Agriculture to Nutrition (ATONU) - Evaluation of Integrated Agriculture and Nutrition Sensitive Interventions for a Poultry Program in Ethiopia: Baseline Results

Nilupa S. Gunaratna, MS, PhD
Harvard T.H. Chan School of Public Health
Purdue University

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Research Team

Harvard T.H. Chan School of Public Health
• Wafaie Fawzi
• Ramya Ambikapathi
• Chelsey Canavan
• Nilupa Gunaratna
• Isabel Madzorera
• Ramadhani Abdallah Noor
• Simone Passarelli

Addis Continental Institute of Public Health
• Yemane Berhane
• Semira Abdelmenan
• Hanna Berhane
• Zebiba Kemal
• Amare Worku
Interventions

**African Chicken Genetics Gains (ACGG)**
- Implemented by the International Livestock Research Institute (ILRI) and partners
- High-yielding exotic chicken genotypes and good management practices

**Agriculture to Nutrition (ATONU)**
- Implemented by the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) and partners
- Social and behavior change: diets and nutrition; water, sanitation, and hygiene (WASH); women’s empowerment in household budgeting and use of income; home gardening/vegetable production
Aims

To estimate the effect of:

- ACGG
- ACGG and ATONU combined
- ATONU in the context of ACGG

on **dietary diversity** among women of reproductive age (18-49 years)

Secondarily, to estimate the effects of the above on **BMI and anemia status** among women of reproductive age (18-49 years) and on **dietary diversity, growth, and anemia status** among young children (aged under 3 years at enrollment)
Design

- Cluster randomized design in which villages are allocated to one of three treatment groups:

  - Random selection
  - 60 villages
  - ACGG
  - Control
  - Randomization
  - ACGG + ATONU
  - ACGG only

Comparisons of interest:
- ACGG only vs. Control
- ACGG + ATONU vs. Control
- ACGG + ATONU vs. ACGG only
Regional Map of Ethiopia

20 districts (woredas) selected by ACGG
Village Sampling and Randomization

Agro-ecological zones

Selected for ACGG?

Villages (kebeles)

ACGG

ACGG + ATONU

Control

= village
Household Inclusion Criteria

**Intervention village:**
Visit all 40 ACGG households
Enroll all eligible

- Have at least one woman of reproductive age (18-49 years at enrollment)
- Plan to remain in the study area for the study duration
- Provide informed consent
- Participating in ACGG

**Control village:**
Randomly select households
Enroll 35 households

- Have at least one woman of reproductive age (18-49 years at enrollment)
- Plan to remain in the study area for the study duration
- Provide informed consent
- Produced chickens in the last 2 years and currently have <50 chickens
Data Collection

18 months: ACGG on-farm evaluation

Intervention groups

Control group

Baseline

Chicken maturation

NSI implementation begins

ACGG begins chick distribution

Seasonal Effects

Endline
Women’s Dietary Diversity

- Chicken Production
- Vegetable Production
- Income from eggs, chicken, produce

Women’s Empowerment

- Dietary Diversity

Modifier
Children’s Dietary Diversity

Management practices (corralling, sleeping location)

Chicken Production

Income from eggs, chicken, produce

Vegetable Production

Women’s Empowerment

Exposure to contamination

Subclinical/clinical infection (inflammation, diarrhea)

Dietary Diversity

Nutritional status (anemia, attained growth)

Modifier
Data Collection (3 Languages)

**Household Head:**
- Household demographics
- Housing and assets
- Crop production and inputs
- Livestock
- Income and expenditures
- Group participation & sources of information

**Woman of Reproductive Age:**
- 24 hr and 7 day recall of foods consumed
- Food expenditures
- Food insecurity
- WASH
- Women’s decision-making and time use
- Group participation & sources of information
- Anemia and anthropometry

**Index Child:**
- 24 hr and 7 day recall of foods consumed
- Infant and young child feeding
- Morbidity
- Anemia and anthropometry

**Village level survey:**
- Food availability and prices in local markets

**Geolocatation & Agroecology**
Demographic Information

<table>
<thead>
<tr>
<th></th>
<th>Median (Q1, Q3) or Percentage (n=2117)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of household members</td>
<td>6 (5,8)</td>
</tr>
<tr>
<td>Female-headed household</td>
<td>14</td>
</tr>
<tr>
<td>Woman’s age</td>
<td>35 (28, 40)</td>
</tr>
<tr>
<td>Women’s education</td>
<td></td>
</tr>
<tr>
<td>No schooling (~1 year)</td>
<td>54</td>
</tr>
<tr>
<td>Primary: 2-5 years</td>
<td>19</td>
</tr>
<tr>
<td>Primary: 6-9 years</td>
<td>14</td>
</tr>
<tr>
<td>Secondary</td>
<td>4</td>
</tr>
<tr>
<td>Religious school</td>
<td>8</td>
</tr>
<tr>
<td>Access to electricity</td>
<td>23</td>
</tr>
<tr>
<td>Access to improved sanitation</td>
<td>30</td>
</tr>
<tr>
<td>Access to improved water</td>
<td>84</td>
</tr>
<tr>
<td>Timads of land owned (1 timad=0.25 ha)</td>
<td>3 (2,6)</td>
</tr>
</tbody>
</table>
Dietary Diversity: Women & Children

Women

Children (6-36 months)

Mean DD: 2.7 in the last 24 hours (SD: 1.1)

Mean DD: 2.7 in the last 24 hours (SD: 1.4)
Nutritional Status

- Regional variation in prevalence of child undernutrition
- Anemia (adjusted for altitude and pregnancy status):
  - Women (18-49 years): 20%
  - Children (0-35 months): 51%
## Farm and Market Diversity

<table>
<thead>
<tr>
<th>Category</th>
<th>Median (Q1, Q3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food crop diversity (major season)</td>
<td>1 (1, 2)</td>
</tr>
<tr>
<td>Food crop diversity (minor season)</td>
<td>0 (0,1)</td>
</tr>
<tr>
<td>Livestock species diversity</td>
<td>4 (3, 5)</td>
</tr>
<tr>
<td>Market food diversity (village level)</td>
<td>5 (3, 8)</td>
</tr>
</tbody>
</table>

- Market diversity and agroecology are modifiers
## Chicken Production

<table>
<thead>
<tr>
<th></th>
<th>Mean or %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local chickens – quantity</td>
<td>5.2</td>
</tr>
<tr>
<td>Improved chickens – quantity</td>
<td>12.1</td>
</tr>
<tr>
<td>Household sold meat in the past 12 months</td>
<td>25%</td>
</tr>
<tr>
<td>Household sold eggs in the past 12 months</td>
<td>41%</td>
</tr>
<tr>
<td>Household's chickens produced eggs last week</td>
<td>47%</td>
</tr>
<tr>
<td>Number of eggs produced by the household's chickens last week</td>
<td>6.1</td>
</tr>
</tbody>
</table>
Corralling and Poultry-related WASH

Poultry Related WASH Characteristics and Corralling
ACGG Kebeles

Percent of HHs

No corral
Has corral
Has enclosed corral

Animal feces
Chickens entered house
Chickens slept in house

n=1231
Women’s Empowerment

Household participation in activities

- Use of eggs for home consumption
- Non-farm income activities
- Marketing eggs
- Marketing chicken
- Killing chickens
- Food expenditure
- Food crop production for home use
- Food crop marketing
- Daily activities for crops for sale
- Daily activities for crops for home use
- Crop production input use
- Chicken production input use
- Chicken production
- Cash crop marketing

% participating
■ Yes ■ No

In these households: Women’s participation

- Use of eggs for home consumption
- Non-farm income activities
- Marketing eggs
- Marketing chickens
- Killing chickens
- Food expenditure
- Food crop production for home use
- Food crop production for home use
- Daily activities for crops for sale
- Daily activities for crops for home...
- Crop production input use
- Chicken production input use
- Chicken production
- Cash crop marketing

% participating
■ Yes ■ No
Qualitative Study – Aims

• The qualitative study aims:

  (1) to understand the relationship between food consumption and exposure to contamination from poultry among children

  (2) to conceptualize the pathways through which a father’s involvement and knowledge can affect a child’s nutritional outcomes.
Qualitative Study – Design & Methods

Field:

- 8 In-depth interviews with men
- 12 in-depth interviews with women
- 4 Focus Group Discussion with men & women (separately) in region 1 (control)
- 4 Focus Group Discussion with men & women (separately) in region 2 (ACGG + NSI)
- 3 hours of direct observation of chicken interactions

Office:

Focus Group Discussion with the enumerators

- **Sampling of participating households is purposive based on:**
  - Region (Oromia and Amhara)
  - Treatment status (3 arms)
  - Age group of index child (6-18 and 18-36 months of age)
  - Female- or male-headed household
Thank You!