A QUALITATIVE AND QUANTITATIVE RESEARCH APPROACH TO APPROPRIATELY DESIGN INTEGRATED AGRICULTURE AND NUTRITION INTERVENTIONS FOR RURAL KENYA

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Acknowledgements

Kenyatta University
- Peter Chege
- Judith Kimiywe

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- Bonnie McClafferty
- Enock Musinguzi
- Alison Tumilowicz

- Gretel Pelto
- Margaret Armar-Klemesu
- Elaine Ferguson
- Doris Weismann

Cornell University, USA
Noguchi Centre, Ghana
LSHTM, UK
Consultant, Germany
High Rainfall 1 (Vihiga) and Semi-Arid 2 (Kitui) Promise the Greatest Impact

USAID focus on HR1 because:
- It has the largest # of
  - rural poor (5.3M)
  - underweight children (420K)
  - stunted children (733K)
  - wasting children (131K)
  - female headed households (2.5M)
- Highest poverty density (>200/km²)
- Highest agric. output/hh. (9,500 kg/year)

USAID focus on SA2 because:
- It has the 2nd largest # of
  - rural poor (1.8M)
- It has the 3rd largest # of
  - underweight children (198K)
  - stunted children (280K)
  - wasting children (53K)
  - female headed households (823K)
- 2nd highest poverty density (150 to 200/km²)
- Lowest income/hh in agricultural regions ($1,895/year)
Goals and Objectives of the Study

GOAL: Understand opportunities to enrich value chains of food commodities comprising IYC diets in FTF regions in Kenya

OBJECTIVES: To determine:

a. The consumption profile of IYC (6-23 mos);

b. Gap analysis between current nutrient intakes and dietary requirements.

c. Assessment of potential for incorporating locally available nutritious commodities into complementary foods and their contribution to nutritional status for children 6-23 months.

d. The opportunities, constraints and costs of improving the diets through improved complementary foods.
Food-based recommendations to fill nutrient intake gaps

- 24-hour dietary recall data, 6-23 mos
- Analyzed using Optifood - a specialized software program, using linear programming
- Being developed for public use
  - London School of Hygiene and Tropical Medicine, FANTA, WHO, Blue Infinity.
- Within modeling constraints, uses dietary intake data to:
  - identify food intake patterns that maximize adequacy of intakes of multiple nutrients
  - identify and model food / food-group dietary modifications to optimize nutrient intakes
## Summary of food-based recommendations

<table>
<thead>
<tr>
<th></th>
<th>Kitui</th>
<th>Vihiga</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6-11 m</td>
<td>12-23 m</td>
</tr>
<tr>
<td>Green leafy veg</td>
<td>1/day</td>
<td>1/day</td>
</tr>
<tr>
<td>Millet flour</td>
<td>1/day</td>
<td>≥1/day</td>
</tr>
<tr>
<td>Legumes</td>
<td>1/day</td>
<td>2/day</td>
</tr>
<tr>
<td>Meat/fish/egg</td>
<td>1/day</td>
<td>≥3/week</td>
</tr>
<tr>
<td>Milk</td>
<td>≥3/day</td>
<td>≥3/day</td>
</tr>
<tr>
<td>Fortified cereal</td>
<td>≥1/day</td>
<td>≥1/day</td>
</tr>
</tbody>
</table>

* 9-11 months only
The Focused Ethnographic Study (FES) uses a mixed methods approach to study feeding patterns and practices in children 6-23 mos.

- Gretel Pelto and Margaret Armar-Klemesu
- Open-ended questions w/guided discussion, free listing, rating and ranking, social/geographic mapping

Framework: cultural-ecological theory.

Obtains data on 6 sectors of determinants of IYC nutrition:

i) Diet
ii) Physical environment
iii) Social environment (e.g. external markets)
iv) Technology
v) Socio-economic organization
vi) Culture (beliefs, knowledge, values, motivations).
Two key FES modules for this application

<table>
<thead>
<tr>
<th>Sources of acquisition</th>
<th>Rating of IYC foods along value dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Household fields</td>
<td>• Healthiness</td>
</tr>
<tr>
<td>• Household home gardens</td>
<td>• Cost</td>
</tr>
<tr>
<td>• Gift from relatives/neighbours production</td>
<td>• Acceptance (by child)</td>
</tr>
<tr>
<td>• Purchased from relatives/neighbours production</td>
<td>• Convenience</td>
</tr>
<tr>
<td>• Purchased from market</td>
<td>• Ease of acquisition</td>
</tr>
<tr>
<td>• Purchased from local entrepreneur</td>
<td></td>
</tr>
</tbody>
</table>
Cultural and social findings

Opportunities

- Caregivers understand the relationship between **food quality** (nutrition & hygiene) and **child health** (survival and growth).
- Motivated to providing IYC with the best foods they could afford.
- Core IYC foods are acquired from markets.
- Concept and practice of preparing some foods especially for IYC (eg, rice, potato-based mixtures)

Barriers

- Affordability was a restraint to buying the ‘best’ foods
- Few income-generating opportunities for women
- Availability of fresh foods was seasonal (vegetables, milk)
- Access to water, cooking fuel, and safe storage were limiting >>>as was time
STRATEGIES FOR: GREEN LEAFY VEGETABLES

- **Focused Ethnographic Studies**
  - Core IYC food
    - Suitable for IYC feeding – soft
    - Ranked favorably for cost
    - Ranked low/mod for health attributes
  - Produced & purchased
    - Purchased from neighbours at lower price
    - Seasonal – lack of irrigation

- **Optifood**
  - Fill nutrient gaps in V & K, across age groups
  - Consumed as ‘side dish’
    - Often only give the broth

**Intervention options**
- BCC could increase perception of health attributes
- Encourage use of leaves vs broth; incorporate into IYC-specific recipes (eg, rice)
- Support local production/sale
- HH level irrigation techniques
**Strategies for: Millet**

**Focused Ethnographic Studies**
- Core IYC food
- Preferred for porridges
- Ranked higher for health attributes & child acceptance than maize
- Only purchased
- Given up trying to grow it
- More expensive than maize (demand>supply)

**Optifood**
- Fill problem nutrient gaps (iron, zinc) in Kitui, across age groups
- Mixed with other cereals for porridges

**Intervention options**
- BCC alone unlikely to change practice
- Ag interventions to develop / disseminate improved varieties (biofortified)
- Commercial : increase supply, decrease price
- Household level
Strategies for: Legumes (common beans)

Focused Ethnographic Studies
- Core IYC food
  - Ranked moderate for healthiness, cost, ease of acquisition, & child acceptance
  - Ranked low for convenience
  - Both purchased and home-produced

Optifood
- Fill problem nutrient gaps (iron, zinc)
- Sometimes mix with cereals for porridges

Intervention options
- BCC focus on increased use of bean flour in cereals – faster cooking than whole beans
- Explore development, acceptability & cost of partially cooked bean flour products
### Recommended strategies for Vihiga/Kitui - Kenya

<table>
<thead>
<tr>
<th>BCC (alone)</th>
<th>Household and local agriculture (for local consumption) (+BCC)</th>
<th>Commercial value chain development (+BCC)</th>
<th>Specific processed foods (+BCC/marketing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Green leafy vegetables</td>
<td>• Green leafy vegetables • Millet</td>
<td>• Millet • Milk • Small whole fish • Beans • Green leafy vegetables</td>
<td>• Low cost, partially cooked fortified cereal mixes • Locally produced cereal flour mixes (maize, millet, bean flour)</td>
</tr>
</tbody>
</table>
Conclusions

• Dietary assessment + Optifood allowed identification of evidence-based food-based recommendations, within limits of cultural acceptability and accessibility

• FES permitted the identification of relevant perceptions, values, practices, constraints, and opportunities to identify appropriate points of intervention across sectors

• Given the relative intensity of these research methods, development of ‘light’ versions should be considered

• Despite difference in agro-ecological zones in these two populations, the FBRs and FES findings were relatively consistent, suggesting a wider degree of applicability across areas with similar food consumption patterns/culture
Thank you