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

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Research Team

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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:

60 villages

Random selection

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
- Midline
- Endline
- ACGG begins chick distribution
- NSI implementation begins
- Seasonal Effects
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)

Nutritional status (anemia, attained growth)

Dietary Diversity

Modifier
# Data Collection (3 Languages)

<table>
<thead>
<tr>
<th>Household Head:</th>
<th>Woman of Reproductive Age:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household demographics</td>
<td>24 hr and 7 day recall of foods consumed</td>
</tr>
<tr>
<td>Housing and assets</td>
<td>Food expenditures</td>
</tr>
<tr>
<td>Crop production and inputs</td>
<td>Food insecurity</td>
</tr>
<tr>
<td>Livestock</td>
<td>WASH</td>
</tr>
<tr>
<td>Income and expenditures</td>
<td>Women’s decision-making and time use</td>
</tr>
<tr>
<td>Group participation &amp; sources of information</td>
<td>Group participation &amp; sources of information</td>
</tr>
<tr>
<td></td>
<td>Anemia and anthropometry</td>
</tr>
</tbody>
</table>

## Geolocation & Agroecology

<table>
<thead>
<tr>
<th>Index Child:</th>
<th>Village level survey:</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 hr and 7 day recall of foods consumed</td>
<td>Food availability and prices in local markets</td>
</tr>
<tr>
<td>Infant and young child feeding</td>
<td></td>
</tr>
<tr>
<td>Morbidity</td>
<td></td>
</tr>
<tr>
<td>Anemia and anthropometry</td>
<td></td>
</tr>
</tbody>
</table>
## Demographic Information

<table>
<thead>
<tr>
<th></th>
<th>Median (Q1, Q3) or Percentage (n=2117)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of household members</strong></td>
<td>6 (5,8)</td>
</tr>
<tr>
<td><strong>Female-headed household</strong></td>
<td>14</td>
</tr>
<tr>
<td><strong>Woman’s age</strong></td>
<td>35 (28, 40)</td>
</tr>
<tr>
<td><strong>Women’s education</strong></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><strong>Access to electricity</strong></td>
<td>23</td>
</tr>
<tr>
<td><strong>Access to improved sanitation</strong></td>
<td>30</td>
</tr>
<tr>
<td><strong>Access to improved water</strong></td>
<td>84</td>
</tr>
<tr>
<td><strong>Timads of land owned (1 timad=0.25 ha)</strong></td>
<td>3 (2,6)</td>
</tr>
</tbody>
</table>
Dietary Diversity: Women & Children

Women

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

Children (6-36 months)

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

Market diversity and agroecology are modifiers
# Chicken Production

<table>
<thead>
<tr>
<th>Description</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

- No corral
- Has corral
- Has enclosed corral

- Animal feces
- Chickens slept in house
- Chickens entered house

n=1231
Women’s Empowerment

Household participation in activities

In these households: Women’s participation
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!