Community Readiness to Address Food Security and Evaluation of Cowpea Intake of Weaning Infants in Dioro, Mali

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The state of health & nutrition in Mali

- 14% of children under five die from diarrheal disease
- Malnutrition/food insecurity concerns
  - 28% of children under five are stunted and 17% are wasted
  - Childhood micronutrient deficiencies:
    - 60% vitamin A deficient
    - 85% anemic

Study Site: Dioro Rice field at the time of Harvest

The Dioro irrigation scheme is based on manual opening of a series of gravity-fed wooden flood gates on the Niger River behind the Markala Dam.

It located at 280 Km from Bamako the capital city.
Rationale

• One of the MDGs target was to control malnutrition among children less than 5 years old, and Mali has high prevalence of malnutrition and diarrheal disease.

• Cowpea (Vigna unguiculata) is the most important food legume grown in the tropical Savanna zones of Africa.

• It is a highly suitable crop because of short growth cycle, and it matures early.

• Cowpeas are consumed during the end of the rainy season when food becomes extremely scarce, particularly in the Sahel regions, such as Mali.
Community Readiness Assessment prior to implementing clinical trial

1. Determine the readiness of the local community to address the issues of childhood diarrheal disease and food security
   a. 2 questionnaires: 29 questions (childhood diarrheal disease) & 30 questions (food security)
   b. Collect health & food behaviors/practices within the Dioro community
Dioro, Mali: health & food behaviors/practices

• **Most important thing(s) to reduce CDD?**
  – Hygiene/sanitation/Clean water
  – Doctor/medicine
  – Safe/nutritious food

• **Treatment of malnourished children?**
  – Nutritious foods (Plumpy Nut, eggs, milk, potatoes, fish broth)
  – Clinic/Health Center

• **Foods in a typical family meal?**
  – Rice, millet, To (sauce), peanuts, cowpea, couscous

• **Most important food component?**
  – Rice – easy to find and produced locally (highly accessible), part of the main meal

• **Interest to modify ingredients in traditional foods?**
  – Yes! – needs to elevate taste, improve health, well-informed
Objective

• The objective was to assess if cowpea, among other grains and local foods is being consumed during the infant weaning period.
  • Assess drinking water quality with rapid Ecoli field tests in homes of infants
  • Implement prospective dietary intervention trial from 6-12 months of age
Methodology (2)

• We trained 8 community health workers (CHWs) to visit daily each households who live the 50 babies enrolled in the study.
• The study protocol was approved by the Mali and CSU Institutional Review Boards.
Methodology (4)

• We utilized dietary questionnaires completed monthly by mothers and community health workers to determine how often and at what age weaning infants (ages 6-12 months) consumed cowpeas (among other foods) in the community of Dioro.
Results (1)

Consumption of Food in all groups

Legend
- Cowpea
- Millet
- Cow_milk
- Rice
- Fruits_Natural_Juices
- Chicken/Fish/Meat
- Vegetables
- Maize
- Eggs

Percentage of children in all groups

Age in Month
Results (2)
Consumption of the Food in Rice Bran Group
Results (3)
Consumption of the Food in Vitamin A Group

![Graph showing consumption of different foods over age in months. The x-axis represents age in months (6, 7, 8, 9) and the y-axis represents the percentage of children in the Vitamin A group consuming the food. The graph includes lines for Cowpea, Millet, Cow_milk, Rice, Fruits_Natural_Juices, Vegetables, Chicken/Fish/Meat, Maize, Eggs, and Cow_milk.](image_url)
Conclusion

• The study showed that the consumption of the cowpea in Dioro among the 50 babies enrolled varies monthly from 6% to 43.9%, it peaks after its harvest. The cowpea is also expensive and not intensely cultivated in Dioro as compared to the rice. In contrast, fish is consumed by all the 50 babies at 9 months old, fish is available from october to june.
Complex interactions to determine the health benefits of foods
Field E.coli testing in Drinking water from study participants homes
Acknowledgement

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Community Readiness Assessment

Reducing childhood diarrhea disease

Improving food security

Readiness Dimensions

Borresen et. al. in preparation