Plenary 2: Evidence on Interventions and Program Components Beyond Effective Food Aid Products: Behaviors, Environment and Modalities

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Food Assistance for Nutrition Evidence Summit
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Beyond Food Aid Products: Evidence on Interventions and Program Components: Behaviors, Environment, and Modalities

Home use of food aid products: Lessons from a supplementary feeding program in Burkina Faso

June 27, 2018
Food Assistance for Nutrition Evidence Summit
Washington D.C.
Ilana R. Cliffer, MPH
Presentation Overview

• Lessons learned from Burkina Faso field trial comparing the cost-effectiveness of four supplementary foods in the prevention of stunting and wasting

• How does this line up with other evidence?
Context: Comparative cost-effectiveness study

Factors potentially influencing effectiveness:
Utilization of study food

Study arms:
CSB+ with oil (ref)
CSWB with oil
SC+
RUSF

Comparative cost-effectiveness of averting stunting and wasting

Controlling for potential confounders:
Household & community level characteristics
## Context: Comparative cost-effectiveness study

<table>
<thead>
<tr>
<th>Study Food</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSB Plus + Oil* (CSB+)</td>
<td>Cornmeal, whole soybeans, vitamin/mineral premix</td>
</tr>
<tr>
<td>Corn Soy Whey Blend + Oil* (CSWB)</td>
<td>Cornmeal, soy flour, <strong>whey protein</strong> concentrate, vitamin/mineral premix</td>
</tr>
<tr>
<td>Super Cereal Plus (SC+)</td>
<td>Corn, dehulled soybeans, dried skim milk powder, vitamin/mineral premix</td>
</tr>
<tr>
<td>Ready-to-Use Supplementary Food (RUSF)</td>
<td>Oilseeds, tree nuts, pulses, cereals, sugar, dairy protein, vegetable oil, vitamin/mineral premix</td>
</tr>
</tbody>
</table>

*Fortified with Vitamin A & D

Monthly ration ~500 kcal/day (as delivered)
• Title II USAID supplementary feeding program (VIM) targeting all pregnant and lactating mothers and children 6-23 months in Sanmatenga Province

• Four geographic regions randomly assigned one of four foods distributed at 48 distribution sites

• Study arms were comparable in terms of community and household characteristics
How do the foods compare in preventing stunting at end-line?

Preliminary Results

Adjusted odds ratios; end-line stunting

<table>
<thead>
<tr>
<th></th>
<th>CSB+</th>
<th>CSWB</th>
<th>SC+</th>
<th>RUSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ref</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2.07*</td>
<td>1.02</td>
<td>1.21</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05

The **odds of stunting at end-line** were similar in the SC+ and RUSF arms; twice as high in the CSWB arm.

The **predicted prevalence of stunting** is highest in the CSWB arm.
How do the foods compare in preventing wasting?

**Preliminary Results**

Adjusted incidence rate ratios; total monthly measurements showing wasting

<table>
<thead>
<tr>
<th></th>
<th>CSB+</th>
<th>CSWB</th>
<th>SC+</th>
<th>RUSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ref</td>
<td>1.25*</td>
<td>0.96</td>
<td>0.92</td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05

Those in the CSWB arm have **25% more monthly episodes of wasting** than those in the CSB+ arm

The predicted number of monthly measurements showing wasting was similar in the SC+ and RUSF arms, but higher in the CSWB arm
How effective were each of the foods in “preventing” stunting and wasting over time?

LAZ declined in all arms, with greatest decline in the CSWB arm

WLZ trajectories are similar, with the RUSF arm showing a slower rate of decline
Two important questions:

• Why do none of the foods prevent the typical declines in z-scores?

• Why does the food with whey protein and enhanced micronutrient profile perform less well than the other foods?
Perhaps the answer lies in household use of the food products

– In-home observations (n=209)

– Individual interviews with beneficiary mothers (n=1,463)

– Focus groups with beneficiary mothers and distribution committees (n=48)

– Lead mother and promoter interviews (n=308)
Is the target beneficiary RECEIVING the food?
High levels of reported and observed sharing

Reported vs Observed Sharing

- No selling reported in any study arm
- Giving away any of the ration, 8-13%
- Giving away oil, 7-8%
- 18-21% of people report using oil for other household cooking
Many studies have found similarly high levels of sharing and diversion

“sharing will happen…consider mitigating measures…”

“Frequency of sharing is substantial…”

“More than one third of all observed meals were shared with other household members.”
Is the target beneficiary CONSUMING the intended quantity of food?
Foods are not always consumed daily

Percent of children ever observed consuming study food*

<table>
<thead>
<tr>
<th>Food</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSB+</td>
<td>54%</td>
</tr>
<tr>
<td>CSWB</td>
<td>44%</td>
</tr>
<tr>
<td>SC+</td>
<td>53%</td>
</tr>
<tr>
<td>RUSF</td>
<td>65%</td>
</tr>
</tbody>
</table>

*Over 4 day observation period, when food was present in the household

Preliminary Results
Children in other studies also do not consume the intended quantity of supplementary foods

“...children receiving supplements through a program are likely to consume less than the intended dose of the LNS…”

“58% of participants receiving CSB reported having left-overs at the end of the day compared to 37% of the participants receiving LNS.”
Consumption may be influenced by taste

“Usually, if we make it, the child refuses to eat it, and if we taste it, we find out it’s bitter…”

“Last month, the flour they gave us could not be used, besides giving it to the animals. Even the animals don’t want it. It’s very bitter.”

“Often, there are insects inside, and if we taste it, we find that it’s too bitter-tasting. We can’t use it to make porridge or couscous. We can only throw it out.”

Preliminary Results
Professional tasters agree that the CSWB was bitter after 10+ months of storage in Burkina

Shortened Table: Sensory profiles of protein blends; Dry powders (as-is)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>New lot 1</th>
<th>New lot 2</th>
<th>Stored lot 1</th>
<th>Stored lot 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweet taste</td>
<td>2.5</td>
<td>2.3</td>
<td>1.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Bitter taste</td>
<td>1.8</td>
<td>2.2</td>
<td>2.6</td>
<td>2.3</td>
</tr>
<tr>
<td>Aftertaste</td>
<td>clean</td>
<td>clean</td>
<td>Stale, cardboard, heat exposure</td>
<td>Stale, cardboard, heat exposure</td>
</tr>
</tbody>
</table>

Attributes are scored on a 15 point universal intensity scale. Most dried ingredient attributes fall between 0 and 4. Analyses by NC State

NC State University
Food Science Department
Sensory Service Center
When storage time was not considered, studies have previously shown CSB with animal protein (milk) to be less bitter.

“CSB porridges with milk proteins had an overall sweet taste and were not perceived as bitter. Substitution of soya flour with the two different milk proteins increased the sweet taste significantly.”

“Products with higher milk content received higher ratings.”
Are beneficiary caregivers PREPARING the foods as intended?
Samples indicate lower fat content than would be expected if porridge prepared according to recommendations.

### Preliminary Results

- **Intrinsic Oil**
  - Required fat content range for RUSF

- **Target quantity of added oil (FAQR)**

Average qty added:
- **CSB+**: 7.3 g/100g
- **CSWB**: 6.6 g/100g
- **SC+**
Results from Malawi trial show that targeted SBCC can increase adherence to preparation recommendations

Figure 1: Mean g added oil per 100 g CSB (oil:CSB ratio) and percent of caregivers meeting or exceeding the target ratio (30:100) by study group. a, b, and c

- Abbreviations: CSB, corn soy blend
- The error bars represent 95% CIs, adjusted for clustering at the FDP level
- Sample sizes by group are as follows: n = 142 for intervention group 1; n = 156 for intervention group 2; and n = 157 for the control group

Rogers et al, 2017
In all study arms, the majority of household water samples showed unsafe or high-risk contamination with E.coli.
Is the food truly a supplement or a replacement for other household complementary foods?
Children consuming Fortified Blended Flours less likely to consume grains than those consuming RUSF.

Adjusted odds ratios and 95% confidence intervals: consumption of grains, roots, and tubers.

<table>
<thead>
<tr>
<th>RUSF</th>
<th>CSB+</th>
<th>CSWB (95% CI)</th>
<th>SC+ (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ref</td>
<td>0.48*</td>
<td>(0.28, 0.83)</td>
<td>(0.30, 0.95)</td>
</tr>
<tr>
<td>-</td>
<td>0.36*</td>
<td>(0.20, 0.64)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.54*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05

Preliminary Results

Percent of population that consumed grains:

- CSB+: 81%
- CSWB: 77%
- SC+: 82%
- RUSF: 88%
No substantial effects found on overall diet diversity, breastfeeding time, or food groups other than grains, roots and tubers
More evidence: LNS results in higher total energy intake (692 kcal) compared to CSB (551 kcal)

**Table 3.** Comparison of mean energy and nutrient intake in the three trial arms (Food supplements included)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Results by study group</th>
<th>Comparisons between CSB and control</th>
<th>Comparisons between LNS and control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>CSB</td>
<td>LNS</td>
</tr>
<tr>
<td>Mean energy, kcal</td>
<td>548 (38)</td>
<td>551 (56)</td>
<td>692 (54)</td>
</tr>
<tr>
<td>Mean protein, g</td>
<td>13.7 (1.1)</td>
<td>15.0 (1.8)</td>
<td>18.3 (1.6)</td>
</tr>
<tr>
<td>Mean calcium, m</td>
<td>136 (21)</td>
<td>392 (53)</td>
<td>331 (38)</td>
</tr>
<tr>
<td>Mean iron, mg</td>
<td>4.9 (0.3)</td>
<td>9.0 (0.8)</td>
<td>9.2 (0.7)</td>
</tr>
<tr>
<td>Mean zinc, mg</td>
<td>4.7 (1.0)</td>
<td>9.6 (1.4)</td>
<td>10.2 (1.5)</td>
</tr>
<tr>
<td>Vitamin A, µg</td>
<td>357 (61)</td>
<td>350 (77)</td>
<td>408 (78)</td>
</tr>
<tr>
<td>Vitamin C, mg</td>
<td>15.9 (1.9)</td>
<td>33.3 (3.7)</td>
<td>30.2 (4.0)</td>
</tr>
</tbody>
</table>

*Huber–White Robust standard error. †Differences are mean values in intervention group – mean value in control group. CI, confidence interval; CSB, corn–soy blend; LNS, lipid-based nutrient supplement.

_Thakwalakwa et al., 2015_
Policy makers and programmers: listen up!

1. Sharing and diversion of foods is unavoidable among all product types

2. Children are not consuming as much of the food products as intended

3. Storage of some products in suboptimal conditions may influence food quality and consumption

4. Caregivers do not always follow the recommended preparation protocols

5. It appears that none of the products studied in Burkina Faso significantly displaced nutrient-dense household foods or breastfeeding; compared to RUSF, FBFs appear more likely to displace grains, roots, and tubers
Quality of programming and household use of the food products matter at least as much as the composition of products being programmed.
Thank you for the collaboration!

- **USAID**: Funder
- **Tufts University**: Beneficiary of Food For Peace/USAID grant for food aid research
- **Institut de Recherche en Sciences de la Santé (IRSS)**: Research implementation partner
- **ACDI/VOCA**: Prime awardee implementing Title II program, Victoire sur la Malnutrition (ViM).
- **Save the Children**: Sub-prime in consortium implementing the ViM program
- **Study participants** from Sanmatenga Province, Burkina Faso
- **Industry partners** who produce the foods
Acknowledgements

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  - Benoit Sawadogo
  - IRSS data collection teams!

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  - Adeline Kologo
  - Breanne Langlois
  - Devika Suri
  - Ye Shen
  - Shelley Walton
  - Lindsey Green
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Beyond Food Aid Products: Evidence for how behaviors, environmental factors, and delivery modalities influence program effectiveness

Delivery mechanisms can influence program effectiveness: Who chooses our outcomes?

June 27, 2018
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Blake Stabler, the Cash Learning Partnership (CaLP)
Outline

• Current state of evidence on using cash and vouchers for nutrition outcomes
  – Nutrition outcomes
  – Food security outcomes
• Trends in humanitarian assistance
  – More cash and vouchers
  – More multi-sectoral and multimodal programming
• Multiple modalities and combining modalities
Where to find evidence

- Research for Action: Impacts of cash on nutrition outcomes, review by Bridget Fenn for World Food Program (WFP) and Action Against Hunger, November 2017

- Research in Food Assistance for Nutrition Impact (REFANI) by Emergency Nutrition Network (ENN), Action Against Hunger, Concern Worldwide, and University College London (UCL) funded by UK aid and ECHO, 2015-2017
Growing body of evidence on nutrition outcomes

- Wasting

- Stunting (but mainly from conditional programs in Latin America)

- No significant differences in anthropometry between conditional and unconditional cash transfers

- Size of transfers influences outcomes: higher amounts that contribute more to the household economy more likely to have an impact on nutritional status
Moderate body of evidence on food security outcomes

• Household expenditures/food expenditures

• Food consumption

• Some evidence on increased dietary diversity

• Growing evidence of increased expenditure on food for children
From 2015 to 2016, 40 percent increase in humanitarian cash and vouchers

Source: Cash Learning Partnership (CaLP) and Accenture, State of the World’s Cash Report, February 2018
Multiple modalities

• Cash or In-Kind? Why Not Both?: Response analysis lessons from multimodal programming, CaLP, Samaritan’s Purse, and Catholic Relief Services (CRS), July 2017
  – Includes case studies of response analysis in:
    • Canada, Canadian Red Cross
    • South Sudan, World Vision
    • Democratic Republic of Congo, Samaritan’s Purse & CRS
    • Nepal, Red Cross/Red Crescent Movement (RCM), CRS, & Caritas Nepal
    • Myanmar: Oxfam

• Failure to record/document situation and response analysis leads to lack of evidence base on how programs work
Summary

• A growing body of evidence that cash and vouchers can have an impact on wasting and stunting.

• A bit more evidence that cash and vouchers can lead to more expenditure on food and increased dietary diversity.

• Cash and voucher programs are becoming more common within and across all sectors of humanitarian work.

• Most humanitarian programs do not record why they chose a particular modality.
Two questions

• How can nutrition be better integrated into multi-sectoral/multi-purpose cash assistance/multimodal assistance/more holistic humanitarian programs?

• As affected populations gain a greater voice in what assistance they receive and how they receive it, how should aid providers adapt to make nutrition a priority for households/families?