance (FSQA) measures even more effective as part of its food aid quality improvement activities.

FSQA controls in place during production ensure that food and ingredients are safe (handled hygienically, securely packaged, and free of microbes, pests and defects) and of high quality (appearance, taste, and flavor) as part of food safety regulations for manufacturers in the United States (U.S.) and abroad. To meet these standards, food production facilities are required to have systems in place throughout the production and manufacturing process, such as, Good Manufacturing Practices (GMP) and Hazard Analysis Critical Point (HACCP) plans, to ensure that safe food reaches consumers. FSQA Feedback Loops are an essential tool to report and address incidents that may arise anywhere along the supply chain: from the producers and suppliers, to the consumers/end users, and back to U.S. Government Agencies. While incidents are rare, the information generated and how they are resolved become part of the evidence base and promote the continuous improvement of products and systems.

This report reviews FSQA systems already in place to inform FFP's efforts to improve the FSQA system in the food aid supply chain. A detailed analysis of six FSQA feedback loop systems was conducted through a desk review and 20 key informant interviews as part of a broader activity to review, recommend, and modernize systems for commodity users based on evidence and findings. These Feedback Loops include those currently used by USAID/FFP, the U.S. Department of Agriculture (USDA), World Food Programme (WFP), and the U.S. commercial food Industry. Ease of use, timeliness, questionnaire and data type, data and trend analysis, storage, reporting threshold (U.S. dollar amount), and staff requirements were among the criteria used to evaluate each system.

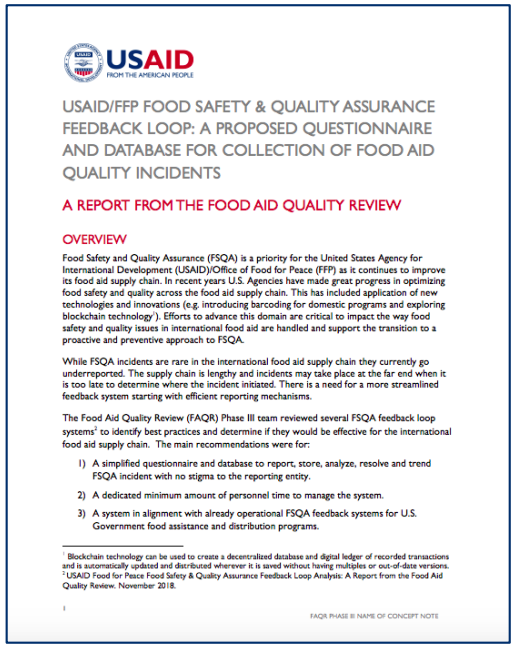
The analysis found that once food aid products are no longer under USAID title, often once international food aid products leave manufacturing plants, control is lost over feedback. How products perform throughout the rest of the supply chain is largely unknown due to the lack of information gathered in-country and reported back to USAID. The current USAID/FFP FSQA feedback system and its accompanying questionnaire are underutilized and inefficient without a database of stored data. There is little evidence to drive continuous improvement of the food aid supply chain or provide relevant feedback on vulnerable points along the supply chain.

The findings from this assessment indicate the need for a modern, streamlined, and easily accessible Feedback Loop using a simple, multiplatform tool and questionnaire to capture and transmit the data. A simple tool for reporting incidents along the supply chain is an important element to include in the FSQA system. The proposed Feedback Loop would have a low reporting threshold ($1), ability to collect and store data, allow for quick transmission of information pertaining to FSQA incidents, have an established workflow by type of incident leading to prompt resolution, involve one dedicated staff member to manage the system, and be user-friendly without stigma or ill-consequences for reporting incidents. It is recommended that USAID/FFP adopt a simpler FSQA Feedback Loop with a Food Incident and Quality Questionnaire (FIQQ) and pilot test the system with a couple of food aid products. Eventually a simplified feedback loop should be embedded in the commodity management system currently used for procurement and distribution of US food aid commodities in emergency and nonemergency settings.

ACCESS:
https://foodaidquality.org/sites/default/files/publications/FAQR%20Feedback%20Loop%20Report%20USAID_%28Final%20for%20FFP%29%203%20Jan%202019.pdf

CITATION: Schlossman, Nina; Bridges, Mandy; Johnson, Quentin. 2018. USAID Food for Peace Food Safety & Quality Assurance Feedback Loop Analysis. Report to USAID. Boston, MA: Tufts University.

USAID/FFP Food Safety & Quality Assurance Feedback Loop: A Proposed Questionnaire and Database for Collection of Food Aid Quality Incidents



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USAID/FFP FOOD SAFETY & QUALITY ASSURANCE FEEDBACK LOOP: A PROPOSED QUESTIONNAIRE AND DATABASE FOR COLLECTION OF FOOD AID QUALITY INCIDENTS

A REPORT FROM THE FOOD AID QUALITY REVIEW

OVERVIEW

Food Safety and Quality Assurance (FSQA) is a priority for the United States Agency for International Development (USAID)/Office of Food for Peace (FFP) as it continues to improve its food aid supply chain. In recent years U.S. Agencies have made great progress in optimizing food safety and quality across the food aid supply chain. This has included application of new technologies and innovations (e.g. introducing barcoding for domestic programs and exploring blockchain technology[1]). Efforts to advance this domain are critical to impact the way food safety and quality issues in international food aid are handled and support the transition to a proactive and preventive approach to FSQA.

While FSQA incidents are rare in the international food aid supply chain they currently go underreported. The supply chain is lengthy and incidents may take place at the far end when it is too late to determine where the incident initiated. There is a need for a more streamlined feedback system starting with efficient reporting mechanisms.

The Food Aid Quality Review (FAQR) Phase III team reviewed several FSQA feedback loop systems[2] to identify best practices and determine if they would be effective for the international food aid supply chain. The main recommendations were for:

1) A simplified questionnaire and database to report, store, analyze, resolve and trend FSQA incident with no stigma to the reporting entity.
2) A dedicated minimum amount of personnel time to manage the system.
3) A system in alignment with already operational FSQA feedback systems for U.S. Government food assistance and distribution programs.

[1] Blockchain technology can be used to create a decentralized database and digital ledger of recorded transactions and is automatically updated and distributed wherever it is saved without having multiples or out-of-date versions.
[2] USAID Food for Peace Food Safety & Quality Assurance Feedback Loop Analysis: A Report from the Food Aid Quality Review. November 2018.

1

FAQR PHASE III NAME OF CONCEPT NOTE

AUTHORS: The Food Aid Quality Review Project

DATE PUBLISHED: 2019

OVERVIEW:
Food Safety and Quality Assurance (FSQA) is a priority for the United States Agency for International Development (USAID)/Office of Food for Peace (FFP) as it continues to improve its food aid supply chain. In recent years U.S. Agencies have made great progress in optimizing food safety and quality across the food aid supply chain. This has included application of new technologies and innovations (e.g. introducing barcoding for domestic programs and exploring blockchain technology1). Efforts to advance this domain are critical to impact the way food safety and quality issues in international food aid are handled and support the transition to a proactive and preventive approach to FSQA. While FSQA incidents are rare in the international food aid supply chain they currently go underreported. The supply chain is lengthy and incidents may take place at the far end when it is too late to determine where the incident initiated. There is a need for a more streamlined feedback system starting with efficient reporting mechanisms. The Food Aid Quality Review (FAQR) Phase III team reviewed several FSQA feedback loop systems2 to identify best practices and determine if they would be effective for the international food aid supply chain. The main recommendations were for:

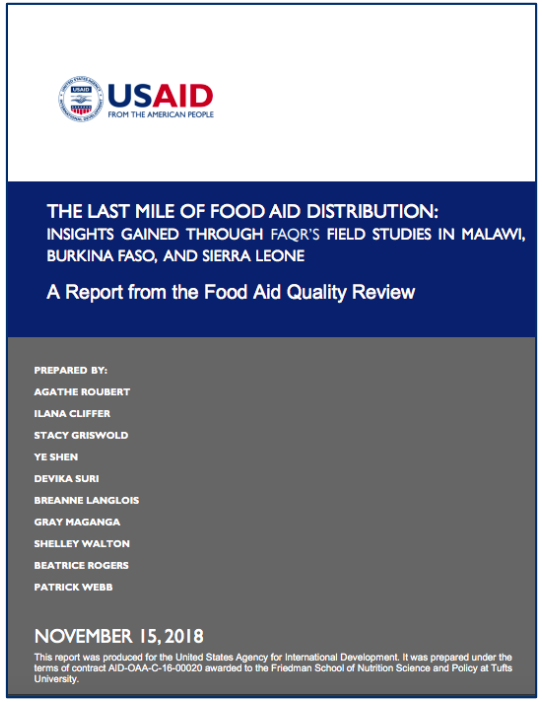
1) A simplified questionnaire and database to report, store, analyze, resolve and trend FSQA incident with no stigma to the reporting entity.
2) A dedicated minimum amount of personnel time to manage the system.
3) A system in alignment with already operational FSQA feedback systems for U.S. Government food assistance and distribution programs.

As a result, the FAQR team developed an updated Food Incident and Quality Questionnaire (FIQQ), and a corresponding FIQQ Feedback Spreadsheet for automatic data collection and storage, which was then vetted with stakeholders. The FIQQ and Feedback Spreadsheet promote timely identification of issues and incidents and together, create a mechanism for the aggregation and storage of data, including photographs. It is a simple, multi-platform system ready to be pilot tested. This report describes the process for developing the FIQQ and Spreadsheet and provides a method for further piloting.

ACCESS: https://foodaidquality.org/sites/default/files/publications/USAIDFFP%20FSQA%20Feedback%20loop-%20A%20Proposed%20Questionnaire%20and%20Incidents%20DataBase%20%20%28FINAL%20for%20FFP%29%2031%20Jan%202019_updated%205.17.19.pdf

CITATION: USAID/FFP Food Safety & Quality Assurance Feedback Loop: A Proposed Questionnaire and Database for Collection of Food Aid Quality Incidents. 2019. Report to USAID. Boston, MA: Tufts University.

The Last Mile of Food Aid Distribution: Insights Gained through FAQR's Field Studies in Malawi, Burkina Faso and Sierra Leone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THE LAST MILE OF FOOD AID DISTRIBUTION:
INSIGHTS GAINED THROUGH FAQR'S FIELD STUDIES IN MALAWI, BURKINA FASO, AND SIERRA LEONE

A Report from the Food Aid Quality Review

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NOVEMBER 15, 2018

This report was produced for the United States Agency for International Development. It was prepared under the terms of contract AID-OAA-C-16-00020 awarded to the Friedman School of Nutrition Science and Policy at Tufts University.

AUTHORS: Agathe Roubert, Ilana Cliffer, Stacy Griswold, Ye Shen, Devika Suri, Breanne Langlois, Gray Maganga, Shelley Walton, Beatrice Rogers, and Patrick Webb

DATE PUBLISHED: November 2018

EXECUTIVE SUMMARY:

In Fiscal Year (FY) 2017, through its food assistance programs, the United States Agency for International Development (USAID)/Office of Food For Peace (FFP) reached 70 million people in 53 countries as part of the global effort to fight hunger and malnutrition. 1 This included shipping over 1.4 million metric tons (MT) of food aid products from the United States to vulnerable populations across the globe. In these programs, the foods must go through a complex journey to reach end recipients. They are usually shipped by ocean freight and brought by truck to a main warehouse in the receiving country. This process takes several months, and even once the foods arrive in-country, significant challenges can arise before the foods reach the end recipients' homes. Indeed, the "last mile," defined as the section of the food aid supply chain between receipt of the foods by the implementing partner2 and storage at the recipients' homes, is often a source of major bottlenecks for food aid stakeholders. The difficulties linked to environmental conditions, geography, and the available infrastructure and resources can negatively affect the efficiency and even the impact of food aid programs. Donors and decision-makers often lack contextually appropriate insights to understand some of these difficulties, and in-country organizations and volunteers must often find context-specific strategies to adapt to the difficulties they face. Last mile scenarios vary greatly among food aid programs, and there is no uniform solution to common problems. However, a better overall understanding of the last mile can help to improve the design, efficiency, and cost-effectiveness of food aid programs. This report contributes to last mile knowledge-building by drawing on experience from the Food Aid Quality Review (FAQR) Project's field studies conducted on USAID/FFP Title II Development Food Security Activities (DFSA) in Southern Malawi and Northeastern Burkina Faso, as well as a Supplementary Feeding Program in Southern Sierra Leone. Through observations, interviews, and focus groups, the FAQR team collected feedback from food aid recipients, volunteers, and implementing partners on the challenges they face and strategies they have implemented to move foods through the last mile.

ACCESS: https://foodaidquality.org/sites/default/files/uploads/The%20Last%20Mile%20of%20Food%20Distribution_updated%206.6.19.pdf

CITATION: Roubert, Agathe; Cliffer, Ilana; Griswold, Stacy; Shen, Ye; Suri, Devika; Langlois, Breanne; Maganga, Gray; Walton, Shelley; Rogers, Beatrice; Webb, Patrick. 2018. The Last Mile of Food Aid Distribution: Insights Gained through FAQR's Field Studies in Malawi, Burkina Faso and Sierra Leone. Report to USAID. Boston, MA: Tufts University.

Comparative Cost-Effectiveness of Four Supplementary Foods in Preventing Stunting and Wasting in Children 6-24 Months in Burkina Faso


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COMPARATIVE COST-EFFECTIVENESS OF FOUR SUPPLEMENTARY FOODS IN PREVENTING STUNTING AND WASTING IN CHILDREN 6-24 MONTHS IN BURKINA FASO

A Report from the Food Aid Quality Review

PREPARED BY:

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Franck Garanet
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JANUARY 2019

This report was produced for the United States Agency for International Development. It was prepared under the terms of contract AID-OAA-C-16-00020 awarded to the Friedman School of Nutrition Science and Policy at Tufts University.

AUTHORS: Ilana Cliffer, Devika Suri, Breanne Langlois, Ye Shen, Laetitia Nikiema Ouedraogo, Augustin Zeba, Hermann Lanou, Franck Garanet, Stephen Vosti, Shelley Walton, Lindsey Ellis Green, Kenneth Chui, Irwin Rosenberg, Patrick Webb, and Beatrice Rogers

DATE PUBLISHED: January 2019

EXECUTIVE SUMMARY:

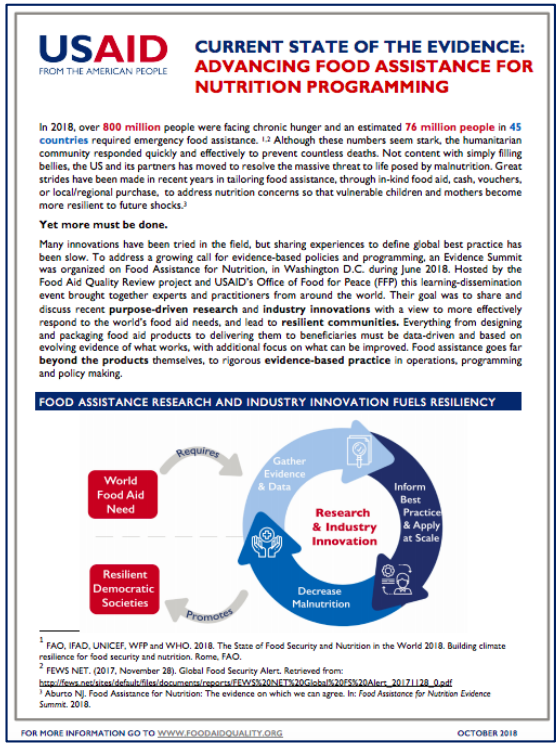
In 2009, the United States Agency for International Development (USAID) Office of Food for Peace (FFP) tasked the Tufts University Friedman School of Nutrition Science and Policy with reviewing the science behind the nutritional needs of vulnerable populations and making recommendations on how to improve the quality and efficiency of USAID food aid programs for nutrition. The result was a report recommending modifications to the product considered the current standard for USAID, Corn Soy Blend Plus (CSB+). The goal of the changes to CSB+ was to improve the costeffectiveness of the product by increasing its caloric density and improving its micronutrient content without unduly increasing its cost. In addition, the importance of animal source foods for growth in children was highlighted in the report; thus, it was recommended that the CSB+ be updated with the addition of a dairy ingredient. From July 2014 to December 2016, the Food Aid Quality Review (FAQR) team at Tufts University partnered with the Institut de Recherche en Sciences de la Santé (IRSS) in Burkina Faso to collect data to test the cost-effectiveness of the improved food, called Corn Soy Whey Blend (CSWB), compared with food most commonly used in USAID nutrition programs, CSB+; the World Food Programme (WFP) recommended food, Super Cereal Plus (SC+); and a lipid-based nutrient supplement, Ready-to-Use Supplementary Food (RUSF). The CSB+ and CSWB were delivered with Fortified Vegetable Oil (FVO), and caregivers were instructed to add 30 g of FVO to 100 g of dry flour when preparing porridge out of the flour. The three primary objectives of the study were:

1. Evaluate the comparative effectiveness of four food aid products in preventing stunting and wasting.
2. Determine the comparative cost-effectiveness of the four foods.
3. Identify factors influencing the effectiveness of the four foods.

ACCESS: https://foodaidquality.org/sites/default/files/publications/FAQR%20Burkina%20Faso%20Final%20Report%2022%20May%2020191.pdf

CITATION: Cliffer, Ilana; Suri, Devika; Langlois, Breanne; Shen, Ye; Ouedraogo, Laetitia Nikiema; Zeba, Augustin; Lanou, Hermann; Garanet, Franck; Vosti, Stephen; Walton, Shelley, Green, Lindsey Ellis; Chui, Kenneth; Rosenberg, Irwin; Webb, Patrick; Rogers, Beatrice. 2019. Comparative Cost-Effectiveness of Four Supplementary Foods in Preventing Stunting and Wasting in Children 6-24 Months in Burkina Faso. Report to USAID. Boston, MA: Tufts University.

Current State of Evidence: Advancing Food Assistance for Nutrition Programming



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CURRENT STATE OF THE EVIDENCE: ADVANCING FOOD ASSISTANCE FOR NUTRITION PROGRAMMING

In 2018, over **800 million** people were facing chronic hunger and an estimated **76 million people** in **45 countries** required emergency food assistance. [1,2] Although these numbers seem stark, the humanitarian community responded quickly and effectively to prevent countless deaths. Not content with simply filling bellies, the US and its partners has moved to resolve the massive threat to life posed by malnutrition. Great strides have been made in recent years in tailoring food assistance, through in-kind food aid, cash, vouchers, or local/regional purchase, to address nutrition concerns so that vulnerable children and mothers become more resilient to future shocks.[3]

Yet more must be done.

Many innovations have been tried in the field, but sharing experiences to define global best practice has been slow. To address a growing call for evidence-based policies and programming, an Evidence Summit was organized on Food Assistance for Nutrition, in Washington D.C. during June 2018. Hosted by the Food Aid Quality Review project and USAID's Office of Food for Peace (FFP) this learning-dissemination event brought together experts and practitioners from around the world. Their goal was to share and discuss recent **purpose-driven research** and **industry innovations** with a view to more effectively respond to the world's food aid needs, and lead to **resilient communities.** Everything from designing and packaging food aid products to delivering them to beneficiaries must be data-driven and based on evolving evidence of what works, with additional focus on what can be improved. Food assistance goes far **beyond the products** themselves, to rigorous **evidence-based practice** in operations, programming and policy making.

FOOD ASSISTANCE RESEARCH AND INDUSTRY INNOVATION FUELS RESILIENCY

[1] FAO, IFAD, UNICEF, WFP and WHO. 2018. The State of Food Security and Nutrition in the World 2018. Building climate resilience for food security and nutrition. Rome. FAO.
[2] FEWS NET. (2017, November 28). Global Food Security Alert. Retrieved from: http://fews.net/sites/default/files/documents/reports/FEWS%20NET%20Global%20FS%20Alert_20171128_0.pdf
[3] Aburto NJ. Food Assistance for Nutrition: The evidence on which we can agree. In: *Food Assistance for Nutrition Evidence Summit*. 2018.

FOR MORE INFORMATION GO TO WWW.FOODAIDQUALITY.ORG OCTOBER 2018

AUTHORS: FAQR Team

DATE PUBLISHED: October 2018

EXECUTIVE SUMMARY: In an effort to support the Sustainable Development Goal of Zero Hunger and the Global Food Security Act aimed at reducing global hunger and improving nutrition, the following actions should be prioritized:

1. More funding is required for careful studies that document best practice for food assistance in all humanitarian contexts, with particular attention to measurable impacts on maternal and child nutrition.

2. Innovations should be promoted in product formulations, food packaging technology, food safety quality, and food aid supply chain optimization tools.

3. Multi-sectoral and multi-institutional collaboration and communication must be enhanced. No one donor, government or agency can effectively operate alone.

4. Investments should increase in advanced data systems to capture reliable and comprehensive food assistance trends.

5. Metrics of nutritional status need to go beyond physical growth of children to include brain development, gut health, and body composition to provide a physiological understanding of malnutrition.

ACCESS: https://foodaidquality.org/sites/default/files/uploads/Evidence%20Summit%20Policy%20Brief_FINAL%2011.19.18.pdf

CITATION: Policy Brief: Current State of the Evidence: Advancing Food Assistance for Nutrition Programming. 2018. Available: http://foodaidquality.org/sites/default/files/uploads/Evidence%20Summit%20Policy%20Brief_FINAL%2011.19.18.pdf

Beyond Z-scores: Measures to Advance Prevention and Treatment Outcomes in Child Malnutrition. Summary of Proceedings from a Symposium at the International Congress of Nutrition, Buenos Aires, Argentina on October 16, 2017

AUTHORS: Devika Suri, Irwin Rosenberg

DATE PUBLISHED: August 2018

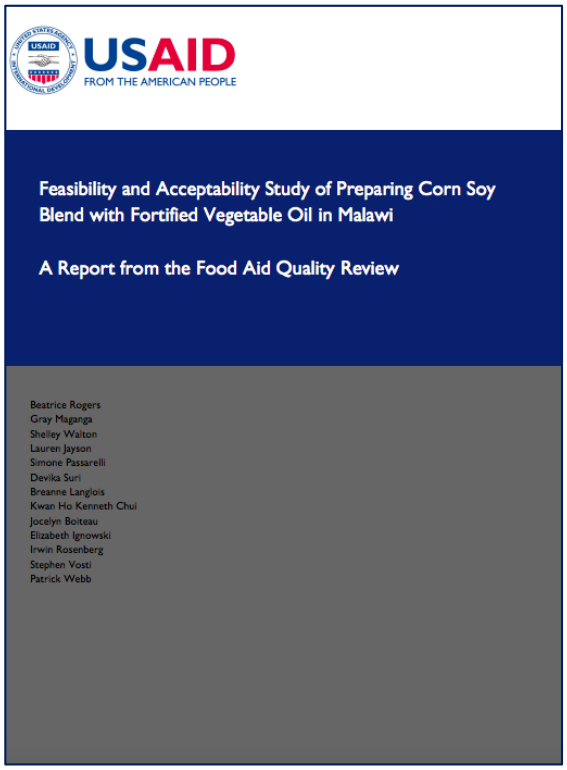
EXECUTIVE SUMMARY: There is a growing imperative to measure the nutrition and health impact of food-based humanitarian assistance with more precision to better inform policy and practice. For many decades, researchers and programmers have relied mainly on anthropometric Z-scores and related cutoffs to determine the nutritional status of children to assess the impact of interventions. However, Z-scores may fail to distinguish important physiological or cognitive factors which can bias the interpretation of health, malnutrition or recovery. A symposium was organized at the 2017 International Congress of Nutrition (ICN) in Buenos Aires, Argentina, to consider three measures which add important contextual information and have implications for how we approach the treatment and prevention of child malnutrition. This paper provides a summary of the Symposium and key messages on research priorities, policy implications and programming guidance.

Several experts were asked to offer their perspectives on each of the three measures considered. The first measure was body composition, i.e. the proportion of lean and fat mass, which can be more useful than weight or height in predicting certain health outcomes. The second measure was environmental enteric dysfunction (EED), whose presence has been shown to be a predictor of child undernutrition. The third measure was dietary protein quality combined with biomarker serum amino acids, which have been shown to be associated with child malnutrition. Current research is being conducted on the use and interpretation of these three measures in the context of malnutrition. However, similar challenges remain among all three. The technology required to evaluate these three measures remains costly and highly-trained technicians are needed. In addition, there is ongoing debate as to which evaluation methods are the most accurate and meaningful. Furthermore, while these measures are being explored, they are still not the main drivers in making decisions about a program's effectiveness.

ACCESS: https://pdf.usaid.gov/pdf_docs/PA00TBMB.pdf

CITATION: Suri, Devika and Rosenberg, Irwin. 2018. Beyond Z-scores: Measures to Advance Prevention and Treatment Outcomes in Child Malnutrition. Summary of Proceedings from a Symposium at the International Congress of Nutrition, Buenos Aires, Argentina on October 16, 2017. Report to USAID. Boston, MA: Tufts University. Available: https://pdf.usaid.gov/pdf_docs/PA00TBMB.pdf

Feasibility and Acceptability Study of Preparing Corn Soy Blend with Fortified Vegetable Oil in Malawi



AUTHORS: Beatrice Rogers, Gray Maganga, Shelley Walton, Lauren Jayson, Simone Passarelli, Devika Suri, Breanne Langlois, Kenneth Chui, Jocelyn Boiteau, Elizabeth Ignowski, Irwin Rosenberg, Stephen Vosti, Patrick Webb

DATE PUBLISHED: June 2015

EXECUTIVE SUMMARY: Efforts to prevent and treat MAM typically rely on nutrient-dense supplementary foods, which commonly include several variations of fortified blended foods (FBFs), combinations of FBFs with other commodities, and ready-to-use supplementary foods (RUSFs). Corn Soy Blend (CSB) with fortified vegetable oil is one such combination used in Title II USAID programs to treat MAM. The Food Aid Quality Review (FAQR) is a project of Tufts University with collaboration and funding from USAID, Food for Peace (FFP), assessing the nutritional quality of food aid products used in the prevention and treatment of moderate acute malnutrition (MAM) in children. Phase I of the FAQR recommended that CSB porridge for treatment of MAM be prepared and consumed with FVO (fortified with Vitamin A and D) in the ratio of 30 g FVO to 100 g CSB (abbreviated 30:100). Phase I also recommended providing CSB in repackaged, individual, packets with printed behavior-change messaging giving instructions on proper preparation of the porridge. These recommendation were made with the aim of increasing the caloric density of CSB porridge, improving the absorption of fat-soluble vitamins through the additional FVO:CSB ratio, and improving the preparation and use CSB porridge through SBCC. The smaller CSB packets also have the potential to streamline the distribution process and create more hygienic CSB storage. However, the programmatic feasibility of this recommendation and the extent to which caregivers' cooking practices could be altered was unknown.

ACCESS: https://pdf.usaid.gov/pdf_docs/PA00M9BB.pdf

CITATION: Rogers, Beatrice; Maganga, Gray; Walton, Shelley; Jayson, Lauren; Passarelli, Simone; Suri, Devika; Langlois, Breanne; Chui, Kwan Ho Kenneth; Boiteau, Jocelyn; Ignowski, Elizabeth; Rosenberg, Irwin; Vosti, Stephen; Webb, Patrick. 2015. Feasibility and Acceptability Study of Corn Soy Blend and Fortified Vegetable Oil in Malawi, Report to USAID from the Food Aid Quality Review. Boston, MA: Tufts University.

Introduction of New and Improved Food Aid Products, 2011-2015: Lessons Learned and Recommendations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Introduction of New and Improved Food Aid Products, 2011-2015: Lessons Learned and Recommendations

A Report from the Food Aid Quality Review

Prepared by:
Nina Schlossman, Quentin Johnson, Leah Koeppel and Lauren Wood

March 2016

This report was produced for the United States Agency for International Development. It was prepared under the terms of contract AFP-C-00-09-00016-00 awarded to the Friedman School of Nutrition Science and Policy at Tufts University.

AUTHORS: Nina Schlossman, Quentin Johnson, Leah Koeppel, Lauren Wood

DATE PUBLISHED: March 2016

EXECUTIVE SUMMARY: This report examines the best practices and lessons learned from the rollout of 25 new and upgraded food aid products in United States Agency for International Development (USAID) Office of Food for Peace (FFP) programs during the period 2011-2015, with the goal of achieving greater impact, being more evidence-based and better "fit for purpose." Systems have been quickly evolving and this document is intended to help preserve institutional memory of product introduction. These past processes should be captured in order to inform future product introduction and rollout and to make approaches more efficient and effective for food aid stakeholders and recipients.

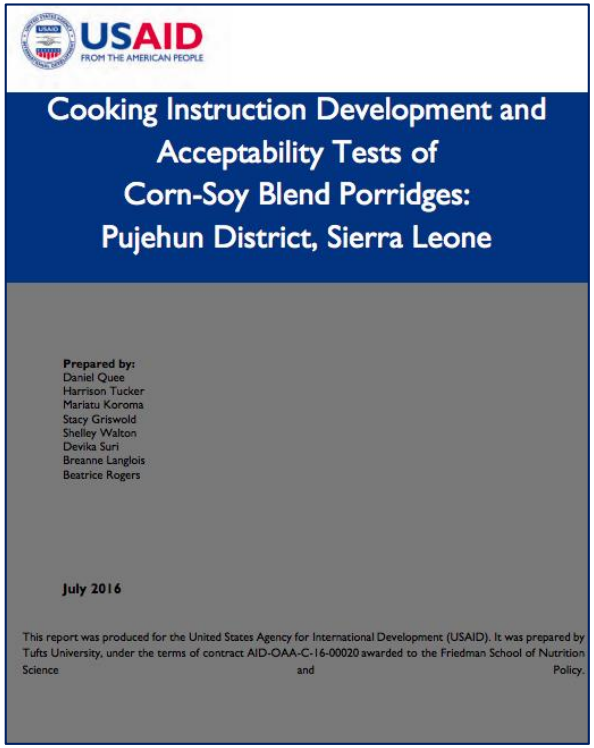
The report discusses six steps in the rollout process: 1) product specifications development; 2) production scale up; 3) establishment of product testing and quality assurance systems; 4) procurement of product and shipping (through solicitation); 5) shipping and delivery of product; and 6) storage, handling and distribution of product. Each step was reviewed in terms of key stakeholder involvement and roles; successes and challenges were identified.

Three types of product rollouts are detailed in the report: 1) product upgrades, 2) product adaptations, and 3) new product introductions. Two case studies are included on: 1) the introduction of fortified rice and 2) the harmonization of product specifications for Ready-To-Use Foods (RUF) among UN agencies and U.S. Government requirements.

ACCESS: https://pdf.usaid.gov/pdf_docs/PA00MJG7.pdf

CITATION: Schlossman, Nina; Johnson, Quentin; Koeppel, Leah; and Wood, Lauren. 2016. Introduction of New and Improved Food Aid Products, 2011-2015: Lessons Learned and Recommendations. A report from the Food Aid Quality Review, managed by Tufts University's Friedman School of Nutrition Science and Policy. Boston, MA.

Cooking Instruction Development and Acceptability Tests of Corn-Soy Blend Porridges: Pujehun District, Sierra Leone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Cooking Instruction Development and Acceptability Tests of Corn-Soy Blend Porridges: Pujehun District, Sierra Leone

Prepared by:
Daniel Quee
Harrison Tucker
Mariatu Koroma
Stacy Griswold
Shelley Walton
Devika Suri
Breanne Langlois
Beatrice Rogers

July 2016

This report was produced for the United States Agency for International Development (USAID). It was prepared by Tufts University, under the terms of contract AID-OAA-C-16-00020 awarded to the Friedman School of Nutrition Science and Policy.

AUTHORS: Daniel Quee, Harrison Tucker, Mariatu Koroma, Stacy Griswold, Shelley Walton, Devika Suri, Breanne Langlois, Beatrice Rogers

DATE PUBLISHED: July 2016

EXECUTIVE SUMMARY: In July 2016, the United States Agency for International Development's (USAID's) Food Aid Quality Review Phase III (FAQRIII) project collaborated with Sierra Leone's Ministry of Health and Sanitation (MoHS), Ministry of Education, Science and Technology (MEST), with support from the World Food Programme (WFP) and Project Peanut Butter to conduct formative research on proper cooking instructions and taste acceptability for three fortified blended flour (FBF) products. This research was carried out in preparation for a cluster-randomized, intentto-treat, cost-effectiveness study of four fortified food products in the treatment of moderate acute malnutrition (MAM) in the Pujehun District of Sierra Leone set to begin in March 2017 ("Four Foods Study"). The results will be used to finalize the standard packaging for the FBFs and to adapt training materials or messaging at point of distribution.

Over a one-week period, 96 female caregivers participated in standardized sensory and taste tests, controlled cooking observations, and focus group discussions to provide insight on normal cooking practices. Overall, the FBFs were well received by the female caregivers, with reported high levels of acceptability of taste and smell (i.e., "liked a lot" on the five-point Likert Scale). Factors identified as influencing proper preparation of the Corn-Soy Blend (CSB) porridges included: literacy and exposure to a demonstration of proper procedures. From participants' feedback, the team recommended slight changes to the pictures that will appear on the FBF packaging, including: darkening the color of the oil, changing the image for water to better represent water droplets, and altering the images to be more literal (e.g., showing two cups of water pouring into a pot when two cups of water are needed). These changes will be incorporated into the instructions which will appear on the FBF packages distributed during the Four Foods Study.

ACCESS: https://pdf.usaid.gov/pdf_docs/PA00MM2P.pdf

CITATION: Quee, Daniel; Tucker, Harrison; Koroma, Mariatu; Griswold, Stacy; Walton, Shelley; Suri, Devika; Langlois, Breanne; Rogers, Beatrice. 2016. Cooking Instruction Development and Acceptability Tests of Corn-Soy Blend Porridges: Pujehun District, Sierra Leone. A report from the Food Aid Quality Review, managed by Tufts University's Friedman School of Nutrition Science and Policy. Boston, MA.

Maximizing Food Aid Supply Chain Cost Effectiveness: A Report from the Food Aid Quality Review Workshop at the 2017 Health and Humanitarian Logistics Conference

AUTHORS: FAQR Team

DATE PUBLISHED: June 2017

EXECUTIVE SUMMARY: The USAID Food Aid Quality Review (FAQR) project2 is developing tools to maximize costeffectiveness in the food aid value chain while also promoting efficiency gains across the US government and global food aid actors. Driven by the priorities, mission, and mandate of the United States Agency for International Development (USAID)/Office of Food for Peace (FFP) to increase efficiency, maximizing USAID/FFP's ability to provide assistance and making the most of the tax dollars. In order to promote conversation around the FAQR developed tools and other important, relevant tools, the FAQR team organized a session at the 2017 Health and Humanitarian Logistics (HHL) Conference in Copenhagen, Denmark on June 7th, 2017.

Four food aid supply chain cost effectiveness tools currently being developed and used by development and humanitarian organization decision makers at different levels were presented as case studies during the conference session. This report summarizes the cases and offers insight into the future strategies for maximizing food aid supply chain cost effectiveness.

ACCESS: https://foodaidquality.org/sites/default/files/publications/Food%20Aid%20Quality%20Review_HHL%20Workshop%20Report_Final_12.27.17%5B1%5D.pdf

CITATION: Not available

Food for Peace Commodities Resource Portal: A Landscape Analysis

USAID FROM THE AMERICAN PEOPLE

MEMO

FOOD AID QUALITY REVIEW

Tufts University

DATE: MAY 23RD, 2017

WORKSTREAM: LIGHT BLUE: 1.2.1.1 USAID FFP COMMODITIES RESOURCES PORTAL

TITLE:

USAID FOOD FOR PEACE COMMODITIES RESOURCE PORTAL LANDSCAPE ANALYSIS

PREPARED BY: Nina Schlossman, Leah Koeppel, Rebecca Fisk and Quentin Johnson

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AUTHORS: Nina Schlossman, Leah Koeppel, Rebecca Fisk, Quentin Johnson

DATE PUBLISHED: 2017

EXECUTIVE SUMMARY: As part of United States Agency for International Development's (USAID's) ongoing improvement process and to highlight the latest advancements in its food aid programs and products, USAID's Office of Food for Peace (FFP) is reviewing and revitalizing its online presence. In support of this process, Food Aid Quality Review (FAQR) Phase III conducted a landscape analysis1 of current USAID FFP web-based resources available on its Commodities Resource Portal ("Portal"), to assess structure and content of materials available online and determine preliminary redesign recommendations for discussion with Portal users. The Portal encompasses the section of the USAID FFP website related to food aid products programmed in FFP programs. Per USAID, the Portal aims to 1) educate the general public about USAID FFP food assistance programs, 2) provide background and context on USAID's ongoing efforts to improve the nutrition and overall quality of the food aid commodity basket, and 3) provide guidance for Private Voluntary Organizations (PVOs) and other stakeholders to inform their FFP proposal development process. This report provides our analysis and assessment of the current Portal design, information and resources and includes preliminary recommendations for an updated portal that would provide succinct, usable information within the current USAID website design and structure. This report is the first step in a broader effort to update and revamp the Portal to better reflect the U.S. food aid basket, food aid context and to improve online food aid product information, especially as new products are introduced. The report includes an 1) Overview of the Food for Peace Commodities Resource Portal, 2) Analysis by Portal Section, review and analysis of 3) World Food Programme Product Information and 4) Suppliers & Commercial Industry Product Information and 5) Preliminary Recommendations.

ACCESS: https://foodaidquality.org/sites/default/files/publications/Portal%20Landscape%20Analysis.pdf

CITATION: Schlossman, Nina; Koeppel, Leah; Fisk, Rebecca and Johnson, Quentin. 2017. Food for Peace Commodities Resource Portal: A Landscape Analysis. A Report from the Food Aid Quality Review, managed by Tufts University's Friedman School of Nutrition Science and Policy. Boston, MA.

FAQR Resource Book
Posters

Adherence to Ration Guidance During Preparation or Feeding of Four Specialized Nutritious Foods Does Not Influence Recovery from Moderate Acute Malnutrition (MAM)

No image available

AUTHORS: Stacy Griswold, Breanne Langlois, Devika Suri, Ye Shen, Shelley Walton, Kenneth Chui, and Beatrice Rogers

DATE/PLACE OF PRESENTATION: June 2019, American Society for Nutrition (ASN)

ABSTRACT:

Objectives:

Fortified blended flours (FBFs) require preparation with boiling water, sometimes with fortified vegetable oil (FVO), using prescribed quantities and ratios. Lipid-based nutrient supplements (LNS) are ready-to-eat, individually packaged, and prescribed for consumption without adding other ingredients/foods. This study assessed compliance with recipe and ration instructions and whether this influenced treatment effectiveness for moderate acute malnutrition (MAM).

Methods:

A cluster-randomized clinical-effectiveness trial in Sierra Leone compared four isocaloric foods in treating children 6–59 mos with uncomplicated MAM: Corn-Soy Blend Plus with FVO (CSB +), Corn-Soy Whey Blend with FVO (CSWB), Super Cereal Plus with amylase (SC + A), or ready-to-use-supplementary food (RUSF). Caregivers were advised bi-weekly by trained nurses on ingredients, quantities, and daily rations. A random sub-sample participated in in-depth interviews on ingredients used at the last preparation. Respondents were categorized in two ways: (for FBFs) using too little, the correct amount or too much or (for RUSF) correct if eaten without other food; or using the recommended ratios of ingredients. Unadjusted logistic regression evaluated the relationship between compliance and graduation from treatment.

Results:

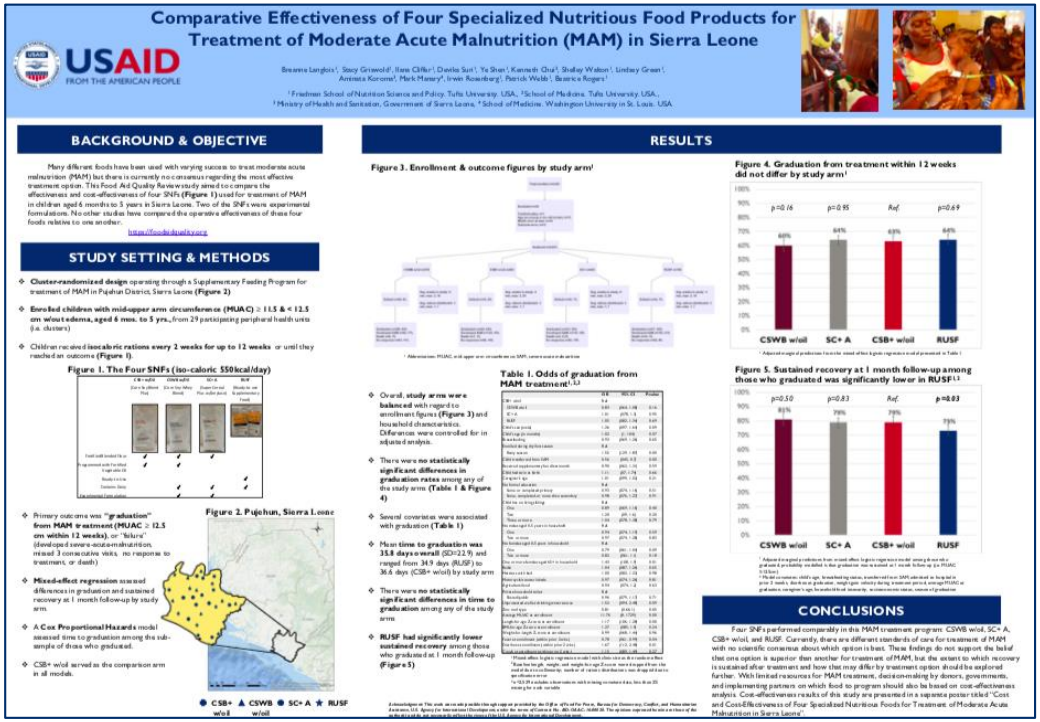
Graduation rates among 958 respondents: 70% CSB + , 67% CSWB, 66% SC + , and 66% RUSF. Reported use of correct ingredients was: 99% of CSB +, 97% of CSWB, and 99% of SC + A and 86% RUSF reported eating without mixing. Reported use of correct amount of flour: 34% in CSB + , 27% in CSWB, and 43% in SC + A of those, 95% in CSB + and 96% in CSWB also used the correct amount of oil. Among all caregivers, 86% in CSB + and 92% in CSWB used the correct amount of oil. In unadjusted models, the relationships between compliance behaviors and graduation were not statistically significant.

Conclusions:

Reported use of correct ingredients was high for all study foods; among FBFs, amount of flour was often different from the recommendation while amount of oil was often correct. Further research may explain apparent low importance of emphasizing ration guidance when designing information, education, and communication for MAM treatment programs.

ACCESS: Adherence to Ration Guidance During Preparation or Feeding of Four Specialized Nutritious Foods Does Not Influence Recovery from Moderate Acute Malnutrition (MAM)

Comparative Effectiveness of Four Specialized Nutritious Food Products for Treatment of Moderate Acute Malnutrition in Sierra Leone



AUTHORS: Breanne Langlois, Stacy Griswold, Ilana Cliffer, Devika Suri, Ye Shen, Kenneth Chui, Shelley Walton, Lindsey Green, Aminata Koroma, Mark Manary, Irwin Rosenberg, Patrick Webb, and Beatrice Rogers

DATE/PLACE OF PRESENTATION: June 2019, American Society for Nutrition (ASN)

ABSTRACT:

Objectives:

This study compared the effectiveness of 4 specialized nutritious foods (SNFs) used for the treatment of moderate acute malnutrition (MAM) in children <5 years of age in Pujehun District, Sierra Leone.

Methods:

This was a cluster-randomized trial operating through a supplementary feeding program (SFP) providing SNFs for treatment of MAM. Three study foods were fortified blended foods – Super Cereal Plus w/amylase (SC + A), Corn-soy Blend Plus w/oil (CSB + w/oil), and Corn-soy-whey Blend w/oil (CSWB w/oil) – and one was a lipid-based Ready to Use Supplementary Food (RUSF). From 4/2017 to 11/2018, children with MAM, defined as mid-upper arm circumference (MUAC) ≥11.5 cm and <12.5 cm without bipedal edema, were enrolled at participating health clinics and received rations bi-weekly until they reached an outcome or for up to 12 weeks. A stratified randomization technique was used to select 28 sites and randomize them into 7 per arm based on pre-determined criteria. During the study, an 8th site was added to the CSWB w/oil arm due to low enrollment. The primary outcome was graduation from SFP defined as MUAC ≥12.5 cm within the 12-week treatment period. Mixed-effect regression assessed whether there were differences in graduation rates among children treated with one of the 4 SNFs.

Results:

A total of 2683 children were enrolled out of a planned sample size of ~5000. Overall: 63% graduated from MAM, 19% developed severe acute malnutrition (SAM), 7% defaulted (missed 3 visits in a row), 1% died, and 10% reached no outcome within 12 weeks. Twenty-five % were transferred into the study from SAM treatment. By study arm, graduation rates were: 62% in CSWB w/oil, 65% in SC + A, 64% in CSB + w/oil, 62% in RUSF. In an unadjusted model, statistically significant differences in graduation rates between the arms were not detected. Data analysis is ongoing to determine if this finding is maintained in adjusted models.

Conclusions:

The 4 foods performed comparably in treating MAM in unadjusted analysis. Decision-making by donors, governments, and programmers on which food to program should also be based on cost-effectiveness analysis.

ACCESS: https://foodaidquality.org/sites/default/files/uploads/ComparativeEffectiveness.pdf

Cost and Cost-Effectiveness of Four Specialized Nutritious Foods for Treatment of Moderate Acute Malnutrition in Sierra Leone

No image available

AUTHORS: Ye Shen, Stacy Griswold, Breanne Langlois, Devika Suri, Stephen Vosti, Patrick Webb, and Beatrice Rogers

DATE/PLACE OF PRESENTATION: June 2019, American Society for Nutrition (ASN)

ABSTRACT:

Objectives:

To estimate cost-effectiveness of 4 specialized nutritious foods (SNF) for Moderate Acute Malnutrition (MAM) treatment in children under five in Pujehun District, Sierra Leone

Methods:

In a cluster randomized trial, a mobile supplementary feeding program was set up at 29 peripheral health units to treat children with MAM (mid-upper arm circumference (MUAC) ≥11.5 cm and <12.5 cm without bipedal edema) with 1 of 4 iso-caloric rations: Corn Soy Blend Plus w/oil (CSB + w/oil, reference), Corn Soy Whey Blend w/oil (CSWB w/oil), Super Cereal Plus w/amylase (SC + A), or Ready to Use Supplementary Food (RUSF). All foods were procured from U.S. except locally produced RUSF. Unlike RUSF and oil provided in commonly programmed specifications, CSB + , CSWB, and SC + A were produced in experimental package size or formulation at small scale. Caregivers picked up rations bi-weekly until children reached an outcome or up to 12 weeks. Collected from accounting records and study instruments using activity-based costing with ingredients, data on 10 components from implementer perspective (start-up, supply chain, and programming) were summarized into cost per enrolled child in 2018 USD for each arm. Other stakeholders' costing perspectives will also be analyzed. To assess cost-effectiveness by arm, cost per recovered child = cost per enrolled child/graduation rate. Predicted means of crude graduation rate (% of children reaching MUAC ≥12.5 cm in 12 weeks) with 95% confidence intervals were estimated from unadjusted mixed-effect model to construct crude cost-effectiveness ranges. Future analyses will be based on adjusted modeling and realistically estimated product costs at scaled production.

Results:

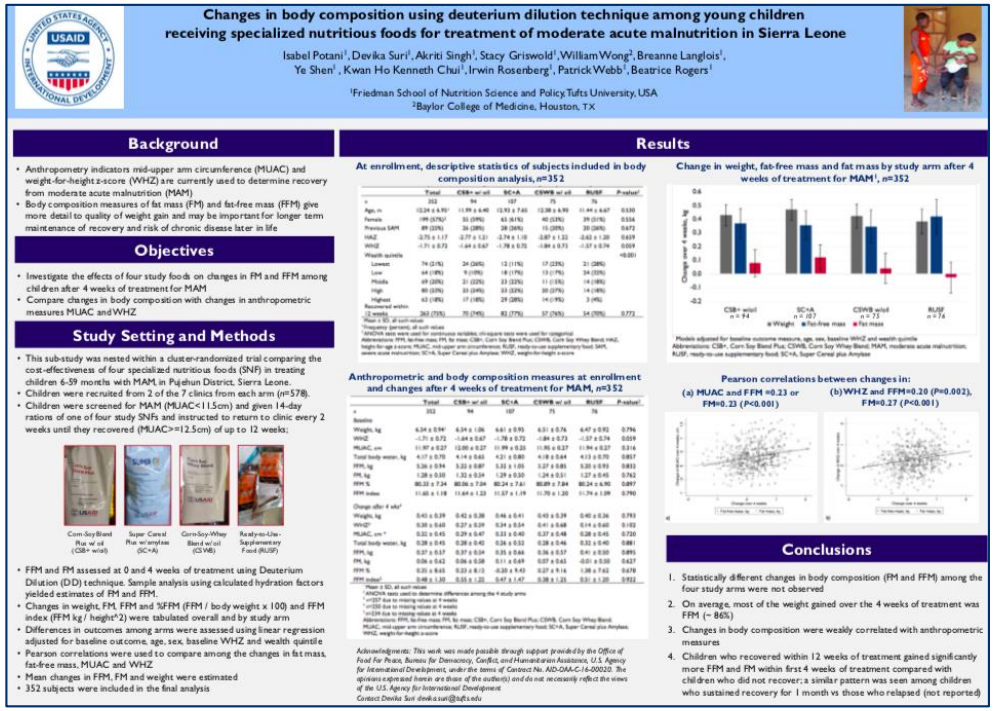
Children (N = 2681) received similar number of bi-weekly rations by arm. Product and international freight were top drivers of cost differences across arms. Crude graduation rate was not statistically different by arm. Cost per enrolled child ranged from $86 in RUSF to $94 in SC + A. Cost per recovered child was $137 ($130 - 145) in RUSF, $142 ($134 - 151) in CSB + w/oil, $146 ($138 - 155) in SC + A, and $149 ($140 - 160) in CSWB w/oil.

Conclusions:

Crude cost-effectiveness to treat MAM considering only implementer cost was similar across 4 SNFs.

ACCESS: Cost and Cost-Effectiveness of Four Specialized Nutritious Foods for Treatment of Moderate Acute Malnutrition in Sierra Leone

Changes in Body Composition Using Deuterium Dilution Technique among Young Children Receiving Specialized Nutritious Foods for Treatment of Moderate Acute Malnutrition in Sierra Leone



AUTHORS: Isabel Potani, Devika Suri, Akriti Singh, Stacy Griswold, William Wong, Breanne Langlois, Ye Shen, Kwan Ho Kenneth Chui, Irwin Rosenberg, Patrick Webb, Beatrice Rogers

DATE/PLACE OF PRESENTATION: June 2019, American Society for Nutrition (ASN)

ABSTRACT:

Objectives:

To determine differential changes in children's body composition—fat-free mass (FFM) and fat mass (FM)—after 4 weeks of treatment for moderate acute malnutrition (MAM) with one of 4 four specialized nutritious foods (SNFs).

Methods:

This sub-study was nested within a larger cluster-randomized trial comparing the cost-effectiveness of 4 isocaloric SNFs in treating MAM among children 6–59 months in Pujehun District, Sierra Leone: Corn-Soy Blend Plus w/oil (CSB + w/oil), Super Cereal Plus w/amylase (SC + A), Corn-Soy-Whey Blend w/oil (CSWB w/oil) and Ready-to-use-Supplementary Food (RUSF). Children with mid-upper arm circumference (MUAC) ≥11.5 cm and <12.5 cm with no clinical complications were enrolled and received an SNF ration bi-weekly until they reached MUAC ≥12.5 cm or up to 12 weeks. Body composition was assessed using the deuterium dilution technique at program enrollment and after 4 weeks of treatment. Changes in weight, FM, FFM and %FFM overall and by study arm were calculated; statistical significance was determined using t-tests and ANOVA (unadjusted).

Results:

Among 336 subjects at enrollment, mean ± SD age was 11.8 ± 6.5 mos, weight was 6.5 ± 0.9 kg, FM was 1.3 ± 0.5 kg, FFM was 5.2 ± 0.9 kg, and %FFM was 80.4 ± 7.3. After 4 weeks of treatment, mean ± SD change in weight was 0.44 ± 0.39 kg ($P < 0.001$), FM was 0.09 ± 0.60 kg ($P = 0.005$), FFM was 0.35 ± 0.56 ($P < 0.001$), and %FFM was 0.003 ± 8.5 (NS). Overall, weight gain consisted on average of 20.9% FM and 79.8% FFM. By study arm, mean ± SD changes in FM and FFM respectively, were: 0.12 ± 0.53 kg and 0.32 ± 0.49 kg in CSB + w/oil; 0.13 ± 0.67 kg and 0.34 ± 0.64 kg in SC + A; 0.08 ± 0.65 kg and 0.36 ± 0.57 kg in CSWB w/oil; 0.02 ± 0.49 kg and 0.39 ± 0.5 kg in RUSF. These changes were not significantly different across study arms.

Conclusions:

Over 4 weeks of treatment for MAM, children gained roughly 80% lean mass relative to 20% fat mass. This body composition is consistent with predicted sustainability of recovery from MAM and healthier long-term disease risk. Differential effects on body composition by type of SNF were not detected after 4 weeks of treatment in this study.

ACCESS: https://foodaidquality.org/sites/default/files/uploads/ChangesBodyComp_compressed.pdf

Environmental Enteric Dysfunction as a Potential Modifier of the Effect of Specialized Nutritious Foods in the Treatment of Moderate Acute Malnutrition in Sierra Leone

Environmental Enteric Dysfunction as a Potential Modifier of the Effect of Specialized Nutritious Foods in the Treatment of Moderate Acute Malnutrition in Sierra Leone

Akriti Singh[1], Isabel Potani[1], Stacy Griswold[1], Devika Suri[1], Breanne Langlois[1], Ye Shen[1], Shelley M. Walton[1], Kenneth Kwan Ho Chui[2], Patrick Webb[1], Irwin H. Rosenberg[1], and Beatrice L. Rogers[1]

[1]Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA; [2]School of Medicine, Tufts University, Boston, MA

OBJECTIVE

- To understand how specialized nutritious foods (SNFs) enable a child to recover from moderate acute malnutrition (MAM), the role of conditions such as environmental enteric dysfunction (EED), impairment of the small intestine, needs to be studied.
- The objective of this study was to examine whether EED at enrollment modifies the effect of SNFs on graduation from a MAM treatment program.

METHODS

- Sierra Leonean children 6-59 months with MAM (mid-upper arm circumference ≥11.5cm & <12.5cm) and no clinical complications (e.g. edema) were supplemented with one of four SNFs in isocaloric rations of ~550kcal/day.
- The SNFs were:

Corn Soy Blend Plus w/ Oil | Corn Soy Whey Blend w/ Oil | Super Cereal Plus w/ Aseptase | Ready to Use Supplementary Food

- EED was assessed at enrollment using the lactulose: mannitol (L: M) test on a sub-set of participants (**Table 1**).
- Logistic regression was used to test for effect modification by EED (**Table 2**).
  - Outcome: Graduation (MUAC ≥12.5cm) from the MAM treatment program within 12 weeks (binary).
  - Exposure: SNFs (categorical).
  - Effect modifiers: % lactulose excreted (%L), % mannitol excreted (%M), lactulose: mannitol excretion ratio (LMER), and lactulose: mannitol ratio (L: M Ratio) in separate models (continuous).
- Chi-square test was used to examine difference in percentage graduated from the MAM treatment program by presence of EED at enrollment defined as %L ≥ 0.2 (**Figure 1**). Cut-offs for other L: M test variables are not as well established.

RESULTS

Table 1. Characteristics of EED sub-study participants

	All	CSWB w/oil	SC+A	CSB+ w/ oil	RUSF	P-value
n	390	56	115	96	123	
Enrollment						
Age (months)	14.67±9.19	13.45±9.32	14.31±9.52	14.34±8.15	15.81±9.55	0.372
Female	220(57%)	33(60%)	71(62%)	44(46%)	72(59%)	0.123
Transferred from SAM	91(24%)	12(22%)	26(23%)	32(34%)	21(17%)	0.037
Anthropometry						
MUAC	11.97±0.27	12.02±0.28	11.95±0.26	11.96±0.27	11.99±0.27	0.384
LAZ	-2.83±1.38	-2.76±1.45	-2.73±1.28	-2.92±1.42	-2.9±1.42	0.670
WLZ	-1.88±0.74	-1.73±0.8	-1.82±0.73	-1.92±0.75	-1.98±0.7	0.124
WAZ	-2.96±0.87	-2.88±0.85	-2.85±0.83	-3±0.91	-3.05±0.86	0.291
EED						
%L	0.34(0.21 - 0.62)	0.37(0.2 - 0.6)	0.33(0.23 - 0.7)	0.31(0.2 - 0.58)	0.34(0.19 - 0.59)	0.185
%L ≥ 0.2	301(77%)	43(77%)	95(83%)	72(75%)	91(74%)	0.407
%M	3.87(2.42 - 5.65)	3.61(2.32 - 5.75)	3.85(2.41 - 5.62)	3.53(2.31 - 5.39)	4.23(2.53 - 5.91)	0.185
LMER	0.1(0.06 - 0.15)	0.1(0.07 - 0.14)	0.1(0.06 - 0.16)	0.1(0.07 - 0.15)	0.09(0.06 - 0.12)	0.760
LM ratio	0.48(0.32 - 0.73)	0.51(0.36 - 0.69)	0.5(0.31 - 0.79)	0.49(0.33 - 0.77)	0.43(0.31 - 0.62)	0.630
Outcome						
Graduated	254(66%)	33(60%)	70(61%)	61(64%)	90(73%)	0.165

Cells represent: Mean±SD or n(%) or Median(interquartile range).

P-value for difference between SNFs by linear regression for continuous variables, chi-square test for categorical variables, and median test for EED variables.

Abbreviations: SAM, severe acute malnutrition; MUAC, mid-upper arm circumference; LAZ, length-for-age z score; WLZ, weight-for-length z score; WAZ, weight-for-age z score; EED, environmental enteric dysfunction; %L, percent lactulose; %M, percent mannitol; LMER, lactulose mannitol excretion ratio; LM, lactulose mannitol.

Table 2. No interaction between EED (as defined by %L, %M, LMER, and LM Ratio), and SNFs in predicting recovery from MAM, n=387

	%L β (95% CI)	%M β (95% CI)	LMER β (95% CI)	LM Ratio β (95% CI)
SNFs				
CSB+ w/ oil	Reference	Reference	Reference	Reference
CSWB w/ oil	-1.17(-2.41 , 0.07)	-1.37(-2.93 , 0.19)	-0.72(-2.38 , 0.93)	-0.72(-2.38 , 0.93)
SC+A	-0.66(-1.63 , 0.31)	-0.11(-1.23 , 1.01)	-1.49(-2.67 , -0.32)	-1.49(-2.67 , -0.32)
RUSF	-0.12(-1.10 , 0.86)	0.18(-0.99 , 1.35)	-0.48(-1.68 , 0.73)	-0.48(-1.68 , 0.73)
EED[1]	-0.93(-2.27 , 0.40)	0.01(-0.17 , 0.20)	-8.24(-15.47 , -1.02)	-1.65(-3.09 , -0.20)
SNFs * EED[1]				
CSB+ w/ oil	Reference	Reference	Reference	Reference
CSWB w/ oil	2.13(-0.26 , 4.52)	0.29(-0.08 , 0.65)	3.42(-9.69 , 16.53)	0.68(-1.94 , 3.31)
SC+A	1.11(-0.55 , 2.76)	-0.02(-0.25 , 0.22)	11.07(2.80 , 19.34)	2.21(0.56 , 3.87)
RUSF	0.97(-0.73 , 2.66)	0.03(-0.21 , 0.26)	6.41(-2.32 , 15.14)	1.28(-0.46 , 3.03)
$P_{interaction}$	0.331	0.384	0.051	0.051
R^2	0.112	0.115	0.122	0.122

[1]Takes the value %L, %M, LMER and LM Ratio in separate models.

Logistic regression models adjusted for child age, gender and previous severe acute malnutrition status.

One highly influential observation excluded from models with LMER and LM Ratio.

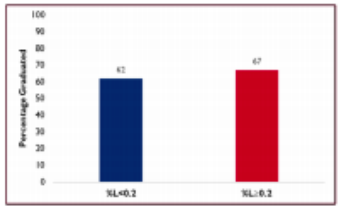


Figure 1. Percentage graduated from the MAM treatment program by presence of EED at enrollment defined as %L≥0.2. Chi-square test p-value =0.407.

CONCLUSIONS

- Prevalence of EED (%L≥ 0.2) at enrollment was high (77%) among MAM children in this study.
- EED (L : M test) at enrollment did not affect graduation from the MAM treatment program within 12 weeks.
- EED (L: M test) at enrollment did not modify the effect of any of the SNFs in regard to graduation from the MAM treatment program within 12 weeks.
- These findings suggest that EED may not affect graduation from the program, or that EED changes over the course of treatment.

ACKNOWLEDGEMENTS

- This work was made possible through support provided by the Office of Food For Peace, Bureau for Democracy, Conflict, and Humanitarian Assistance, U.S. Agency for International Development, under the terms of Contract No. AID-OAA-A-16-00020. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.
- In the field, samples were stored in liquid nitrogen supplied by the Department of Biological Sciences, Njala University, Sierra Leone. Samples were stored at the University of Makeni Infectious Disease Research Laboratory, Sierra Leone. Concentration of the sugars was analyzed at Baylor College of Medicine, Texas, USA.

AUTHORS: Akriti Singh, Isabel Potani, Stacy Griswold, Devika Suri, Breanne Langlois, Ye Shen, Shelley M. Walton, Kenneth Kwan Ho Chui, Patrick Webb, Irwin H. Rosenberg, and Beatrice L. Rogers

DATE/PLACE OF PRESENTATION: June 2019, American Society for Nutrition (ASN)

ABSTRACT:

Objective:

- To understand how specialized nutritious foods (SNFs) enable a child to recover from moderate acute malnutrition (MAM), the role of conditions such as environmental enteric dysfunction (EED), impairment of the small intestine, needs to be studied.
- The objective of this study was to examine whether EED at enrollment modifies the effect of SNFs on graduation from a MAM treatment program.

Conclusions:

- Prevalence of EED at enrollment was high (77%) among MAM children in this study.
- EED (L:M test) at enrollment did not affect graduation from the MAM treatment program within 12 weeks.
- EEW (L:M test) at enrollment did not modify the effect of any of the SNFs in regard to graduation from the MAM treatment program within 12 weeks.
- These findings suggest that EED may not affect graduation from the program, or that EED changes over the course of treatment.

ACCESS:

https://friedmanfellows.com/assets/ppts/2019/ASN-EED-Poster_5-June-2019_Akriti-Singh.pdf

A Tale of Two Measures: Self-Report and Lab-Assessed Values in Amount of Oil Added to CSB Porridge Prepared by Caregivers of Children with Moderate Acute Malnutrition in Southern Malawi

No image available

AUTHORS: Breanne Langlois, Beatrice Rogers

DATE/PLACE OF PRESENTATION: April 2016, Experimental Biology

ABSTRACT:
Objective: To compare self-reported with laboratory-assessed grams oil per 100 grams Corn-Soy Blend (CSB) in porridge prepared by caregivers of beneficiary children receiving the food as treatment for moderate acute malnutrition

Methods: This was a secondary analysis of an effectiveness study conducted in Southern Malawi in 2014 assessing 2 interventions designed to increase the amount of oil added to CSB porridge prepared by caregivers, with a target of 30 g added oil per 100 g CSB. The Control Group received standard monthly ration: 1 L oil, 8 kg CSB in bulk. Intervention groups received 2.6 L oil, 8 kg CSB provided either in bulk (Group 1) or in 4 2-kg packages with printed messages (Group 2), and social behavior change communication to meet added oil target (Groups 1 and 2). Data were collected through structured interviews with caregivers and lab analysis of porridge samples. Paired sample t-tests compared oil added to CSB porridge (oil g per 100 g CSB) from self-report and lab analysis within each study group (Wilcoxon when appropriate); ANOVA test assessed the mean difference (self-report – lab value) between the study groups. Bland-Altman plots were used to display the discrepancy between the 2 measures.

Results: A total of 584 caregivers participated: n=192 in Group 1; n=196 in Group 2; n=196 in the Control Group. The mean ± SDs of added oil (in g per 100 g CSB) from self-report and lab analysis, respectively, were: 30±9 and 28±16 (Group 1), 30±9 and 25±15 (Group 2), 15±9 and 12±10 (Control). Estimated added oil from self-report was significantly higher than lab analysis within each study group ($p<0.05$ for all). Among the study groups, the mean differences between the measures of added oil (reported – lab) were not significant ($p=0.56$). A cluster of observations in the intervention groups had abnormally high fat content in lab assessed values; sensitivity analysis excluding this cluster showed mean lab values of added oil were reduced to 22±12 in both intervention groups, causing differences in self-report versus lab to become significantly larger in the intervention groups compared to control ($p=0.002$). Bland-Altman plots revealed a clear bias between the 2 measures in the intervention groups: participants tended to over-report the amount of oil used, but as the lab-assessed amount increased (i.e. as their behavior changed towards using more oil) there was a shift towards under-reporting. This was less evident in the control group. Both self–report and lab-assessed values showed the same relationships among the study groups, with Groups 1 and 2 having more added oil than the Control.

Conclusion: Caregivers in the intervention groups reported what they were instructed to do, regardless of whether lab analysis reflected the targeted behavior change. While self-report was not as reliable as the lab measure, both conveyed that intervention group caregivers added more oil to porridge than the control group. Laboratory analysis was critical to determine the precise magnitude of added oil to CSB porridge.

ACCESS: https://faseb.onlinelibrary.wiley.com/doi/10.1096/fasebj.30.1_supplement.1149.17

The role of dairy in the comparative effectiveness and cost of fortified blended foods versus ready-to-use foods in treatment of children with moderate acute malnutrition

No image available

AUTHORS: Devika Suri, Denish Moorthy, Irwin Rosenberg

DATE/PLACE OF PRESENTATION: April 2016, Experimental Biology

ABSTRACT:

Objective:

Recent meta-analyses found treating young children with MAM using ready-to-use foods (RUF) versus fortified blended foods (FBF) resulted in higher recovery rates and weight gain. This analysis aimed to compare studies of RUF and FBF with and without dairy to determine whether the addition of dairy to these food supplements modified the comparative effectiveness and cost of treatment.

Methods:

A review of literature on the comparative effectiveness of FBF and RUF in treatment of MAM was conducted. Outcomes of recovery from MAM, weight gain and length gain were compared among study cohorts, which included FBF with dairy (FBF+), FBF without dairy (FBF−), RUF with dairy (RUF+) and RUF without dairy (RUF−). Data on recovery from MAM was pooled among the 4 supplement categories. The cost per 500 kcal of each category of food supplement was averaged among studies that reported cost data.

Results:

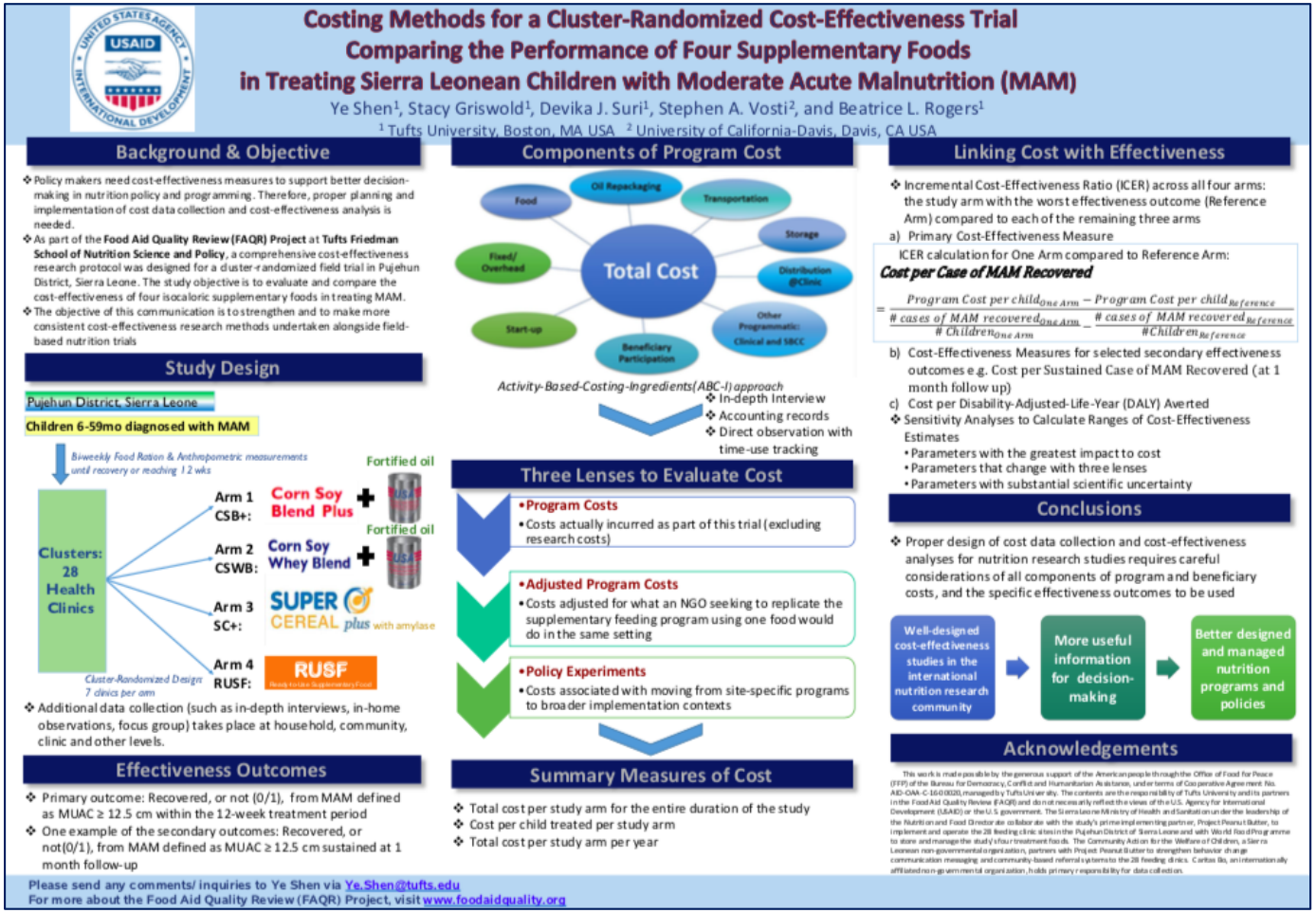
Among the 7 studies included, 9 RUFs were tested, of which 5 contained dairy, and 9 FBFs were tested, of which 3 contained dairy. Children treated with RUF+ had higher recovery rates compared with FBF− in 5 out of 5 study cohorts, higher weight gain in 4 out of 4, and significantly higher length gain in 1 out of 4. Children treated with RUF+ vs FBF+ had higher recovery rates in 1 out of 2 study cohorts, with no differences in weight or length gain. No differences were found in the 2 studies comparing RUF− and FBF+. Finally, children treated with RUF− had higher recovery rates compared with FBF− in 1 of 2 studies, higher weight gain in 2 out of 2, and no differences in length gain. Recovery from MAM among the 7 studies was 65% (FBF−), 79% (FBF+), 82% (RUF−), and 80% (RUF+). Four of the 7 studies included cost data; on average per 500 kcal costs were $0.15 (FBF−), $0.18 (FBF+), $0.17 (RUF−), and $0.35 (RUF+).

Conclusion:

Our results suggest that addition of dairy to FBF make it comparative in effectiveness to both RUF with and without dairy, but does not appear to be a factor between the RUF categories. RUF with dairy was twice the cost per kcal compared with the other food supplement categories. Cost-effectiveness analysis will be useful to help determine the most appropriate food supplement for treatment of MAM.

ACCESS: https://faseb.onlinelibrary.wiley.com/doi/abs/10.1096/fasebj.30.1_supplement.669.14

Costing Methods for a Cluster-Randomized Cost-Effectiveness Trial Comparing the Performance of Four Supplementary Foods in Treating Sierra Leonean Children with Moderate Acute Malnutrition



AUTHORS: Ye Shen, Stacy Griswold, Devika Suri, Stephen Vosti, Beatrice Rogers

DATE/PLACE OF PRESENTATION: April 2017, Experimental Biology

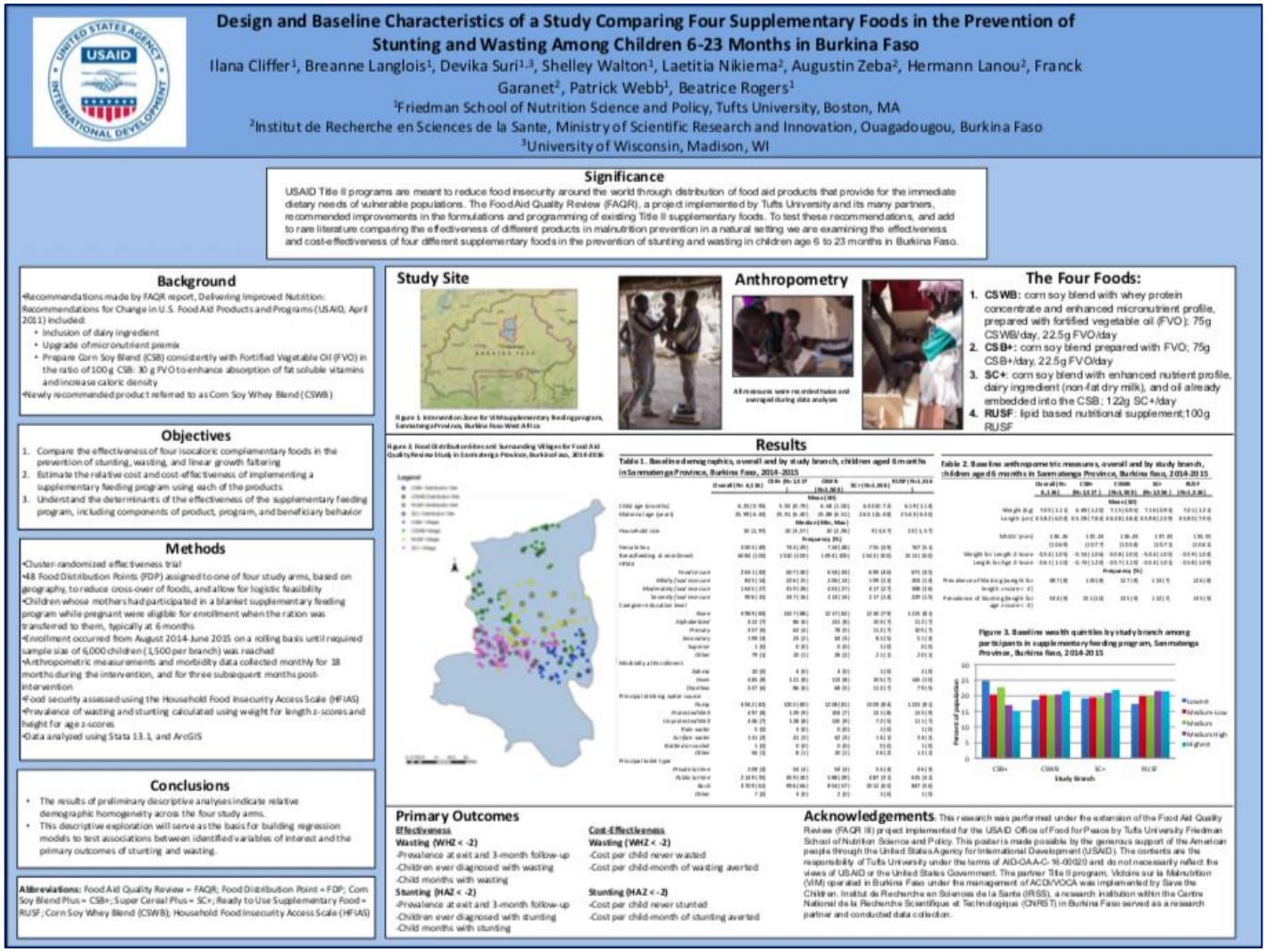
ABSTRACT: Policy makers need cost-effectiveness measures to support better decision- making in nutrition policy and programming. Therefore, proper planning and implementation of cost data collection and cost-effectiveness analysis is needed.

As part of the Food Aid Quality Review (FAQR) Project at Tufts Friedman School of Nutrition Science and Policy, a comprehensive cost-effectiveness research protocol was designed for a cluster-randomized field trial in Pujehun District, Sierra Leone. The study objective is to evaluate and compare the cost-effectiveness of four isocaloric supplementary foods in treating MAM.

The objective of this communication is to strengthen and to make more consistent cost-effectiveness research methods undertaken alongside field- based nutrition trials.

ACCESS: https://foodaidquality.org/sites/default/files/publications/EB%202017%20Poster_%20Salone%202.0_%20CE%20methods_FINAL.pdf

Design and Baseline Characteristics of a Study Comparing Four Supplementary Foods in the Prevention of Stunting and Wasting Among Children 6-23 Months in Burkina Faso



Design and Baseline Characteristics of a Study Comparing Four Supplementary Foods in the Prevention of Stunting and Wasting Among Children 6-23 Months in Burkina Faso

Ilana Cliffer[1], Breanne Langlois[1], Devika Suri[1,3], Shelley Walton[1], Laetitia Nikiema[2], Augustin Zeba[2], Hermann Lanou[2], Franck Garanet[2], Patrick Webb[1], Beatrice Rogers[1]

[1]Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA

[2]Institut de Recherche en Sciences de la Sante, Ministry of Scientific Research and Innovation, Ouagadougou, Burkina Faso

[3]University of Wisconsin, Madison, WI

Significance

USAID Title II programs are meant to reduce food insecurity around the world through distribution of food aid products that provide for the immediate dietary needs of vulnerable populations. The Food Aid Quality Review (FAQR), a project implemented by Tufts University and its many partners, recommended improvements in the formulations and programming of existing Title II supplementary foods. To test these recommendations, and add to rare literature comparing the effectiveness of different products in malnutrition prevention in a natural setting we are examining the effectiveness and cost-effectiveness of four different supplementary foods in the prevention of stunting and wasting in children age 6 to 23 months in Burkina Faso.

Background

- Recommendations made by FAQR report, Delivering Improved Nutrition: Recommendations for Change in U.S. Food Aid Products and Programs (USAID, April 2011) included:
  - Inclusion of dairy ingredient
  - Upgrade of micronutrient premix
  - Prepare Corn Soy Blend (CSB) consistently with Fortified Vegetable Oil (FVO) in the ratio of 100 g CSB: 30 g FVO to enhance absorption of fat soluble vitamins and increase caloric density
- Newly recommended product referred to as Corn Soy Whey Blend (CSWB)

Objectives

1. Compare the effectiveness of four isocaloric complementary foods in the prevention of stunting, wasting, and linear growth faltering
2. Estimate the relative cost and cost-effectiveness of implementing a supplementary feeding program using each of the products
3. Understand the determinants of the effectiveness of the supplementary feeding program, including components of product, program, and beneficiary behavior

Methods

- Cluster-randomized effectiveness trial
- 48 Food Distribution Points (FDP) assigned to one of four study arms, based on geography, to reduce cross-over of foods, and allow for logistic feasibility
- Children whose mothers had participated in a blanket supplementary feeding program while pregnant were eligible for enrollment when the ration was transferred to them, typically at 6 months
- Enrollment occurred from August 2014-June 2015 on a rolling basis until required sample size of 6,000 children (1,500 per branch) was reached
- Anthropometric measurements and morbidity data collected monthly for 18 months during the intervention, and for three subsequent months post-intervention
- Food security assessed using the Household Food Insecurity Access Scale (HFIAS)
- Prevalence of wasting and stunting calculated using weight for length z-scores and height for age z-scores
- Data analyzed using Stata 13.1, and ArcGIS

Conclusions

- The results of preliminary descriptive analyses indicate relative demographic homogeneity across the four study arms.
- This descriptive exploration will serve as the basis for building regression models to test associations between identified variables of interest and the primary outcomes of stunting and wasting.

Abbreviations: Food Aid Quality Review = FAQR; Food Distribution Point = FDP; Corn Soy Blend Plus = CSB+; Super Cereal Plus = SC+; Ready to Use Supplementary Food = RUSF; Corn Soy Whey Blend (CSWB); Household Food Insecurity Access Scale (HFIAS)

Study Site

Figure 1. Intervention Zone for Vitaliaupplementary feeding program, Sanmatenga Province, Burkina Faso West Africa

Anthropometry

All measures were recorded twice and averaged during data analysis

The Four Foods:

1. **CSWB**: corn soy blend with whey protein concentrate and enhanced micronutrient profile, prepared with fortified vegetable oil (FVO); 75g CSWB/day, 22.5g FVO/day
2. **CSB+**: corn soy blend prepared with FVO; 75g CSB+/day, 22.5g FVO/day
3. **SC+**: corn soy blend with enhanced nutrient profile, dairy ingredient (non-fat dry milk), and oil already embedded into the CSB; 122g SC+/day
4. **RUSF**: lipid based nutritional supplement; 100g RUSF

Figure 2. Food Distribution Sites and Surrounding Villages for Food Aid Quality Review Study in Sanmatenga Province, Burkina Faso, 2014-2016

Results

Table 1. Baseline demographics, overall and by study branch, children aged 6 months in Sanmatenga Province, Burkina Faso, 2014-2015

Table 2. Baseline anthropometric measures, overall and by study branch, children aged 6 months in Sanmatenga Province, Burkina Faso, 2014-2015

Figure 3. Baseline wealth quintiles by study branch among participants in supplementary feeding program, Sanmatenga Province, Burkina Faso, 2014-2015

Primary Outcomes

Effectiveness

Wasting (WHZ < -2)
- Prevalence at exit and 3-month follow-up
- Children ever diagnosed with wasting
- Child months with wasting

Stunting (HAZ < -2)
- Prevalence at exit and 3-month follow-up
- Children ever diagnosed with stunting
- Child months with stunting

Cost-Effectiveness

Wasting (WHZ < -2)
- Cost per child never wasted
- Cost per child-month of wasting averted

Stunting (HAZ < -2)
- Cost per child never stunted
- Cost per child-month of stunting averted

Acknowledgements: This research was performed under the extension of the Food Aid Quality Review (FAQR II) project implemented for the USAID Office of Food for Peace by Tufts University Friedman School of Nutrition Science and Policy. This poster is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of Tufts University under the terms of AID-OAA-C-16-00020 and do not necessarily reflect the views of USAID or the United States Government. The partner Title II program, Vitaliaire sur la Malnutrition (VM) operated in Burkina Faso under the management of ACDI/VOCA was implemented by Save the Children. Institut de Recherche en Sciences de la Sante (IRSS), a research institution within the Centre National de la Recherche Scientifique et Technologique (CNRST) in Burkina Faso served as a research partner and conducted data collection.

Authors: Ilana Cliffer, Breanne Langlois, Devika Suri, Shelley Walton, Laetitia Nikiema, Augustin Zeba, Hermann Lanou, Franck Garanet, Patrick Webb, Beatrice Rogers

Date/Place of Presentation: April 2017, Experimental Biology

Abstract: USAID Title II programs are meant to reduce food insecurity around the world through distribution of food aid products that provide for the immediate dietary needs of vulnerable populations. The Food Aid Quality Review (FAQR), a project implemented by Tufts University and its many partners, recommended improvements in the formulations and programming of existing Title II supplementary foods. To test these recommendations and add to rare literature comparing the effectiveness of different products in malnutrition prevention in a natural setting we are examining the effectiveness and cost-effectiveness of four different supplementary foods in the prevention of stunting and wasting in children age 6 to 23 months in Burkina Faso.

Access: https://foodaidquality.org/sites/default/files/publications/EB%202017%20Burkina%20Descriptives%20Final.pdf

Experiences of Beneficiary Caregivers in a Supplementary Feeding Program in Southern Malawi

Experiences and Perceptions of Beneficiary Caregivers in a Supplementary Feeding Program in Southern Malawi

Breanne Langlois[1], Devika Suri[1,2], Ye Shen[1], Shelley Walton[1], Gloria Alvarez[1], Katie Moses[1] and Beatrice Rogers[1]

[1] Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA
[2] University of Wisconsin, Madison, WI

BACKGROUND & PURPOSE

Tufts University is conducting a review of the quality of food aid products used in nutrition programs.[1] One part of this project was a study examining the feasibility of increasing the ratio of fortified oil to Corn Soy Blend (CSB) in porridge prepared by caregivers of children enrolled in a supplementary feeding program for treatment of moderate acute malnutrition in Southern Malawi. Increased oil is intended to increase calorie density and Essential Fatty Acids content.

Focus group discussions were conducted among participating caregivers in order to better understand their perceptions and experiences in the supplementary feeding program (SFP). The objective of this analysis was to identify and describe these findings.

Figure 1. Study Area in Southern Malawi

METHODS

This was an analysis of qualitative data collected as part of a 2014 feasibility study assessing programmatic changes designed to increase the amount of oil added to CSB porridge prepared by caregivers. Study participants were caregivers who were receiving CSB with oil as treatment for their children (age< 5 years) with moderate acute malnutrition.

Focus Group Discussions (FGD) were conducted among participating caregivers, consisting of semi-structured questions about experiences in the SFP. Interviews were audiotaped, transcribed, de-identified, and then analyzed using QSR International's NVivo 10 Software. An inductive, thematic content analysis approach was used to identify common conceptual themes from the data. Consent was obtained from all FGD participants.

1. The Food Aid Quality Review (FoodAidQuality.org)

FINDINGS

Nine FGDs were conducted, with between 7-10 caregivers participating in each. Several themes emerged relating to on-the-ground experiences, benefits and challenges of the SFP, and its effects within the community. Challenges with the SFP were commonly centered on the distribution process. Participants described not knowing when to expect the distribution (e.g. having no fixed date or time, or distribution not arriving when planned); poor communication (e.g. having no advance notice of when the distribution will arrive, being told the day of, or not everyone receiving the message); long wait time at the distribution site; ration not received by the intended beneficiary. Additionally, it was commonly described that the ration does not last until the next distribution because the child eats the CSB porridge often (more than recommended). Participants also described common perceptions within their community: that the CSB is better than other flours; that beneficiaries are favored; and that others should also be entitled to receive the porridge. Several participants also described experiencing confrontation with other community members as a result of not sharing their CSB ration. Caregivers often cited improvements in the health of the beneficiary children. Other benefits of the SFP reported by caregivers included: happier, more active children and having gained knowledge about child feeding.

Figure 2. Common challenges with the SFP centered around the distribution process

Figure 3. Long wait times were commonly cited

SAMPLE QUOTES

Community perceptions

"they say the CSB tastes better than the corn"
"think that we are just favored or we have connections"
"They are just jealous" "some people just want to taste the FVO"
"some just want to taste the flour" "they want it for cooking relish"
"they think everyone is entitled to eat the porridge"
"they think it is a privilege to be in the program"
"they look at the CSB as something prestigious"

Benefits of the SFP

"her body looks healthy" "now he is better and is able to play"
"we have gained knowledge" "we can see a change"
"gained knowledge on how to take care of our children"
"she grows up to be intelligent" "My child has improved a lot."

CONCLUSIONS

Qualitative information is critical to identify important contextual issues that may affect program implementation and acceptance. These findings highlight common challenges encountered in a supplementary feeding program, and may be relevant in other settings. Implementers can use these findings to anticipate potential challenges and unintended consequences. The following should be considered and appropriately managed to ensure effective implementation: barriers to collecting supplementary food rations such as distance to distribution site and reliable means of communication about distributions; community perceptions, norms, economic status of other households, and availability of other foods that may influence how beneficiaries are perceived, and the pressure to share the ration with others.

Acknowledgment: *This research was performed under the extension of the Food Aid Quality Review (FAQR II) project implemented for the USAID Office of Food for Peace by the Tufts University Friedman School of Nutrition Science and Policy. This poster is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of Tufts University under the terms of Contract AFP-C-00-09-00016-00 and AID-OAA-C-16-00020 and do not necessarily reflect the views of USAID or the United States Government. The partner Title II program, Wellness and Agriculture for Life Advancement operated in Malawi under the management of Catholic Relief Services, and was implemented by several private voluntary organizations, including the three that participated in this study: Project Concern International, Save the Children, and Africare. The Center for Social Research, a research institution within the Faculty of Social Science of the University of Malawi in Zomba, was in charge of data collection.*

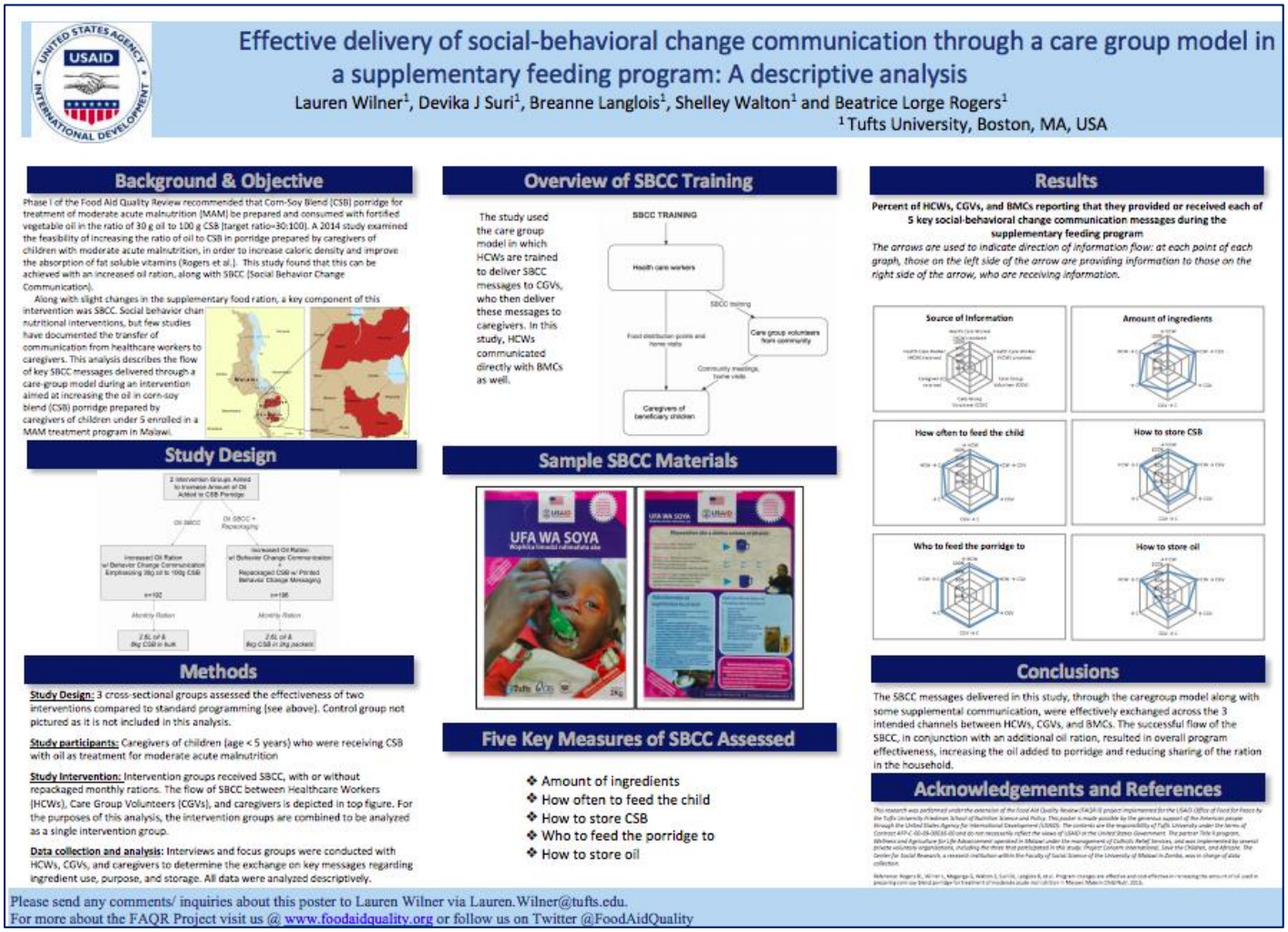
Authors: Breanne Langlois, Devika Suri, Ye Shen, Shelley Walton, Gloria Alvarez, Katie Moses, Beatrice Rogers

Date/Place of Presentation: April 2017, Experimental Biology

Abstract: Tufts University is conducting a review of the quality of food aid products used in nutrition programs. 1 One part of this project was a study examining the feasibility of increasing the ratio of fortified oil to Corn Soy Blend (CSB) in porridge prepared by caregivers of children enrolled in a supplementary feeding program for treatment of moderate acute malnutrition in Southern Malawi. Increased oil is intended to increase calorie density and Essential Fatty Acids content. Focus group discussions were conducted among participating caregivers in order to better understand their perceptions and experiences in the supplementary feeding program (SFP). The objective of this analysis was to identify and describe these findings.

Access: https://foodaidquality.org/sites/default/files/publications/Malawi%20Experiences%20of%20Caregivers%20-%20EB2017%20-%20FINAL.pdf

Effective delivery of social-behavioral change communication through a care group model in a supplementary feeding program: a descriptive analysis



Effective delivery of social-behavioral change communication through a care group model in a supplementary feeding program: A descriptive analysis

Lauren Wilner[1], Devika J Suri[1], Breanne Langlois[1], Shelley Walton[1] and Beatrice Lorge Rogers[1]

[1] Tufts University, Boston, MA, USA

Background & Objective

Phase I of the Food Aid Quality Review recommended that Corn-Soy Blend (CSB) porridge for treatment of moderate acute malnutrition (MAM) be prepared and consumed with fortified vegetable oil in the ratio of 30 g oil to 100 g CSB (target ratio=30:100). A 2014 study examined the feasibility of increasing the ratio of oil to CSB in porridge prepared by caregivers of children with moderate acute malnutrition, in order to increase caloric density and improve the absorption of fat soluble vitamins (Rogers et al.). This study found that this can be achieved with an increased oil ration, along with SBCC (Social Behavior Change Communication).

Along with slight changes in the supplementary food ration, a key component of this intervention was SBCC. Social behavior chan nutritional interventions, but few studies have documented the transfer of communication from healthcare workers to caregivers. This analysis describes the flow of key SBCC messages delivered through a care-group model during an intervention aimed at increasing the oil in corn-soy blend (CSB) porridge prepared by caregivers of children under 5 enrolled in a MAM treatment program in Malawi.

Study Design

Methods

Study Design: 3 cross-sectional groups assessed the effectiveness of two interventions compared to standard programming (see above). Control group not pictured as it is not included in this analysis.

Study participants: Caregivers of children (age < 5 years) who were receiving CSB with oil as treatment for moderate acute malnutrition

Study Intervention: Intervention groups received SBCC, with or without repackaged monthly rations. The flow of SBCC between Healthcare Workers (HCWs), Care Group Volunteers (CGVs), and caregivers is depicted in top figure. For the purposes of this analysis, the intervention groups are combined to be analyzed as a single intervention group.

Data collection and analysis: Interviews and focus groups were conducted with HCWs, CGVs, and caregivers to determine the exchange on key messages regarding ingredient use, purpose, and storage. All data were analyzed descriptively.

Overview of SBCC Training

The study used the care group model in which HCWs are trained to deliver SBCC messages to CGVs, who then deliver these messages to caregivers. In this study, HCWs communicated directly with BMCs as well.

SBCC TRAINING

Health care workers

Caregivers of beneficiary children

Sample SBCC Materials

UFA WA SOYA

Five Key Measures of SBCC Assessed

- Amount of ingredients
- How often to feed the child
- How to store CSB
- Who to feed the porridge to
- How to store oil

Results

Percent of HCWs, CGVs, and BMCs reporting that they provided or received each of 5 key social-behavioral change communication messages during the supplementary feeding program

The arrows are used to indicate direction of information flow: at each point of each graph, those on the left side of the arrow are providing information to those on the right side of the arrow, who are receiving information.

Source of Information

Amount of ingredients

How often to feed the child

How to store CSB

Who to feed the porridge to

How to store oil

Conclusions

The SBCC messages delivered in this study, through the caregroup model along with some supplemental communication, were effectively exchanged across the 3 intended channels between HCWs, CGVs, and BMCs. The successful flow of the SBCC, in conjunction with an additional oil ration, resulted in overall program effectiveness, increasing the oil added to porridge and reducing sharing of the ration in the household.

Acknowledgements and References

Please send any comments/ inquiries about this poster to Lauren Wilner via Lauren.Wilner@tufts.edu.
For more about the FAQR Project visit us @ www.foodaidquality.org or follow us on Twitter @FoodAidQuality

Authors: Lauren Wilner, Devika Suri, Breanne Langlois, Shelley Walton, Beatrice Rogers

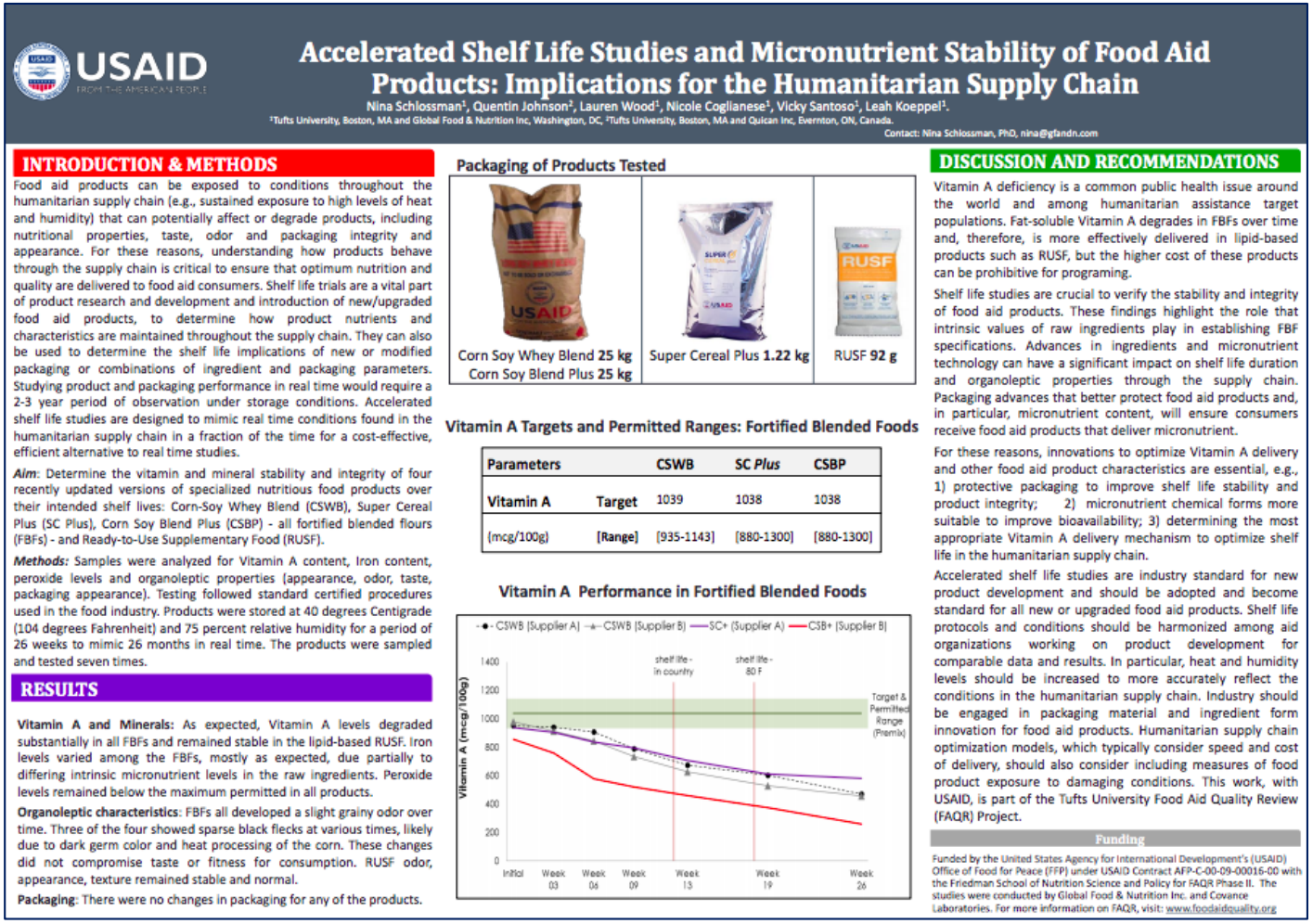
Date/Place of Presentation: April 2017, Experimental Biology

Abstract: Phase I of the Food Aid Quality Review recommended that Corn-Soy Blend (CSB) porridge for treatment of moderate acute malnutrition (MAM) be prepared and consumed with fortified vegetable oil in the ratio of 30 g oil to 100 g CSB (target ratio=30:100). A 2014 study examined the feasibility of increasing the ratio of oil to CSB in porridge prepared by caregivers of children with moderate acute malnutrition, in order to increase caloric density and improve the absorption of fat-soluble vitamins (Rogers et al.). This study found that this can be achieved with an increased oil ration, along with SBCC (Social Behavior Change Communication).

Along with slight changes in the supplementary food ration, a key component of this intervention was SBCC. Social behavior change communication (SBCC) is often used in nutritional interventions, but few studies have documented the transfer of communication from healthcare workers to caregivers. This analysis describes the flow of key SBCC messages delivered through a care-group model during an intervention aimed at increasing the oil in corn-soy blend (CSB) porridge prepared by caregivers of children under 5 enrolled in a MAM treatment program in Malawi.

Access: https://foodaidquality.org/sites/default/files/publications/EB%202017%20Poster_%20Malawi%20SBCC%20.pdf

Accelerated Shelf-Life Studies and Micronutrient Stability of Food Aid Products: Implications for the Humanitarian Supply Chain



USAID
FROM THE AMERICAN PEOPLE

Accelerated Shelf Life Studies and Micronutrient Stability of Food Aid Products: Implications for the Humanitarian Supply Chain

Nina Schlossman[1], Quentin Johnson[2], Lauren Wood[1], Nicole Coglianese[1], Vicky Santoso[1], Leah Koeppel[1].

[1]Tufts University, Boston, MA and Global Food & Nutrition Inc, Washington, DC, [2]Tufts University, Boston, MA and Quican Inc, Evernton, ON, Canada.

Contact: Nina Schlossman, PhD, nina@gfandn.com

INTRODUCTION & METHODS

Food aid products can be exposed to conditions throughout the humanitarian supply chain (e.g., sustained exposure to high levels of heat and humidity) that can potentially affect or degrade products, including nutritional properties, taste, odor and packaging integrity and appearance. For these reasons, understanding how products behave through the supply chain is critical to ensure that optimum nutrition and quality are delivered to food aid consumers. Shelf life trials are a vital part of product research and development and introduction of new/upgraded food aid products, to determine how product nutrients and characteristics are maintained throughout the supply chain. They can also be used to determine the shelf life implications of new or modified packaging or combinations of ingredient and packaging parameters. Studying product and packaging performance in real time would require a 2-3 year period of observation under storage conditions. Accelerated shelf life studies are designed to mimic real time conditions found in the humanitarian supply chain in a fraction of the time for a cost-effective, efficient alternative to real time studies.

Aim: Determine the vitamin and mineral stability and integrity of four recently updated versions of specialized nutritious food products over their intended shelf lives: Corn-Soy Whey Blend (CSWB), Super Cereal Plus (SC Plus), Corn Soy Blend Plus (CSBP) - all fortified blended flours (FBFs) - and Ready-to-Use Supplementary Food (RUSF).

Methods: Samples were analyzed for Vitamin A content, Iron content, peroxide levels and organoleptic properties (appearance, odor, taste, packaging appearance). Testing followed standard certified procedures used in the food industry. Products were stored at 40 degrees Centigrade (104 degrees Fahrenheit) and 75 percent relative humidity for a period of 26 weeks to mimic 26 months in real time. The products were sampled and tested seven times.

RESULTS

Vitamin A and Minerals: As expected, Vitamin A levels degraded substantially in all FBFs and remained stable in the lipid-based RUSF. Iron levels varied among the FBFs, mostly as expected, due partially to differing intrinsic micronutrient levels in the raw ingredients. Peroxide levels remained below the maximum permitted in all products.

Organoleptic characteristics: FBFs all developed a slight grainy odor over time. Three of the four showed sparse black flecks at various times, likely due to dark germ color and heat processing of the corn. These changes did not compromise taste or fitness for consumption. RUSF odor, appearance, texture remained stable and normal.

Packaging: There were no changes in packaging for any of the products.

Packaging of Products Tested

Corn Soy Whey Blend **25 kg** Corn Soy Blend Plus **25 kg**	Super Cereal Plus **1.22 kg**	RUSF **92 g**

Vitamin A Targets and Permitted Ranges: Fortified Blended Foods

Parameters		CSWB	SC *Plus*	CSBP
Vitamin A	Target	1039	1038	1038
(mcg/100g)	[Range]	[935-1143]	[880-1300]	[880-1300]

Vitamin A Performance in Fortified Blended Foods

DISCUSSION AND RECOMMENDATIONS

Vitamin A deficiency is a common public health issue around the world and among humanitarian assistance target populations. Fat-soluble Vitamin A degrades in FBFs over time and, therefore, is more effectively delivered in lipid-based products such as RUSF, but the higher cost of these products can be prohibitive for programing.

Shelf life studies are crucial to verify the stability and integrity of food aid products. These findings highlight the role that intrinsic values of raw ingredients play in establishing FBF specifications. Advances in ingredients and micronutrient technology can have a significant impact on shelf life duration and organoleptic properties through the supply chain. Packaging advances that better protect food aid products and, in particular, micronutrient content, will ensure consumers receive food aid products that deliver micronutrient.

For these reasons, innovations to optimize Vitamin A delivery and other food aid product characteristics are essential, e.g., 1) protective packaging to improve shelf life stability and product integrity; 2) micronutrient chemical forms more suitable to improve bioavailability; 3) determining the most appropriate Vitamin A delivery mechanism to optimize shelf life in the humanitarian supply chain.

Accelerated shelf life studies are industry standard for new product development and should be adopted and become standard for all new or upgraded food aid products. Shelf life protocols and conditions should be harmonized among aid organizations working on product development for comparable data and results. In particular, heat and humidity levels should be increased to more accurately reflect the conditions in the humanitarian supply chain. Industry should be engaged in packaging material and ingredient form innovation for food aid products. Humanitarian supply chain optimization models, which typically consider speed and cost of delivery, should also consider including measures of food product exposure to damaging conditions. This work, with USAID, is part of the Tufts University Food Aid Quality Review (FAQR) Project.

Funding

Funded by the United States Agency for International Development's (USAID) Office of Food for Peace (FFP) under USAID Contract AFP-C-00-09-00016-00 with the Friedman School of Nutrition Science and Policy for FAQR Phase II. The studies were conducted by Global Food & Nutrition Inc. and Covance Laboratories. For more information on FAQR, visit: www.foodaidquality.org

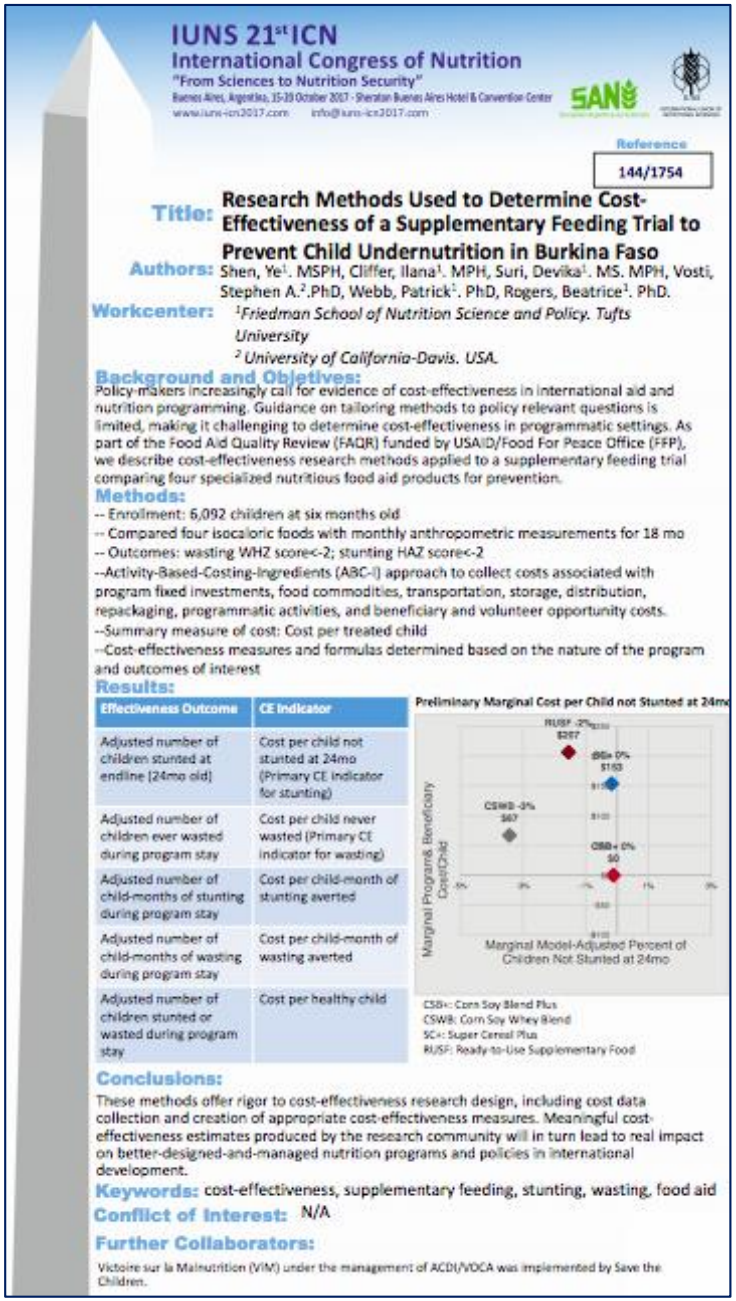
AUTHORS: Nina Schlossman, Quentin Johnson, Lauren Wood, Nicole Coglianese, Vicky Santoso, Leah Koeppel

DATE/PLACE OF PRESENTATION: June 2017, Health and Humanitarian Logistics Conference and IFT 2017 Annual Meeting and Food Expo

ABSTRACT: Food aid products can be exposed to conditions throughout the humanitarian supply chain (e.g., sustained exposure to high levels of heat and humidity) that can potentially affect or degrade products, including nutritional properties, taste, odor and packaging integrity and appearance. For these reasons, understanding how products behave through the supply chain is critical to ensure that optimum nutrition and quality are delivered to food aid consumers. Shelf life trials are a vital part of product research and development and introduction of new/upgraded food aid products, to determine how product nutrients and characteristics are maintained throughout the supply chain. They can also be used to determine the shelf life implications of new or modified packaging or combinations of ingredient and packaging parameters. Studying product and packaging performance in real time would require a 2-3 year period of observation under storage conditions. Accelerated shelf life studies are designed to mimic real time conditions found in the humanitarian supply chain in a fraction of the time for a cost-effective, efficient alternative to real time studies.

ACCESS: https://foodaidquality.org/sites/default/files/publications/170531_Shelf%20Life%20HHLC%20Poster%20FINAL_GF%26N.pdf

Research Methods Used to Determine Cost-Effectiveness of a Supplementary Feeding Trial to Prevent Child Undernutrition in Burkina Faso



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Buenos Aires, Argentina, 15-19 October 2017 · Sheraton Buenos Aires Hotel & Convention Center
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Reference
144/1754

Title: Research Methods Used to Determine Cost-Effectiveness of a Supplementary Feeding Trial to Prevent Child Undernutrition in Burkina Faso

Authors: Shen, Ye[1]. MSPH, Cliffer, Ilana[1]. MPH, Suri, Devika[1]. MS. MPH, Vosti, Stephen A.[2].PhD, Webb, Patrick[1]. PhD, Rogers, Beatrice[1]. PhD.

Workcenter: [1]*Friedman School of Nutrition Science and Policy. Tufts University*
[2] *University of California-Davis. USA.*

Background and Objectives:
Policy-makers increasingly call for evidence of cost-effectiveness in international aid and nutrition programming. Guidance on tailoring methods to policy relevant questions is limited, making it challenging to determine cost-effectiveness in programmatic settings. As part of the Food Aid Quality Review (FAQR) funded by USAID/Food For Peace Office (FFP), we describe cost-effectiveness research methods applied to a supplementary feeding trial comparing four specialized nutritious food aid products for prevention.

Methods:
-- Enrollment: 6,092 children at six months old
-- Compared four isocaloric foods with monthly anthropometric measurements for 18 mo
-- Outcomes: wasting WHZ score<-2; stunting HAZ score<-2
--Activity-Based-Costing-Ingredients (ABC-I) approach to collect costs associated with program fixed investments, food commodities, transportation, storage, distribution, repackaging, programmatic activities, and beneficiary and volunteer opportunity costs.
--Summary measure of cost: Cost per treated child
--Cost-effectiveness measures and formulas determined based on the nature of the program and outcomes of interest

Results:

Effectiveness Outcome	CE Indicator
Adjusted number of children stunted at endline (24mo old)	Cost per child not stunted at 24mo (Primary CE indicator for stunting)
Adjusted number of children ever wasted during program stay	Cost per child never wasted (Primary CE indicator for wasting)
Adjusted number of child-months of stunting during program stay	Cost per child-month of stunting averted
Adjusted number of child-months of wasting during program stay	Cost per child-month of wasting averted
Adjusted number of children stunted or wasted during program stay	Cost per healthy child

Preliminary Marginal Cost per Child not Stunted at 24mo

CSB+: Corn Soy Blend Plus
CSWB: Corn Soy Whey Blend
SC+: Super Cereal Plus
RUSF: Ready-to-Use Supplementary Food

Conclusions:
These methods offer rigor to cost-effectiveness research design, including cost data collection and creation of appropriate cost-effectiveness measures. Meaningful cost-effectiveness estimates produced by the research community will in turn lead to real impact on better-designed-and-managed nutrition programs and policies in international development.

Keywords: cost-effectiveness, supplementary feeding, stunting, wasting, food aid

Conflict of Interest: N/A

Further Collaborators:
Victoire sur la Malnutrition (VIM) under the management of ACDI/VOCA was implemented by Save the Children.

AUTHORS: Ye Shen, Ilana Cliffer, Devika Suri, Stephen Vosti, Patrick Webb, Beatrice Rogers

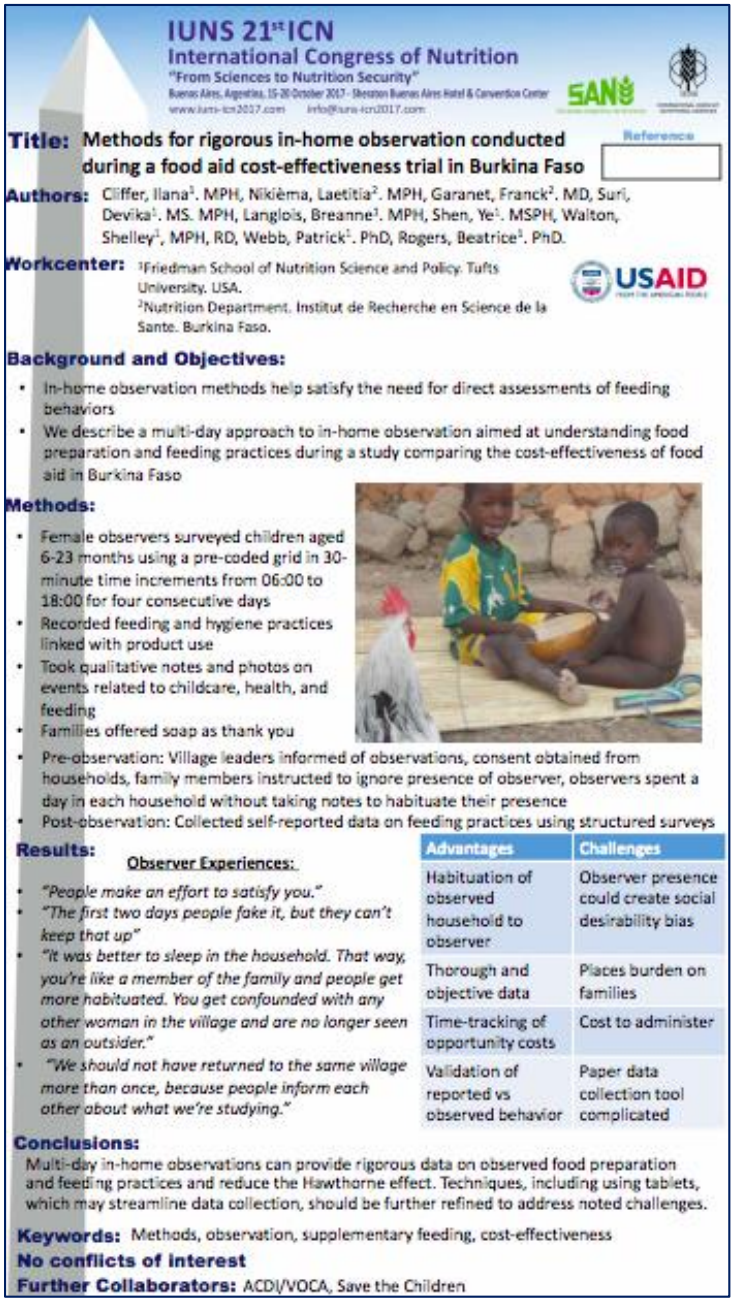
DATE/PLACE OF PRESENTATION: October 2017, International Congress of Nutrition (ICN)

THEMES: Cost-effectiveness, supplementary feeding, stunting, wasting, food aid

ABSTRACT: Policymakers increasingly call for evidence of cost-effectiveness in international aid and nutrition programming. Guidance on tailoring methods to policy relevant questions is limited, making it challenging to determine cost-effectiveness in programmatic settings. As part of the Food Aid Quality Review (FAQR) funded by USAID/Food For Peace Office (FFP), we describe cost-effectiveness research methods applied to a supplementary feeding trial comparing four specialized nutritious food aid products for prevention.

ACCESS: https://foodaidquality.org/sites/default/files/publications/ResearchMethodsUsed.pdf

Methods for rigorous in-home observation conducted during a food aid cost-effectiveness trial in Burkina Faso



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SAN

Reference

Title: Methods for rigorous in-home observation conducted during a food aid cost-effectiveness trial in Burkina Faso

Authors: Cliffer, Ilana[1]. MPH, Nikièma, Laetitia[2]. MPH, Garanet, Franck[2]. MD, Suri, Devika[1]. MS. MPH, Langlois, Breanne[1]. MPH, Shen, Ye[1]. MSPH, Walton, Shelley[1], MPH, RD, Webb, Patrick[1]. PhD, Rogers, Beatrice[1]. PhD.

Workcenter: [1]Friedman School of Nutrition Science and Policy. Tufts University. USA.
[2]Nutrition Department. Institut de Recherche en Science de la Sante. Burkina Faso.

USAID

Background and Objectives:

- In-home observation methods help satisfy the need for direct assessments of feeding behaviors
- We describe a multi-day approach to in-home observation aimed at understanding food preparation and feeding practices during a study comparing the cost-effectiveness of food aid in Burkina Faso

Methods:

- Female observers surveyed children aged 6-23 months using a pre-coded grid in 30-minute time increments from 06:00 to 18:00 for four consecutive days
- Recorded feeding and hygiene practices linked with product use
- Took qualitative notes and photos on events related to childcare, health, and feeding
- Families offered soap as thank you
- Pre-observation: Village leaders informed of observations, consent obtained from households, family members instructed to ignore presence of observer, observers spent a day in each household without taking notes to habituate their presence
- Post-observation: Collected self-reported data on feeding practices using structured surveys

Results:

Observer Experiences:

- *"People make an effort to satisfy you."*
- *"The first two days people fake it, but they can't keep that up"*
- *"It was better to sleep in the household. That way, you're like a member of the family and people get more habituated. You get confounded with any other woman in the village and are no longer seen as an outsider."*
- *"We should not have returned to the same village more than once, because people inform each other about what we're studying."*

Advantages	Challenges
Habituation of observed household to observer	Observer presence could create social desirability bias
Thorough and objective data	Places burden on families
Time-tracking of opportunity costs	Cost to administer
Validation of reported vs observed behavior	Paper data collection tool complicated

Conclusions:
Multi-day in-home observations can provide rigorous data on observed food preparation and feeding practices and reduce the Hawthorne effect. Techniques, including using tablets, which may streamline data collection, should be further refined to address noted challenges.

Keywords: Methods, observation, supplementary feeding, cost-effectiveness
No conflicts of interest
Further Collaborators: ACDI/VOCA, Save the Children

AUTHORS: Ilana Cliffer, Laetitia Nikièma, Franck Garanet, Devika Suri, Breanne Langlois, Ye Shen, Shelley Walton, Patrick Webb, Beatrice Rogers

DATE/PLACE OF PRESENTATION: October 2017, International Congress of Nutrition (ICN)

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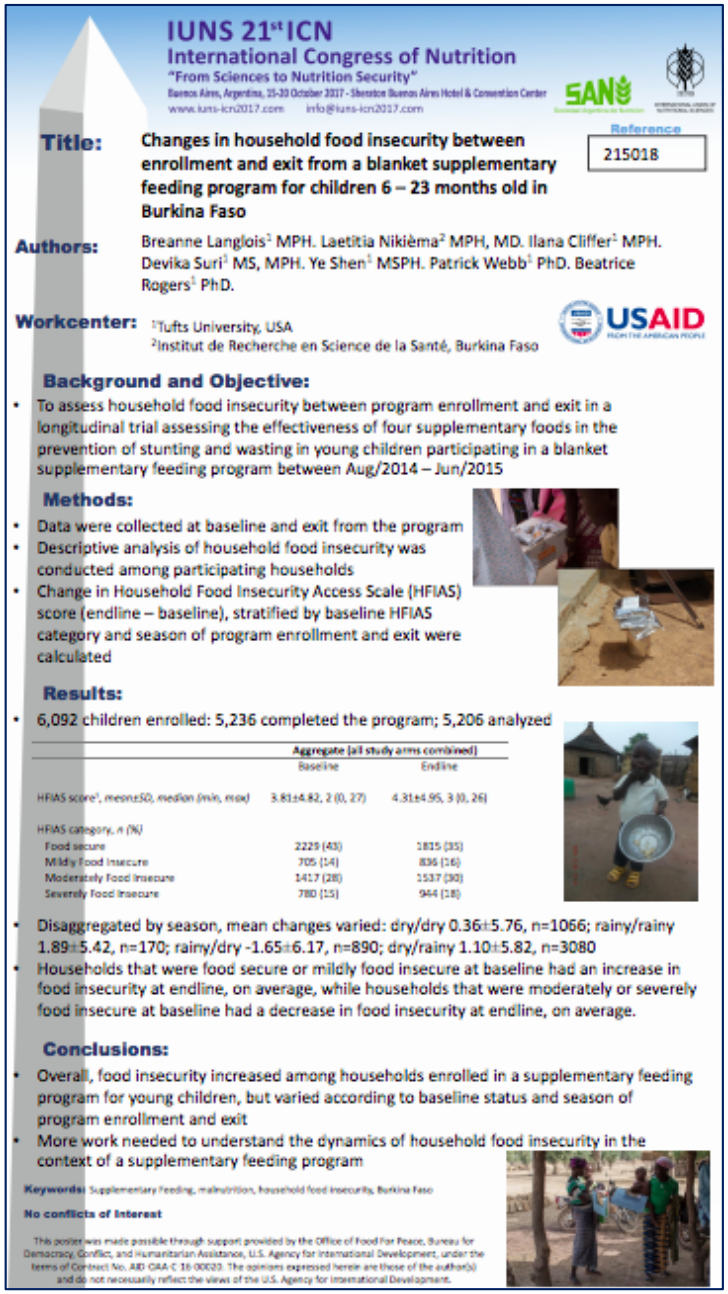
ACCESS: https://foodaidquality.org/sites/default/files/publications/MethodsforRigorous.pdf

Changes in household food insecurity between enrollment and exit from a blanket supplementary feeding program for children 6-23 months old in Burkina Faso



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Reference 215018

Title: Changes in household food insecurity between enrollment and exit from a blanket supplementary feeding program for children 6 – 23 months old in Burkina Faso

Authors: Breanne Langlois[1] MPH. Laetitia Nikièma[2] MPH, MD. Ilana Cliffer[1] MPH. Devika Suri[1] MS, MPH. Ye Shen[1] MSPH. Patrick Webb[1] PhD. Beatrice Rogers[1] PhD.

Workcenter: [1]Tufts University, USA
[2]Institut de Recherche en Science de la Santé, Burkina Faso

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Background and Objective:

- To assess household food insecurity between program enrollment and exit in a longitudinal trial assessing the effectiveness of four supplementary foods in the prevention of stunting and wasting in young children participating in a blanket supplementary feeding program between Aug/2014 – Jun/2015

Methods:

- Data were collected at baseline and exit from the program
- Descriptive analysis of household food insecurity was conducted among participating households
- Change in Household Food Insecurity Access Scale (HFIAS) score (endline – baseline), stratified by baseline HFIAS category and season of program enrollment and exit were calculated

Results:

- 6,092 children enrolled: 5,236 completed the program; 5,206 analyzed

	Aggregate (all study arms combined)	
	Baseline	Endline
HFIAS score[1], *mean±SD, median (min, max)*	3.83±4.82, 2 (0, 27)	4.31±4.95, 3 (0, 26)
HFIAS category, *n (%)*		
Food secure	2229 (43)	1815 (35)
Mildly Food Insecure	705 (14)	836 (16)
Moderately Food Insecure	1417 (28)	1537 (30)
Severely Food Insecure	780 (15)	944 (18)

- Disaggregated by season, mean changes varied: dry/dry 0.36±5.76, n=1066; rainy/rainy 1.89±5.42, n=170; rainy/dry -1.65±6.17, n=890; dry/rainy 1.10±5.82, n=3080
- Households that were food secure or mildly food insecure at baseline had an increase in food insecurity at endline, on average, while households that were moderately or severely food insecure at baseline had a decrease in food insecurity at endline, on average.

Conclusions:

- Overall, food insecurity increased among households enrolled in a supplementary feeding program for young children, but varied according to baseline status and season of program enrollment and exit
- More work needed to understand the dynamics of household food insecurity in the context of a supplementary feeding program

Keywords: Supplementary feeding, malnutrition, household food insecurity, Burkina Faso

No conflicts of Interest

This poster was made possible through support provided by the Office of Food For Peace, Bureau for Democracy, Conflict, and Humanitarian Assistance, U.S. Agency for International Development, under the terms of Contract No. AID-OAA-C-16-00020. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

AUTHORS: Breanne Langlois, Laetitia Nikièma, Ilana Cliffer, Devika Suri, Ye Shen, Patrick Webb, Beatrice Rogers

DATE/PLACE OF PRESENTATION: October 2017, International Congress of Nutrition (ICN)

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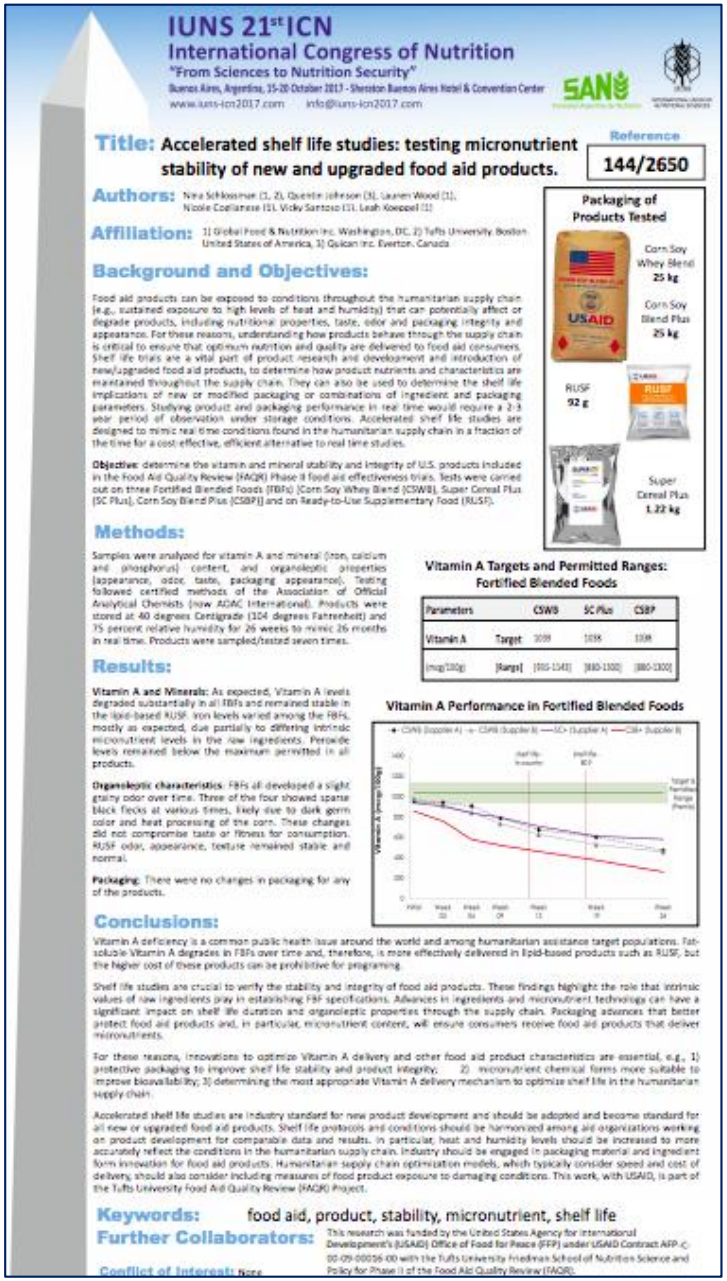
ACCESS:

https://foodaidquality.org/sites/default/files/publications/ICN%20poster%20HFIAS%20BKL.pdf

Accelerated Shelf-Life Studies: Testing Micronutrient Stability of New and Upgraded Food Aid Products



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Title: Accelerated shelf life studies: testing micronutrient stability of new and upgraded food aid products.

Reference 144/2650

Authors: Nina Schlossman (1, 2), Quentin Johnson (3), Lauren Wood (1), Nicole Coglianese (1), Vicky Santoso (1), Leah Koeppel (1)

Affiliation: 1) Global Food & Nutrition Inc. Washington, DC, 2) Tufts University, Boston United States of America, 3) Quican Inc. Everton, Canada

Background and Objectives:

Food aid products can be exposed to conditions throughout the humanitarian supply chain (e.g., sustained exposure to high levels of heat and humidity) that can potentially affect or degrade products, including nutritional properties, taste, odor and packaging integrity and appearance. For these reasons, understanding how products behave through the supply chain is critical to ensure that optimum nutrition and quality are delivered to food aid consumers. Shelf life trials are a vital part of product research and development and introduction of new/upgraded food aid products, to determine how product nutrients and characteristics are maintained throughout the supply chain. They can also be used to determine the shelf life implications of new or modified packaging or combinations of ingredient and packaging parameters. Studying product and packaging performance in real time would require a 2-3 year period of observation under storage conditions. Accelerated shelf life studies are designed to mimic real time conditions found in the humanitarian supply chain in a fraction of the time for a cost-effective, efficient alternative to real time studies.

Objective: determine the vitamin and mineral stability and integrity of U.S. products included in the Food Aid Quality Review (FAQR) Phase II food aid effectiveness trials. Tests were carried out on three Fortified Blended Foods (FBFs) [Corn Soy Whey Blend (CSWB), Super Cereal Plus (SC Plus), Corn Soy Blend Plus (CSBP)] and on Ready-to-Use Supplementary Food (RUSF).

Packaging of Products Tested

Corn Soy Whey Blend 25 kg
Corn Soy Blend Plus 25 kg
RUSF 92 g
Super Cereal Plus 1.22 kg

Methods:

Samples were analyzed for vitamin A and mineral (iron, calcium and phosphorus) content, and organoleptic properties (appearance, odor, taste, packaging appearance). Testing followed certified methods of the Association of Official Analytical Chemists (now AOAC International). Products were stored at 40 degrees Centigrade (104 degrees Fahrenheit) and 75 percent relative humidity for 26 weeks to mimic 26 months in real time. Products were sampled/tested seven times.

Vitamin A Targets and Permitted Ranges: Fortified Blended Foods

Parameters		CSWB	SC Plus	CSBP
Vitamin A	Target	1000	1000	1000
(mcg/100g)	[Range]	[900-1540]	[800-1300]	[800-1300]

Results:

Vitamin A and Minerals: As expected, Vitamin A levels degraded substantially in all FBFs and remained stable in the lipid-based RUSF. Iron levels varied among the FBFs, mostly as expected, due partially to differing intrinsic micronutrient levels in the raw ingredients. Peroxide levels remained below the maximum permitted in all products.

Organoleptic characteristics: FBFs all developed a slight grainy odor over time. Three of the four showed sparse black flecks at various times, likely due to dark germ color and heat processing of the corn. These changes did not compromise taste or fitness for consumption. RUSF odor, appearance, texture remained stable and normal.

Packaging: There were no changes in packaging for any of the products.

Vitamin A Performance in Fortified Blended Foods

Conclusions:

Vitamin A deficiency is a common public health issue around the world and among humanitarian assistance target populations. Fat-soluble Vitamin A degrades in FBFs over time and, therefore, is more effectively delivered in lipid-based products such as RUSF, but the higher cost of these products can be prohibitive for programing.

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For these reasons, innovations to optimize Vitamin A delivery and other food aid product characteristics are essential, e.g., 1) protective packaging to improve shelf life stability and product integrity; 2) micronutrient chemical forms more suitable to improve bioavailability; 3) determining the most appropriate Vitamin A delivery mechanism to optimize shelf life in the humanitarian supply chain.

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Keywords: food aid, product, stability, micronutrient, shelf life

Further Collaborators: This research was funded by the United States Agency for International Development's (USAID) Office of Food for Peace (FFP) under USAID Contract AFP-C-00-09-00036-00 with the Tufts University Friedman School of Nutrition Science and Policy for Phase II of the Food Aid Quality Review (FAQR).

Conflict of Interest: None

AUTHORS: Nina Schlossman, Quentin Johnson, Lauren Wood, Nicole Coglianese, Vicky Santoso, Leah Koeppel

DATE/PLACE OF PRESENTATION: October 2017, International Congress of Nutrition (ICN)

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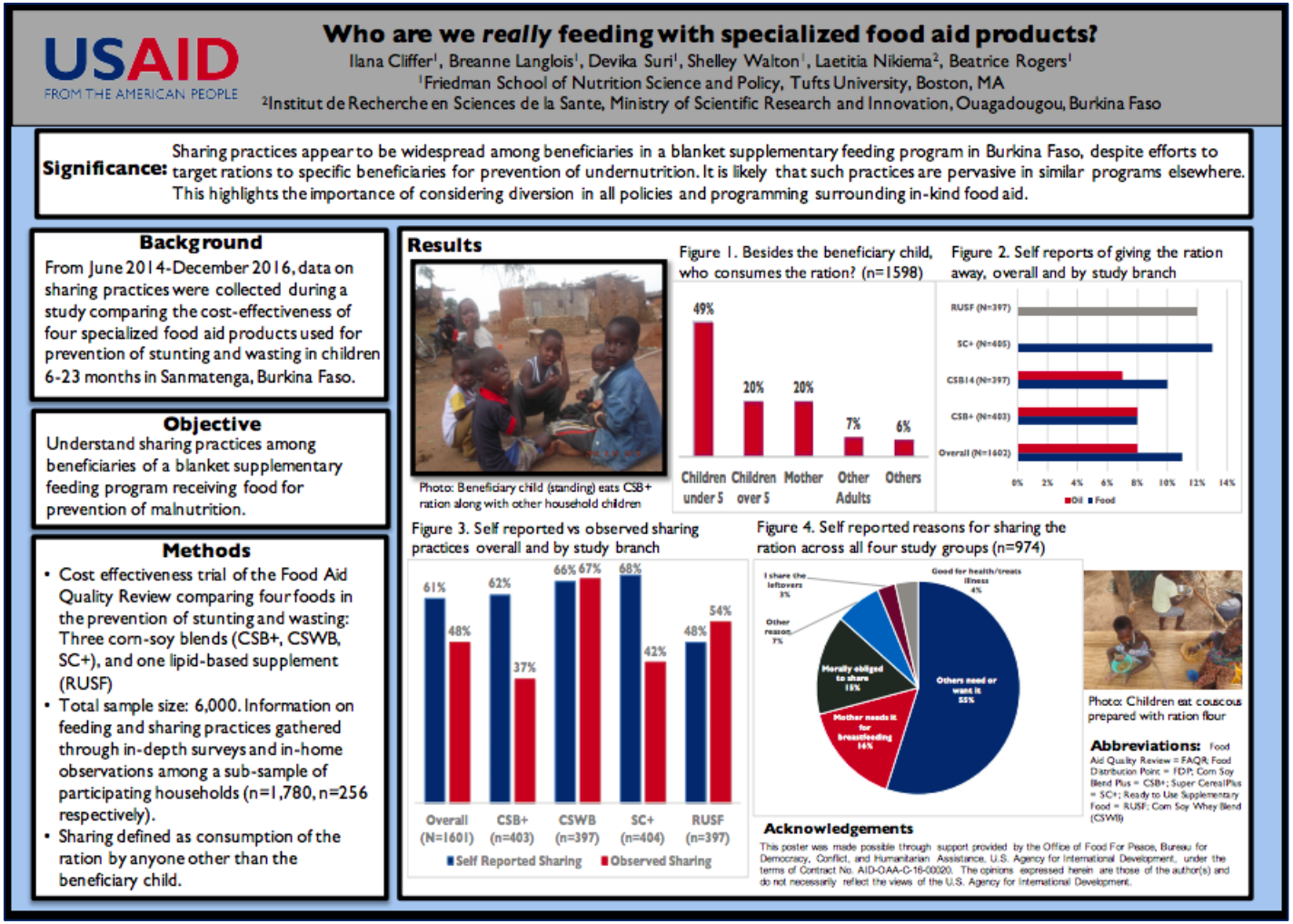
ACCESS: https://foodaidquality.org/sites/default/files/publications/AcceleratedShelfLifeStudies.pdf

Who are we really feeding with specialized food aid products?



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Who are we *really* feeding with specialized food aid products?

Ilana Cliffer[1], Breanne Langlois[1], Devika Suri[1], Shelley Walton[1], Laetitia Nikiema[2], Beatrice Rogers[1]
[1]Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA
[2]Institut de Recherche en Sciences de la Sante, Ministry of Scientific Research and Innovation, Ouagadougou, Burkina Faso

Significance: Sharing practices appear to be widespread among beneficiaries in a blanket supplementary feeding program in Burkina Faso, despite efforts to target rations to specific beneficiaries for prevention of undernutrition. It is likely that such practices are pervasive in similar programs elsewhere. This highlights the importance of considering diversion in all policies and programming surrounding in-kind food aid.

Background

From June 2014-December 2016, data on sharing practices were collected during a study comparing the cost-effectiveness of four specialized food aid products used for prevention of stunting and wasting in children 6-23 months in Sanmatenga, Burkina Faso.

Objective

Understand sharing practices among beneficiaries of a blanket supplementary feeding program receiving food for prevention of malnutrition.

Methods

- Cost effectiveness trial of the Food Aid Quality Review comparing four foods in the prevention of stunting and wasting: Three corn-soy blends (CSB+, CSWB, SC+), and one lipid-based supplement (RUSF)
- Total sample size: 6,000. Information on feeding and sharing practices gathered through in-depth surveys and in-home observations among a sub-sample of participating households (n=1,780, n=256 respectively).
- Sharing defined as consumption of the ration by anyone other than the beneficiary child.

Results

Photo: Beneficiary child (standing) eats CSB+ ration along with other household children

Figure 1. Besides the beneficiary child, who consumes the ration? (n=1598)

Figure 2. Self reports of giving the ration away, overall and by study branch

Figure 3. Self reported vs observed sharing practices overall and by study branch

Figure 4. Self reported reasons for sharing the ration across all four study groups (n=974)

Photo: Children eat couscous prepared with ration flour

Abbreviations: Food Aid Quality Review = FAQR; Food Distribution Point = FDP; Corn Soy Blend Plus = CSB+; Super CerealPlus = SC+; Ready to Use Supplementary Food = RUSF; Corn Soy Whey Blend (CSWB)

Acknowledgements

This poster was made possible through support provided by the Office of Food For Peace, Bureau for Democracy, Conflict, and Humanitarian Assistance, U.S. Agency for International Development, under the terms of Contract No. AID-OAA-C-16-00020. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

Authors: Ilana Cliffer, Breanne Langlois, Devika Suri, Laetitia Nikièma, Beatrice Rogers

Date/Place of Presentation: November 2017, ACF Research for Nutrition Conference

Abstract:
Significance: Sharing practices appear to be widespread among beneficiaries in a blanket supplementary feeding program in Burkina Faso, despite efforts to target rations to specific beneficiaries for prevention of undernutrition. It is likely that such practices are pervasive in similar programs elsewhere. This highlights the importance of considering diversion in all policies and programming surrounding in-kind food aid.

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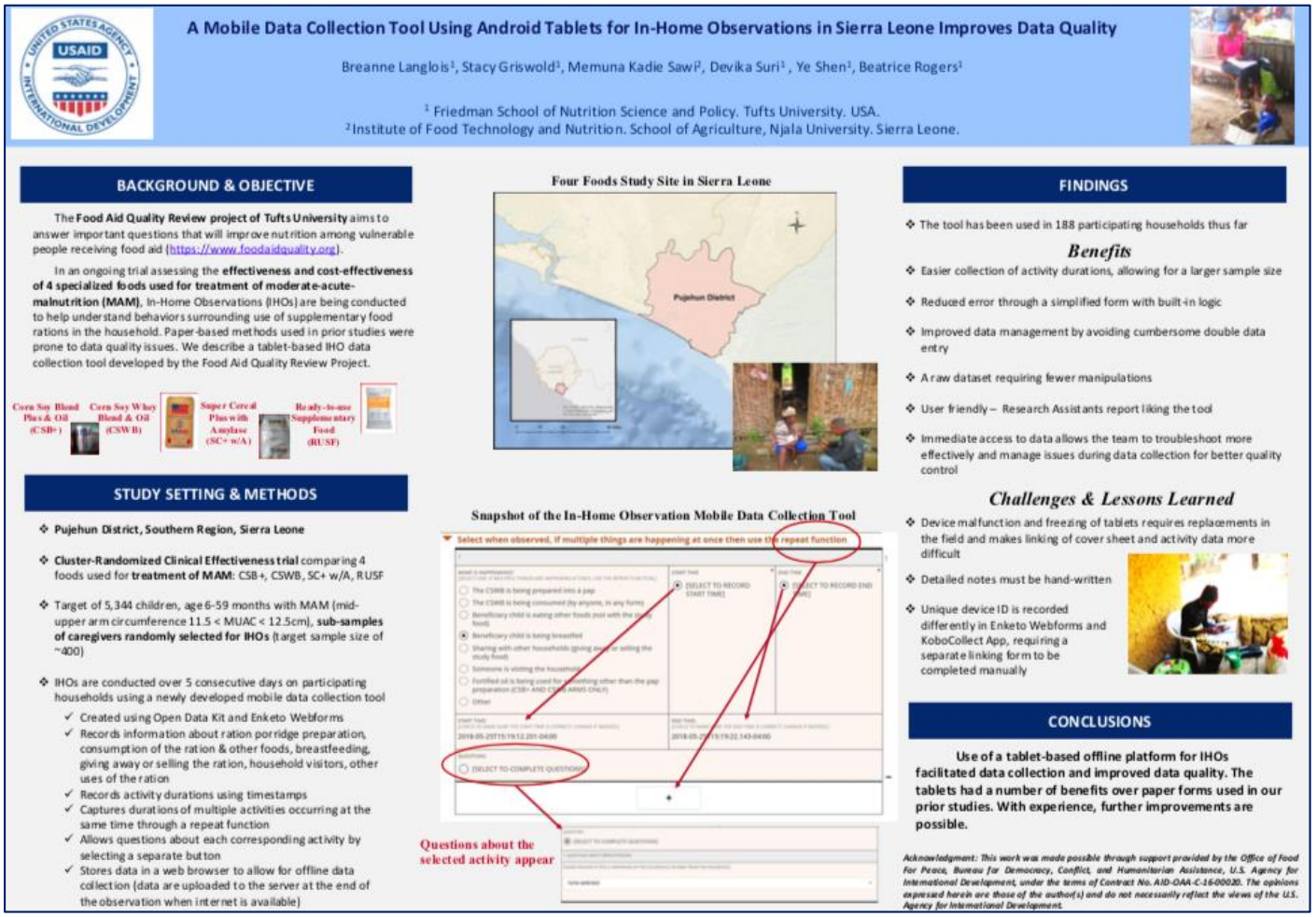
Access: https://www.ennonline.net/attachments/2700/FAQR-R4NUT-2017-Poster_possible.pdf

A Mobile Data Collection Tool Using Android Tablets for In-Home Observations in Sierra Leone Improves Data Quality



A Mobile Data Collection Tool Using Android Tablets for In-Home Observations in Sierra Leone Improves Data Quality

Breanne Langlois[1], Stacy Griswold[1], Memuna Kadie Sawi[2], Devika Suri[1], Ye Shen[1], Beatrice Rogers[1]

[1] Friedman School of Nutrition Science and Policy. Tufts University. USA.
[2] Institute of Food Technology and Nutrition. School of Agriculture, Njala University. Sierra Leone.

BACKGROUND & OBJECTIVE

The **Food Aid Quality Review project of Tufts University** aims to answer important questions that will improve nutrition among vulnerable people receiving food aid (https://www.foodaidquality.org).

In an ongoing trial assessing the **effectiveness and cost-effectiveness of 4 specialized foods used for treatment of moderate-acute-malnutrition (MAM)**, In-Home Observations (IHOs) are being conducted to help understand behaviors surrounding use of supplementary food rations in the household. Paper-based methods used in prior studies were prone to data quality issues. We describe a tablet-based IHO data collection tool developed by the Food Aid Quality Review Project.

Corn Soy Blend Plus & Oil (CSB+) | Corn Soy Whey Blend & Oil (CSWB) | Super Cereal Plus with Amylase (SC+ w/A) | Ready-to-use Supplementary Food (RUSF)

STUDY SETTING & METHODS

- **Pujehun District, Southern Region, Sierra Leone**
- **Cluster-Randomized Clinical Effectiveness trial** comparing 4 foods used for **treatment of MAM**: CSB+, CSWB, SC+ w/A, RUSF
- Target of 5,344 children, age 6-59 months with MAM (mid-upper arm circumference 11.5 < MUAC < 12.5cm), **sub-samples of caregivers randomly selected for IHOs** (target sample size of ~400)
- IHOs are conducted over 5 consecutive days on participating households using a newly developed mobile data collection tool
  - ✓ Created using Open Data Kit and Enketo Webforms
  - ✓ Records information about ration porridge preparation, consumption of the ration & other foods, breastfeeding, giving away or selling the ration, household visitors, other uses of the ration
  - ✓ Records activity durations using timestamps
  - ✓ Captures durations of multiple activities occurring at the same time through a repeat function
  - ✓ Allows questions about each corresponding activity by selecting a separate button
  - ✓ Stores data in a web browser to allow for offline data collection (data are uploaded to the server at the end of the observation when internet is available)

Four Foods Study Site in Sierra Leone

Pujehun District

Snapshot of the In-Home Observation Mobile Data Collection Tool

Select when observed, if multiple things are happening at once then use the repeat function

Questions about the selected activity appear

FINDINGS

- The tool has been used in 188 participating households thus far

Benefits

- Easier collection of activity durations, allowing for a larger sample size
- Reduced error through a simplified form with built-in logic
- Improved data management by avoiding cumbersome double data entry
- A raw dataset requiring fewer manipulations
- User friendly – Research Assistants report liking the tool
- Immediate access to data allows the team to troubleshoot more effectively and manage issues during data collection for better quality control

Challenges & Lessons Learned

- Device malfunction and freezing of tablets requires replacements in the field and makes linking of cover sheet and activity data more difficult
- Detailed notes must be hand-written
- Unique device ID is recorded differently in Enketo Webforms and KoboCollect App, requiring a separate linking form to be completed manually

CONCLUSIONS

Use of a tablet-based offline platform for IHOs facilitated data collection and improved data quality. The tablets had a number of benefits over paper forms used in our prior studies. With experience, further improvements are possible.

Acknowledgment: This work was made possible through support provided by the Office of Food For Peace, Bureau for Democracy, Conflict, and Humanitarian Assistance, U.S. Agency for International Development, under the terms of Contract No. AID-OAA-C-16-00020. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

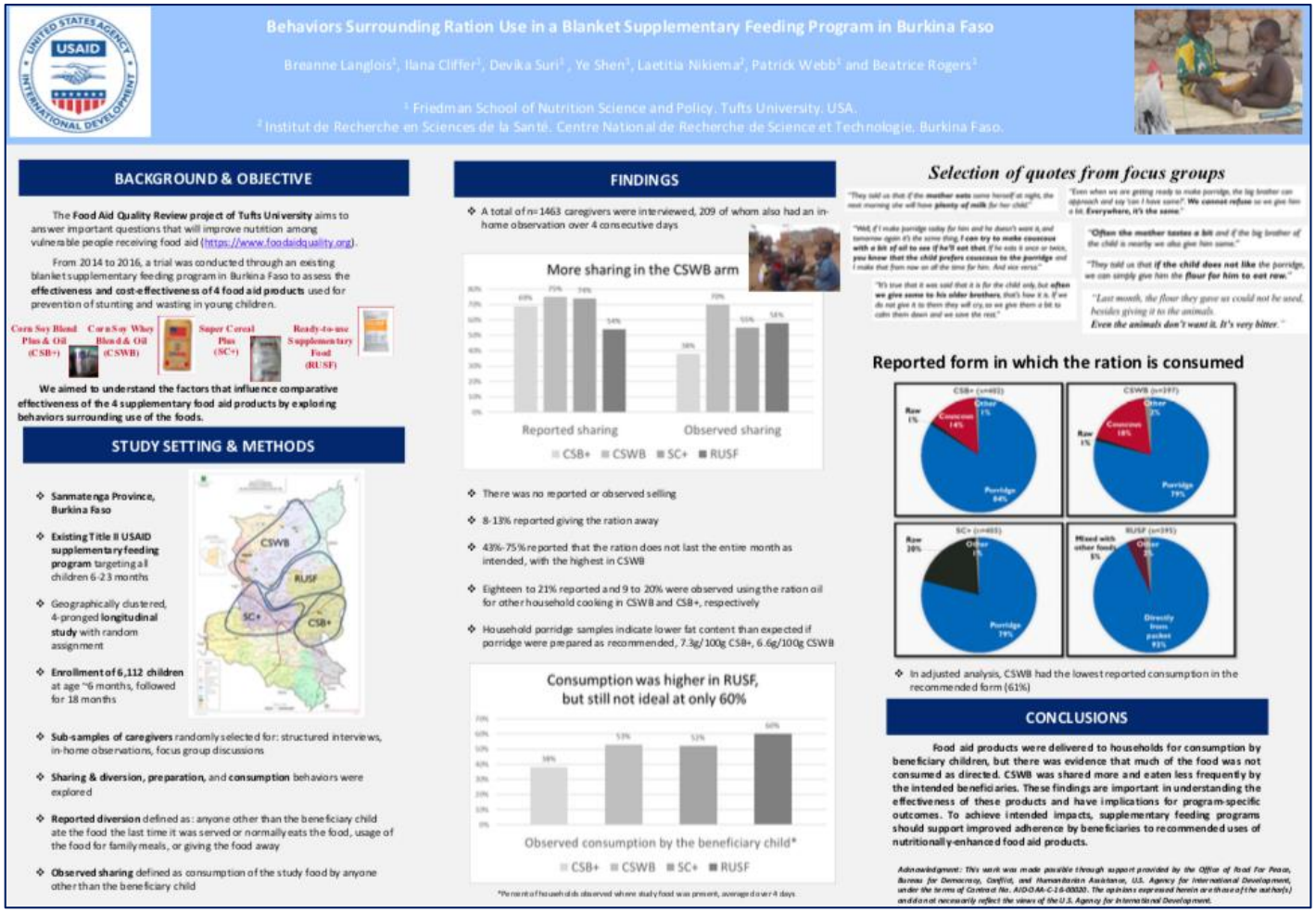
AUTHORS: Breanne Langlois, Stacy Griswold, Memuna Kadie Sawi, Devika Suri, Ye Shen, Beatrice Rogers

DATE/PLACE OF PRESENTATION: June 2018, American Society for Nutrition (ASN)

ABSTRACT:
Background: In an ongoing trial assessing the effectiveness and cost-effectiveness of 4 specialized foods used for treatment of moderate-acutemalnutrition (MAM), In-Home Observations (IHOs) are being conducted to help understand behaviors surrounding use of supplementary food rations in the household. Paper-based methods used in prior studies were prone to data quality issues. We describe a tablet-based IHO data collection tool developed by the Food Aid Quality Review Project.

ACCESS: https://foodaidquality.org/sites/default/files/publications/ASNposterMobileData.pdf

Behaviors Surrounding Ration Use in a Blanket Supplementary Feeding Program in Burkina Faso



AUTHORS: Breanne Langlois, Ilana Cliffer, Devika Suri, Ye Shen, Laetitia Nikièma, Patrick Webb, Beatrice Rogers

DATE/PLACE OF PRESENTATION: June 2018, American Society for Nutrition (ASN)

ABSTRACT: From 2014 to 2016, a trial was conducted through an existing blanket supplementary feeding program in Burkina Faso to assess the effectiveness and cost-effectiveness of 4 food aid products used for prevention of stunting and wasting in young children:

- Corn Soy Blend Plus & Oil
- Corn Soy Whey Blend & Oil
- Super Cereal Plus
- Ready-to-use Supplementary Food

We aimed to understand the factors that influence comparative effectiveness of the 4 supplementary food aid products by exploring behaviors surrounding the use of the foods.

ACCESS: https://foodaidquality.org/sites/default/files/publications/ASNposterBurkinaRationUseBehaviors.pdf

Community Cluster Approach: Its Added Value in Surveys Conducted at Rural Community Level

USAID FROM THE AMERICAN PEOPLE

COMMUNITY CLUSTER APPROACH: ITS ADDED VALUE IN SURVEYS CONDUCTED AT RURAL COMMUNITY LEVEL

Memuna Kadie Sawi[1], David S.Yambasu[2], Stacy Griswold[3], Beatrice Rogers[3], Devika Suri[3], Breanne Langlois[3]

[1]Njala University, Njala, Sierra Leone [2]Caritas Bo, Bo Town, Sierra Leone [3]Tufts University, Boston, MA USA

Introduction

A longitudinal study is being implemented in Sierra Leone comparing the effectiveness and cost-effectiveness of four different supplementary foods in a supplementary feeding program (SFP) for treatment of Moderate Acute Malnutrition in children age 6 to 59 months. The study is implemented by Tufts University in partnership with the Sierra Leone Ministry of Health and Sanitation, Washington University in St. Louis, Project Peanut Butter, and Caritas Bo.

Objective

Describe the advantages of using a community cluster approach in organizing a community-based survey.

Methodology

Twenty eight Peripheral Health Units were organized into four geographic clusters, and research teams for each cluster live in the community. Community structures were assessed to evaluate security and availability of basic social services. Team selection was based on a review of the strength and weakness of individual team members to ensure the formation of a balanced team in each cluster with a leverage on potential for effective logistical support and level of community engagement. Research Assistants are trained in community engagement strategies and managing community curiosity while using tablets during interviews in rural communities. Household surveys are managed by Caritas Bo using tablet-based electronic data collection and qualitative interviews.

Key Achievements

1. Managing community curiosity: the cluster approach provided an advantage of managing community curiosity which is attracted by the use of high technology devices (e.g. smart phones and tablets) in rural communities
2. Increased community trust: the use of cluster approach in staff deployment increased community trust and community engagement in supporting the research team to access caregivers in hard to reach communities
3. Reduced operational cost
4. Improved coordination, timely delivery of field logistics and supplies
5. Increased efficiency in data collection

Community support to access caregivers hard to reach areas.

Caritas Bo FAQR III Field research team.

Acknowledgments

This poster was made possible through support provided by the Office of Food For Peace, Bureau for Democracy, Conflict, and Humanitarian Assistance, U.S. Agency for International Development, under the terms of Contract No. AID-OAA-C-16-00020. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

AUTHORS: Memuna Kadie Sawi, David Yambasu, Stacy Griswold, Beatrice Rogers, Devika Suri, Breanne Langlois

DATE/PLACE OF PRESENTATION: June 2018, American Society for Nutrition (ASN)

ABSTRACT:

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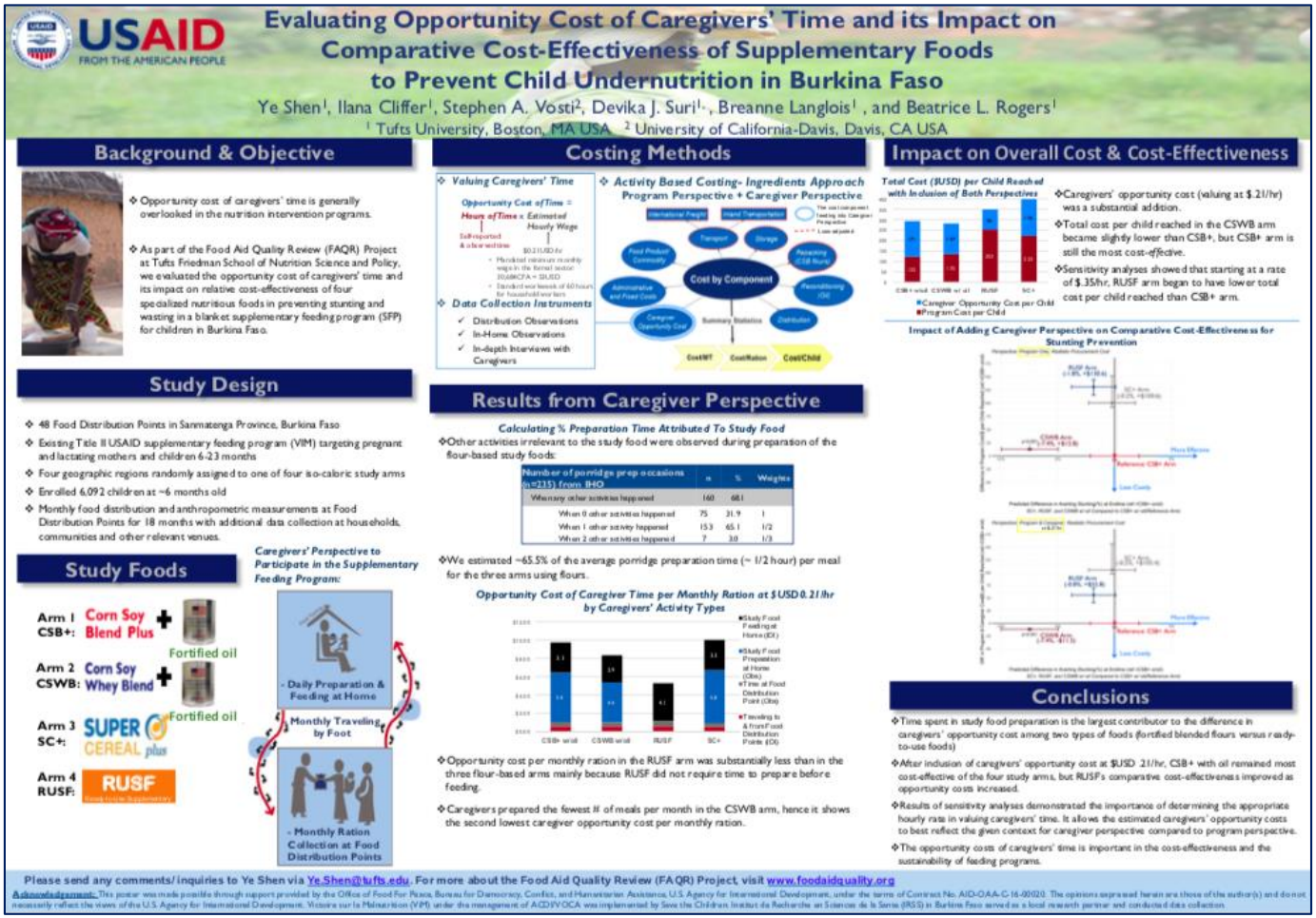
Objective:
Describe the advantages of using a community cluster approach in organizing a community-based survey.

ACCESS:
https://foodaidquality.org/sites/default/files/publications/CommunityClusterASN.pdf

Evaluating Opportunity Cost of Caregivers' Time and its Impact on Comparative Cost-Effectiveness of Supplementary Foods to Prevent Child Undernutrition in Burkina Faso



AUTHORS: Ye Shen, Ilana Cliffer, Stephen Vosti, Devika Suri, Breanne Langlois, Beatrice Rogers

DATE/PLACE OF PRESENTATION: June 2018, American Society for Nutrition (ASN)

ABSTRACT:
Background & Objective:
Opportunity cost of caregivers' time is generally overlooked in the nutrition intervention programs. ϖAs part of the Food Aid Quality Review (FAQR) Project at Tufts Friedman School of Nutrition Science and Policy, we evaluated the opportunity cost of caregivers' time and its impact on relative cost-effectiveness of four specialized nutritious foods in preventing stunting and wasting in a blanket supplementary feeding program (SFP) for children in Burkina Faso.

ACCESS: https://foodaidquality.org/sites/default/files/publications/ASN2018OpportunityCost.pdf

U.S. Food Safety Modernization Act Standards Now Being Applied to Food Aid Products for Nutrition and Humanitarian Response

U.S. Food Safety Modernization Act Standards Now Being Applied to Food Aid Products for Nutrition and Humanitarian Response

Nina Schlossman[1], Quentin Johnson[2], Beth Weeks.
[1]Tufts University, Boston, MA and Global Food & Nutrition Inc, Washington, DC and [2]Tufts University, Boston, MA and Quican Inc, Evernton, ON, Canada.

BACKGROUND

Over the last 8 years, the Food Safety Modernization Act (FSMA) transformed the Food and Drug Administration (FDA) food safety and quality assurance regulations for farmers, manufacturers and importers by shifting focus from *responding to* cases of foodborne illness to the *prevention* of foodborne illness in both the domestic and international food supply chain.

OBJECTIVE

Introduce modern food safety and microbiology standards into specifications for food aid products to address and prevent moderate acute malnutrition (MAM) as part of the United States Agency for International Development (USAID) efforts to improve nutrition and safety of food aid products distributed worldwide.

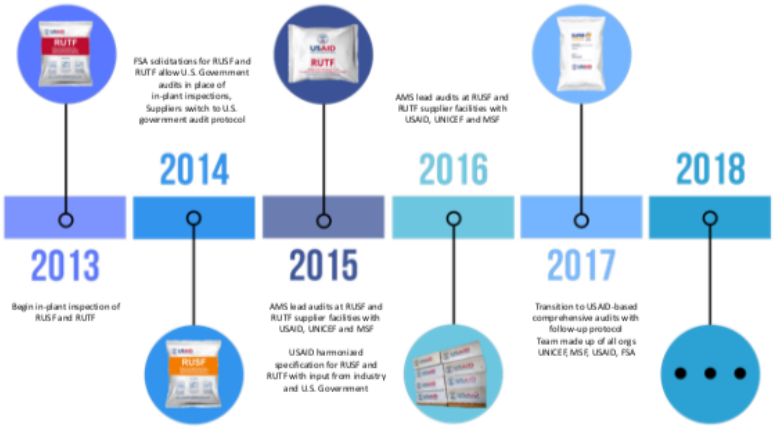
METHODS

Research standards and apply them to the manufacturing specifications for each product, Starting with the micronutrient fortified blended flour (FBF) products. The deoxynivalenol (DON) test for vomitoxin has been developed and added to the specifications for all grain-based food aid products.

RESULTS

Specifications for Corn-Soy Blend Plus, Super Cereal Plus (SCP), and Fortified Milled Rice now include FSMA-appropriate microbiological testing. Improved formulations deliver bioavailable forms of Iron and enhanced micronutrients, and SCP includes a dose of animal protein from dairy. These foods are widely consumed as part of a humanitarian ration and targeted to mothers and children in the first 1,000 days to address MAM. These vulnerable populations will benefit most immediately from improved food aid safety measures.

A CASE STUDY IN U.S. AND INTERNATIONAL INTERAGENCY HARMONIZATION



CONCLUSIONS

International guidelines for the food aid products distributed by organizations such as WFP, USAID, USDA, and MSF are important for ensuring simplified requirements for verifying quality and safety at the source. The application of FSMA to the food aid supply chain, including DON testing can be applied globally will be essential to ensure safety as more and more local and regional manufacturers supply the humanitarian food aid basket.

CONTACT: Nina Schlossman, PhD | nina@gfandn.com

This research has been funded by the USAID's Bureau for Democracy, Conflict and Humanitarian Assistance's Office of Food For Peace, through the Food Aid Quality Review Phase III (FAQR III) project implemented by Tufts University Friedman School of Nutrition Science and Policy through a subcontract to Global Food & Nutrition Inc. For more information on FAQR, visit: foodaidquality.org

AUTHORS: Nina Schlossman, Quentin Johnson, Beth Weeks

DATE/PLACE OF PRESENTATION: June 2018, American Society for Nutrition (ASN)

ABSTRACT:
Background: Over the last 8 years, the Food Safety Modernization Act (FSMA) transformed the Food and Drug Administration (FDA) food safety and quality assurance regulations for farmers, manufacturers and importers by shifting focus from responding to cases of foodborne illness to the prevention of foodborne illness in both the domestic and international food supply chain.

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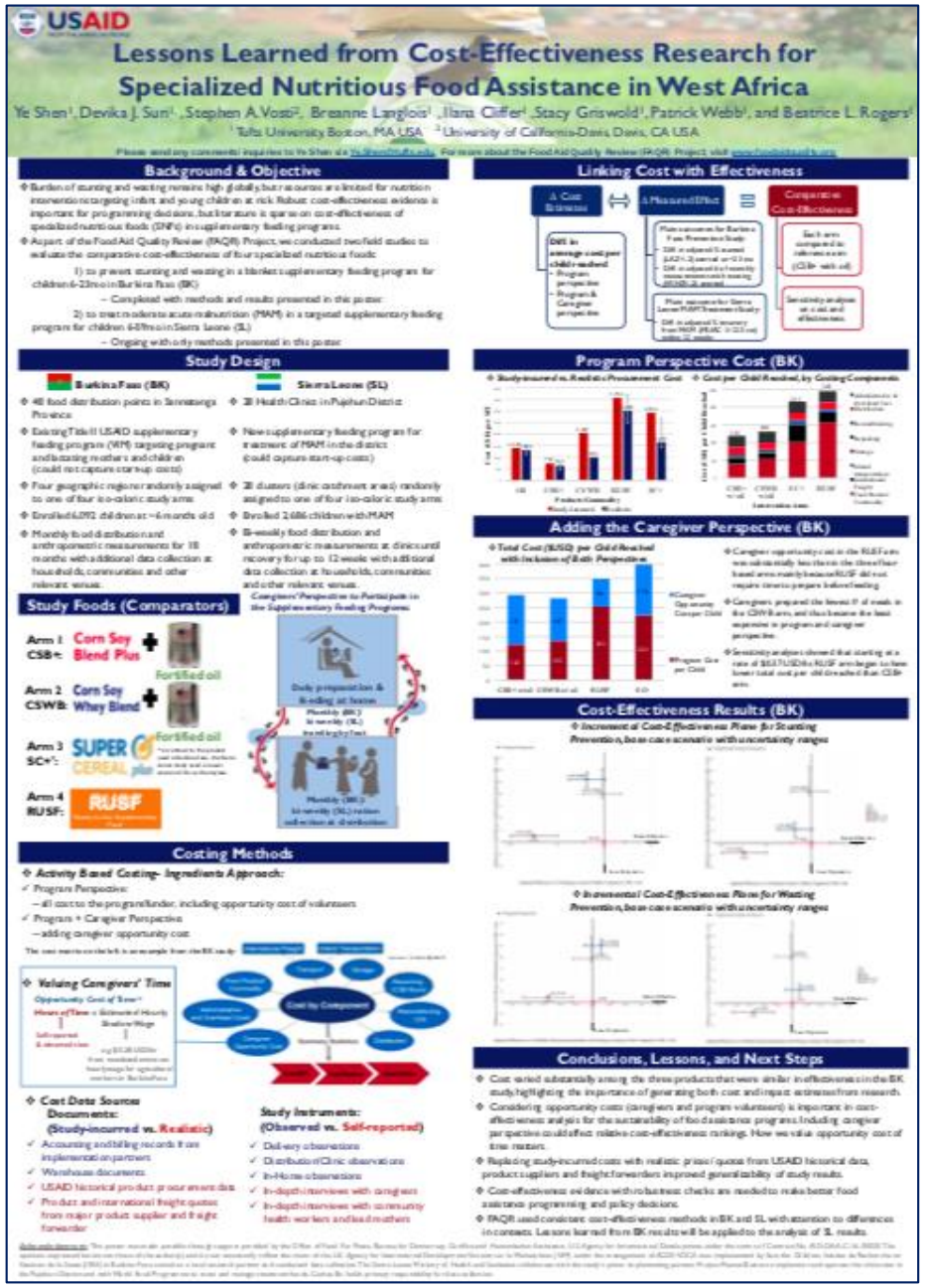
ACCESS: https://foodaidquality.org/sites/default/files/publications/FSMA%20poster_ASN18_GFN.pdf

Lessons Learned from Cost-Effectiveness Research for Specialized Nutritious Food Assistance in West Africa



AUTHORS: Devika Suri, Stephen Vosti, Breanne Langlois, Ilana Cliffer, Stacy Griswold, Patrick Webb, Beatrice Rogers

DATE/PLACE OF PRESENTATION: October 2018, Global Evidence and Implementation Summit (GEIS)

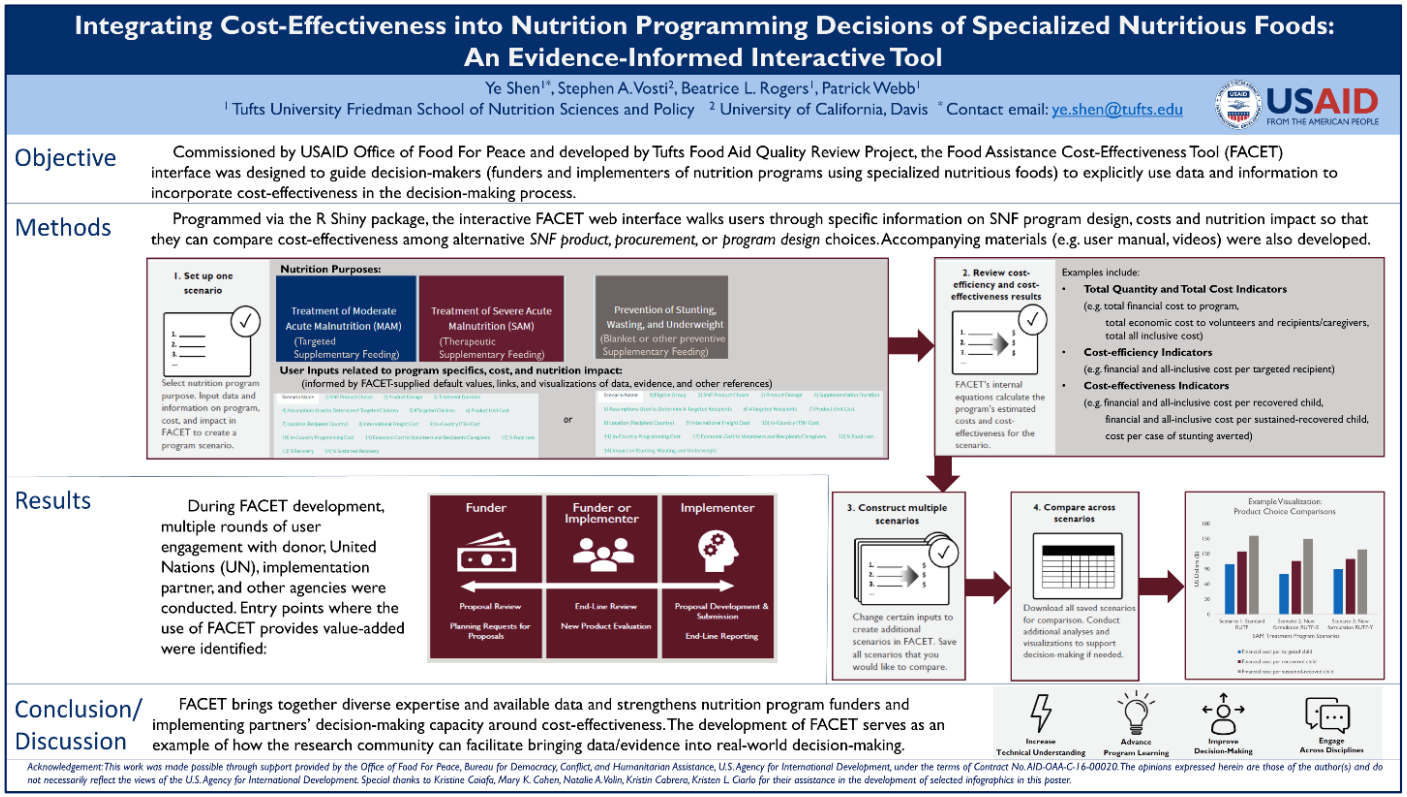
ABSTRACT:

Background & Objective:

- Burden of stunting and wasting remains high globally, but resources are limited for nutrition interventions targeting infant and young children at risk. Robust cost-effectiveness evidence is important for programming decisions, but literature is sparse on cost-effectiveness of specialized nutritious foods (SNFs) in supplementary feeding programs.
- As part of the Food Aid Quality Review (FAQR) Project, we conducted two field studies to evaluate the comparative cost-effectiveness of four specialized nutritious foods:
  - To prevent stunting and wasting in a blanket supplementary feeding program for children 6-23mo in Burkina Faso (BK).
- Completed with methods and results presented in this poster.
  - To treat moderate acute malnutrition (MAM) in a targeted supplementary feeding program for children 6-59mo in Sierra Leone (SL).
  - Ongoing with only methods presented in this poster.

ACCESS:
https://foodaidquality.org/sites/default/files/publications/GEIS2018%20Poster_CE%20Field%20Research_FINAL.pdf

Integrating Cost-Effectiveness into Nutrition Programming Decisions of Specialized Nutritious Foods: An Evidence-Informed Interactive Tool



Authors: Ye Shen, Stephen A. Vosti, Beatrice L. Rogers, Patrick Webb

Date/Place of Presentation: June 2020, American Society for Nutrition (ASN)

Abstract:

Objectives: An interactive Food Assistance Cost-Effectiveness Tool (FACET) was created to support funders and implementing partners of selected nutrition programs involving specialized nutritious foods (SNF) to factor cost-effectiveness into programming decisions in development and humanitarian contexts.

Results: User engagement has helped identify applications of the FACET tool:

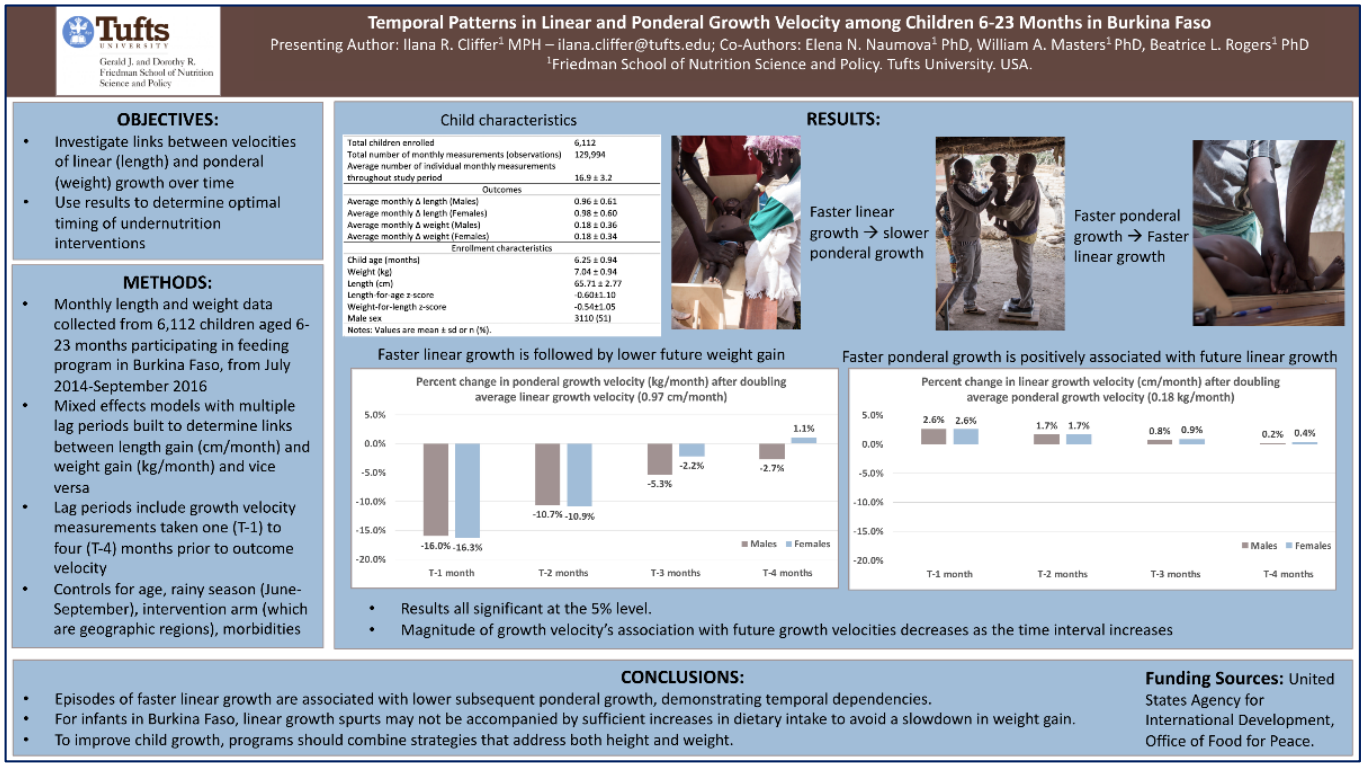
Throughout the programming cycle, e.g., during proposal development (by implementing partners), during proposal reviews (by funders), for end-line reporting (by implementing partners), and for program reviews (by implementing partners and funders);

New SNF product vetting, e.g., assessing the extent to which promising new products can 'compete' with existing products in terms of cost-effectiveness.

Conclusions: FACET brings together diverse expertise and available data and strengthens nutrition program funders and implementing partners' decision-making capacity around cost-effectiveness. The development of FACET serves as an example of how the research community can facilitate bringing data/evidence into real-world decision-making.

Access:
https://www.eventscribe.com/2020/ASN/fsPopup.asp?Mode=posterinfo&PosterID=275644

Temporal Patterns in Linear and Ponderal Growth Velocity among Children 6-23 Months in Burkina Faso



AUTHORS: Ilana R. Cliffer, Elena N. Naumova, William A. Masters, Beatrice L. Rogers

DATE/PLACE OF PRESENTATION: June 2020, American Society for Nutrition (ASN)

ABSTRACT:
Objectives: Although studies have found co-occurrence of stunting (low height-for-age) with wasting (low weight-for-height), and found that wasting often precedes stunting, none has investigated links between velocities of linear and ponderal growth over time. Understanding temporal dependencies and growth trajectories in both height and weight can help determine optimal timing of interventions to prevent wasting and stunting.
Methods: We re-analyzed monthly height and weight data from a cohort of 6112 children aged 6–23 months in a supplementary feeding trial in Burkina Faso, conducted from July 2014 to September 2016. We built mixed effects models with multiple lag periods to determine links between linear growth trajectory (cm gained/month) and ponderal growth trajectory (kg gained/month), and vice versa, controlling for age, season, study arm, and morbidities. Lag periods included growth velocity measurements taken one (t-1) to four (t-4) months prior to the outcome velocity.
Results: On average in these data, ponderal growth is positively associated with future linear growth, but linear growth is followed by lower future weight gain. Doubling the average ponderal growth velocity (0.18 kg/month) is associated with 3%–0.2% higher linear growth velocity one to four months later, while doubling the average linear growth velocity (0.95 cm/month) is associated with 16%–3% lower ponderal growth velocity one to four months later. In all cases, the magnitude of a growth velocity's association with future growth velocities decreases as the time interval increases. These results are all significant at the 5% level.
Conclusions: We find that episodes of faster linear growth are associated with lower subsequent ponderal growth. This finding demonstrates temporal dependencies and suggests that, for infants in Burkina Faso, linear growth spurts may not be accompanied by sufficient increases in dietary intake to avoid a slowdown in weight gain. To improve child growth, programs should combine strategies that address both height and weight. Funding Sources United States Agency for International Development, Office of Food for Peace.

ACCESS:
https://www.eventscribe.com/shared/posters/fullscreen.asp?pvfp=Nzk2Mnw0MDQzOTUxN3wxMzQwOTI2fFdlYnNpdGU