Adding ENAM to the intervention pot to improve young children's diets in rural Ghana

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Consequences of poor child nutrition

- Reduced early development
  - Physical
  - Cognitive
- Increased severity of illness/mortality
- Increased risk with reproduction
- Poor birth outcomes
- Diminished productivity in adulthood
- Lost potential for a nation

In Sept., 2000, Millennium Declaration was signed by 189 countries

“In Sept., 2000, Millennium Declaration was signed by 189 countries

“to create an environment – at the national and global levels alike – which is conducive to development and the elimination of poverty”

Millennium Development Goals (MDGs)

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

Improving nutrition is key to achieving the MDGs

Child nutritional status in sub-Saharan Africa

http://www.prb.org/Articles/2008/stuntingssa.aspx/?p=1

Prevalence of stunting among Ghanaian children

UNICEF conceptual framework for child growth

UNICEF. Global Framework for Action, 2006
ENAM Project

Enhancing child Nutrition through Animal source food Management

Enam = “animal-based products” (Twi)

Collaborative Research Support Program (CRSP)

Active CRSPs
- Aquaculture CRSP - Oregon State University
- BASIS CRSP - University of Wisconsin
- Bean/Cowpea CRSP - Michigan State University
- Global Livestock CRSP - University of California - Davis
- Integrated Pest Management CRSP - Virginia Tech
- PEANUT CRSP - University of Georgia
- Soil Management CRSP - University of Hawaii at Manoa
- Sorgum/Millet CRSP - University of Nebraska
- Sustainable Agriculture and Natural Resource Management CRSP - Virginia Tech

Phase 1
Participatory process to develop problem model

Phase 2
Implement an income-generation and education/training intervention

Phase 3
Transfer of activities to local agents for sustainability

Inquiry selection site

Regions
Ecological zones
Experience in region

Communities
Ministry assisted
1 rural & 1 semi-rural/zone

Upper East
Brong-Ahafo
Central

Inquiry: “What are the constraints on ASF?”

Interviews
- Regional & national managers in agriculture and health ministries

Focus groups
- Non-governmental organization staff
- Extension workers
- Community leaders
- Child caregivers

Tracking ASF sources
Stakeholders’ workshop

Participants
- Researchers
- Ministry of Food and Agriculture (MOFA)/Women in Agriculture and Development (WIAD)
- Ghana Health Services (GHS)
- Commodity organizations
- Non-governmental organizations
- Community residents

Outcomes
- Analysis of research results
- Development of problem model
- List of intervention approaches

Problem model for constraints on ASF

<table>
<thead>
<tr>
<th>Income</th>
<th>Feeding skills and nutrition knowledge</th>
<th>Number of extension field staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Processing and storage</td>
<td>Household food allocation</td>
</tr>
<tr>
<td></td>
<td>Marketing linkages</td>
<td>Cultural beliefs and attitudes</td>
</tr>
<tr>
<td></td>
<td>Financial services</td>
<td>Caregiver empowerment</td>
</tr>
<tr>
<td>ASF</td>
<td>Availability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accessibility</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Utilization</td>
<td></td>
</tr>
<tr>
<td>Seasonality</td>
<td>Pests and diseases</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Suggested interventions to overcome constraints

Community level
- Stimulate income-generation activities (IGA)
- Provide access to micro-credit loans
- Food processing/storage training
- Entrepreneurship/marketing training
- Nutrition education training for caregivers
- Dialogue with leaders/communities to change commonly held beliefs and support women

Regional/country level
- Extension continuing education
- Ministry and NGO staff

What are the “best practices” for IGA in Ghana?

Sample
18 organizations/institutions in ENAM study areas

Methods
- Semi-structured interviews
- Program administrators and implementers
- Informal discussions
- Program participants
- Observations of program activities
- Review of program documentation when available

Best practices
- Individual IGA
- Both cash and input may be required
- Loan is guaranteed by group
- Small weekly payments
- Renewal of IGA upon community completion

Identified gaps
- Limited emphasis on ASF-specific IGA
- Inconsistent involvement with market linkages
- Limited emphasis on nutrition education & evaluation

Phase 1

Problem model
Components of intervention
Best practices for IGA
Partners
Phase 2
Implement an income-generation and education/training intervention

Research question
Does the implementation of an intervention with micro-credit, entrepreneurship training, and nutrition education improve household food security, use of animal source foods for children, and children’s nutritional status in rural Ghana?

Study site selection
2 intervention and 2 control communities per region

Nutrition indicators among Ghanaian children < 5 y of age, by study region in 2003

Intervention: (i) identify IGA

Community → ENAM Team → Community

Develop list of IGA
Consensus on IGA to support
Reviewed IGA suitability
Develop support packages for selected IGA
Cash flow analysis
Feasible IGA
Fish smoking
Fishmonger
Poultry egg production
Selling of foodstuffs
Selling of cooked foods
Processing & sale of foods
(shea butter, rice parboiling)

Intervention: (ii) organize micro-credit

**Orientation training**
Eligible caregivers for solidarity groups (3-5/group)
Loan requirements:
- Group concept
- Loan cycle
- Repayment and savings
- Education
Future loans require:
- Meeting attendance
- Savings
- Group appraisal

Women developed individual business plan
Repayment feasible within 16-wk loan cycle
$22-$141/cycle

<table>
<thead>
<tr>
<th>Support category</th>
<th>Grant</th>
<th>Repayable loan</th>
<th>Caregiver contribution</th>
<th>Total (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Feeding</td>
<td>40</td>
<td>280</td>
<td>320</td>
<td>640</td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td>15</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Medication</td>
<td>15</td>
<td></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Point-of-lay birds</td>
<td>100</td>
<td>50</td>
<td>150</td>
<td>265</td>
</tr>
<tr>
<td>Total</td>
<td>205</td>
<td>50</td>
<td>345</td>
<td>585</td>
</tr>
</tbody>
</table>

Example of 16-wk package: poultry egg production

Intervention: (iii) provide IGA training

**Example: training in fish smoking**
- Construction of improved smoking oven
- Demonstration oven
- Fish handling
- Smoked fish preservation
- Technical assistance
  - MOFA/WIAD
- Central and Upper East regions

**Example: training in poultry raising**
- Central region (2005)
  - Technical assistance: U of Ghana
  - Avian Influenza – halted
- Brong-Ahafo and Upper East regions (2007-2008):
  - Technical assistance: Heifer Int’l-Ghana
    - Coup construction and maintenance
    - Poultry health & feed management
    - Interactions with veteran poultry farmers
    - Marketing of poultry products
  - University of California Avian Flu School
Intervention: (iv) nutrition education
Weekly education sessions before loan/saving payments
Group dynamics
Nutrition focus: cycles 1, 2, 4
Technical assistance
Health promotion Unit of Ghana Health Services
Women in Agriculture Development (WIAD)
Approaches
Flip chart lesson plans
  - Growing well
  - Child feeding styles
  - Malnutrition signs
  - Benefits of ASF
  - Balanced plate
  - Hygiene
Food demonstrations & recipes

Cooking competition to reinforce nutrition education lessons
Evaluation of meal prepared
Rationale focused on child
Knowledgeable about nutritional value
Includes ASF and iodized salt
Practical
Adequate portion size

Intervention: (v) Entrepreneurial education
Weekly education sessions before loan/saving payments
Entrepreneurial focus: cycles 2, 3, 4
Technical assistance
Women in Agriculture Development (WIAD)
Approaches
Group lessons with manual
Skits on lessons learned

Participant selection
(i) 180 participants
  Open to all women with 2-5 y old children; self-selected
  Received the intervention (education & IGA)
(ii) 144 non-participants/intervention community
  Lived in same community; had 2-5 y old child
  Selected on internal wealth ranking
  No IGA intervention/could have heard education
(iii) 287 controls
  Lived in similar, neighboring communities; had 2-5 y old child
  Selected on internal wealth ranking
  No intervention (health education films)

Data Collection
Longitudinal data collected
Microcredit performance
Meeting attendance
Repayments
Savings
Cash flow for IGA (sub-sample)
Household
Socio-demographic
Food security
ASF expenditures
Caregiver
Expenditures
Child nutrition/health knowledge
Child
Dietary intakes
FFQ
Weighted food (subsample)
Anthropometry
Other data collected
Case studies (post intervention only)

Baseline household characteristics

<table>
<thead>
<tr>
<th>Intervention community</th>
<th>Participants</th>
<th>Non-Participants</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extended families, %</td>
<td>47.2</td>
<td>52.9</td>
<td>40.8</td>
</tr>
<tr>
<td>Wealth rank, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>56.1</td>
<td>63.7</td>
<td>63.1</td>
</tr>
<tr>
<td>Medium/high</td>
<td>44.2</td>
<td>36.3</td>
<td>36.9</td>
</tr>
<tr>
<td>Head of household</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>occupation, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agro-business</td>
<td>63.6</td>
<td>72.4</td>
<td>72.9</td>
</tr>
<tr>
<td>Trader</td>
<td>17.3</td>
<td>15.4</td>
<td>8.4</td>
</tr>
<tr>
<td>Salary/artisan</td>
<td>12.4</td>
<td>8.3</td>
<td>13.6</td>
</tr>
<tr>
<td>Not employed</td>
<td>6.8</td>
<td>3.8</td>
<td>3.1</td>
</tr>
</tbody>
</table>

* P<0.05
Baseline caregiver characteristics

<table>
<thead>
<tr>
<th></th>
<th>Intervention community</th>
<th>Controls</th>
<th>Non-participants</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y</td>
<td>32.6 ± 8.9</td>
<td>32.4 ± 8.8</td>
<td>33.2 ± 9.0</td>
<td></td>
</tr>
<tr>
<td>Living with spouse, %</td>
<td>72.4</td>
<td>77.7</td>
<td>74.6</td>
<td></td>
</tr>
<tr>
<td>Formal education, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>50.3</td>
<td>56.4</td>
<td>51.4</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>46.0</td>
<td>39.7</td>
<td>44.4</td>
<td></td>
</tr>
<tr>
<td>Secondary or above</td>
<td>3.7</td>
<td>3.8</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>Main occupation, % *</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agro-business</td>
<td>25.8</td>
<td>38.7</td>
<td>63.3</td>
<td></td>
</tr>
<tr>
<td>Trader</td>
<td>72.2</td>
<td>53.5</td>
<td>30.9</td>
<td></td>
</tr>
<tr>
<td>Other/None</td>
<td>1.3</td>
<td>7.7</td>
<td>5.8</td>
<td></td>
</tr>
</tbody>
</table>

Baseline child characteristics

<table>
<thead>
<tr>
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<th>Controls</th>
<th>Non-participants</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mo *</td>
<td>38.9 ± 10.1</td>
<td>42.9 ± 11.6</td>
<td>43.6 ± 12.3</td>
<td></td>
</tr>
<tr>
<td>Weight-for-age Z</td>
<td>-0.8 ± 0.9</td>
<td>-1.0 ± 1.0</td>
<td>-1.1 ± 1.0</td>
<td></td>
</tr>
<tr>
<td>Height-for-age Z</td>
<td>-1.3 ± 1.3</td>
<td>-1.4 ± 1.2</td>
<td>-1.4 ± 1.3</td>
<td></td>
</tr>
<tr>
<td>Weight-for-height Z *</td>
<td>-0.1 ± 0.9</td>
<td>-0.3 ± 1.0</td>
<td>-0.3 ± 0.9</td>
<td></td>
</tr>
<tr>
<td>Underweight, % *</td>
<td>8.1</td>
<td>15.5</td>
<td>16.4</td>
<td></td>
</tr>
<tr>
<td>Stunted, %</td>
<td>28.6</td>
<td>33.8</td>
<td>28.5</td>
<td></td>
</tr>
<tr>
<td>Wasted, %</td>
<td>1.2</td>
<td>2.8</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>Female, %</td>
<td>45.4</td>
<td>50.0</td>
<td>48.3</td>
<td></td>
</tr>
</tbody>
</table>

Evidence that the intervention took place

**ENAM Project CSA members’ weekly meeting attendance rates by loan cycle**

<table>
<thead>
<tr>
<th></th>
<th>Central</th>
<th>Brong-Ahafo</th>
<th>Upper East</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle 1</td>
<td>75%</td>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>Cycle 2</td>
<td>75%</td>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>Cycle 3</td>
<td>75%</td>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>Cycle 4</td>
<td>75%</td>
<td>75%</td>
<td>75%</td>
</tr>
</tbody>
</table>

Microcredit performance

**Loan increments**

- Cycle 1: 0 weeks
- Cycle 2: 25 weeks
- Cycle 3: 50 weeks
- Cycle 4: 75 weeks

**Savings**

- Cycle 1: 0 weeks
- Cycle 2: 25 weeks
- Cycle 3: 50 weeks
- Cycle 4: 75 weeks

Caregivers’ perceptions of change in business earnings during the past 4 months, loan cycle 4

- Increased
- Unchanged
- Decreased

Case studies: how do participants define success for ENAM?
Independent researcher
Dr. Nana Akua Anyidoho (Inst. Statistical, Social and Economic Research, University of Ghana)
Gloria Y Kobati (Research Assistant, University of Ghana)

Methods
Focus groups
3, 1/region with 8-10 CSA members each
Case studies
12 “successful”
6 “less successful” (those that need a small push)
Life history interview with respondent
Interviews with household members, SG, field officer
Observations in household
ENAM records

What would one expect to see in the life of a woman who is doing well in ENAM?

Indicators of ENAM success: (i) performance in CSA

Meeting attendance
Punctual
Regular
Committed to group activities / group sacrifice

Repayments/savings
Regular and prompt
Good savings record

Indicators of ENAM success: (i) business enterprises

Hard working
Business has expanded
Good attitude towards:
Work
Customers
Able to sell & re-stock products quickly

Indicators of ENAM success: (i) child welfare

Regular school attendance
Healthy & well dressed
Compound well kept

What factors contribute to participants’ success …….
Case study (Afia): ASF-related IGA

"Before the project, I would sell all the fish because I wanted the money. But now, I make sure there is always some fish left at home for them [the children]...I can tell you these practices have saved Dominic from a lot of illnesses... My other children did not benefit from what I now know and they were always falling ill...Dominic is very good in school, even the teachers say so. And I know this is because of what I feed him".

Case study (Kapara): Increased income & educating peers

"I am able to buy any type of food I wish to give to my children. I am also able to pay their school fees without any difficulty. Generally, life is a lot easier for me today than before. Moreover, I have saved some money for my children’s future".

She says that she teaches the ENAM nutritional education to her sister-in-law, who shares in the cooking for the household, so that no matter who cooks, the children enjoy good nutrition. A later conversation with the sister-in-law confirmed that, even though she is not in the ENAM project, she had significant knowledge of the nutritional lessons.

Case study (Assibi’s husband): family support

“This is the lean season when most households do not have food to eat…But we have enough money to buy food for the family and are not feeling the hunger like other people are. Since we are fishmongers, the children get to eat fish every day. And whenever my wife goes to town, she buys beef or goat meat, if she has money on her, and so the children eat food that ‘makes them strong’. …As you are aware, when a woman has money, the first thing on her mind is her children, and it is the same with my wife.”

Preliminary evidence that food insecurity decreased among intervention households

Described data have not been published yet.

Evidence that the promotion of ASF-related IGA may lead to increased ASF intakes among young children

Described data have not been published yet.

Preliminary evidence that ASF intakes increased among children in intervention households

Described data have not been published yet.
Preliminary evidence that micronutrient intakes increased among children in intervention households

Described data have not been published yet.

Preliminary evidence that child growth improved among intervention households

Described data have not been published yet.

Phase 2
Community-based economic & educational intervention
Increased human & institutional capacity

Phase 3
Transfer of activities to local agents for sustainability

Partnerships to strengthen sustainability

- ENAM interventions
- Microfinance
- Entrepreneurial activities
- Nutrition education
- Freedom from Hunger
- Helfer
- Peer Education
- Capacity building and systems strengthening
- Rural Banks
- Communities

Stakeholders' workshop: Sustainability

Participants
- Researchers
- Ministries
- Non-governmental organizations
- Community residents

Objectives
- Initial research results
- Panel: ENAM participants voices
- Student presentations

Outcomes
- Scaling up
- Sustainability
Sustainability – (i) Access to credit

Enabling institutions
Freedom from Hunger, Ghana

Permanent institutions
Rural banks (private)

Mechanism of sustainability
"Credit with Education" via rural banks
15% interest / 4 month cycle
1st cycle in Central region = 320 women

Sustainability – (ii) IGA training

Enabling institutions
Heifer International, Ghana
UC, Davis Avian Flu School

Permanent institutions
MOFA
University of Ghana

Mechanism of sustainability
Continuing education courses

Sustainability – (iii) nutrition education

Enabling institutions
Freedom from Hunger, Ghana
University of Ghana

Permanent institutions
Rural banks
NGO
Ghana Health Services
Communities

Mechanism of sustainability
Peer counseling
"Credit with education"
Continuing education courses

Sustainability – (iv) policies and directions

Enabling institutions
University of Ghana (Vice-Chancellor’s Office)

Permanent institutions
Banking institutions
NGO
Ministries
Research/teaching universities
Communities

Mechanism of sustainability
Inter-institutional board

Key lessons learned

Enabling factors
- Planning grant process
- Identifying and applying ‘best practices’ and lessons learned’ from stakeholder experiences
- Effective community participation processes
- Dynamic and committed field personnel
- Routine documentation/data collection and supervision
- Enhanced accountability
- Integrating partners throughout process

Challenges
- Fostering leadership among women’s groups
- Grappling with sustainability issues
- Linking research institutions and implementation/policy institutions
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