



Diversifying local diets

Nutrition education for mothers/caregivers improved the diversity of complementary foods of children in Western Kenya

In cooperation with



**JUSTUS-LIEBIG-
UNIVERSITÄT
GIESSEN**

INULA — Improving
nutrition through local
agrobiodiversity

- 2.5 year research programme (2012 – 2014) in Western Kenya
- Studied quality and accessibility of complementary foods in rural households
- Examined the availability and use of local agricultural biodiversity on smallholder farms
- Carried out four nutrition education sessions for mothers/ caregivers on diversifying complementary foods

Background

Malnutrition among children under five years is still a widespread problem in many developing countries. Worldwide, approximately 162 million children under the age of five years are stunted, in Kenya 35% of all children aged under five were stunted in 2008-2009 (Kenya Demographic and Health Survey).

While consuming a variety of foods is important for meeting essential nutrient requirements, traditional diets fed to children in many developing countries are based predominantly on starchy staples and include few or no nutrient

rich foods such as fruits, vegetables and animal source foods. During feeding infants and young children are often not encouraged to eat a sufficient amount and variety of foods which varies by age and breastfeeding status. In addition, even when food resources are available in the home, caregivers might not make the best use of them due to lack of knowledge of the best foods for young children, cultural beliefs and practices and inappropriate advice. Thus, lack of diversity next to inappropriate consistency, low nutrient den-

sity and quantity of foods is a major contributing factor to inadequate nutrient intake among infants and children during the complementary feeding period which is part of the widely recognized critical first 1,000 days. This lack of diversity has been attributed to both poor dietary quality, feeding practices and nutrition knowledge among the caregivers. Bioversity and its partners conducted a series of efficacy studies to assess the contribution of communication and behaviour change to improving infant and young child nutrition.



The study



Interview of mother in Teso district.

"We reach only mothers who come to the health facilities. We could reach out more but we need nutrition training ourselves and training aids."

Community Health Worker

The INULA – Improving Nutrition through Local Agrobiodiversity project was a 2.5-year collaborative research programme funded by the German Federal Ministry of Economic Cooperation and Development (BMZ) and the CGIAR Agriculture for Nutrition and Health Research Programme. It focused on improving dietary quality through agricultural biodiversity in collaboration with the University of Giessen, Germany, Kenyatta University, Nairobi, Kenya, district community health workers and the target community members in

Western Kenya.

The study examined the quality and accessibility of complementary foods suitable for infants and young children aged 6 months to two years in Western Kenya to see if the use of diverse locally available foods could improve the dietary quality and in turn the nutrition and health of the target groups.

Agricultural biodiversity comprises a vast array of plant and animal, cultivated and wild species. Many of the species and their varieties or breeds have high nutritional

significance and which, if made available and used effectively, could contribute considerably to the dietary diversity and quality during all seasons of the year.

To understand the use of local agricultural biodiversity in diets, nutrition surveys were carried out at the household level to understand the current composition of the diet and its nutritional value. Nutrition education was targeted to the mothers and caregivers in half of the 40 villages that participated in the project by working closely with local community health workers.

The nutrition education sessions

A total of four nutrition education sessions were carried out with up to 15 caregivers in 20 intervention villages. Prior to the commencement of the nutrition education sessions, community health workers' nutrition knowledge was assessed and they received participatory training on how to train mothers on different nutrition topics. The nutrition education was then conducted in cooperation with the respective community health worker in each village.

Session 1 was based on available teaching material on Infant and Young Child Feeding from UNICEF/USAID that emphasized the importance of breastfeeding and complementary feeding and typical complementary foods for different age groups.

Session 2 was designed using FAO training material focusing on addressing challenges in feeding practices identified in the nutrition and agriculture baseline surveys. Here, the importance of a diverse and balanced diet was highlighted. This session introduced also the concept of the food circle (FAO) and a seasonal food availability calendar for each district. It promoted the integration of locally available agrobiodiversity into diets and included a cooking demonstration.

Session 3 reviewed the first and second sessions followed by practically preparing nutritious and diverse meals for children aged 6-23 months and included another cooking demonstration on how to prepare nutritious complementary meals using a variety of locally available foods. For this only foods which were brought by the caregivers and were, thus, available in the village were used.

Session 4 addressed how to obtain and prepare safe, adequate (quantity and texture) and nutritious (quality) meals for infants and children 6-23 months. Foods that mothers may use to enrich the diet were discussed. Different ways to improve budgeting for food to get the best value for money and still prepare nutritious complementary foods were shared with caregivers as well as how families can increase the types and amount of locally available and nutritious foods for use in complementary feeding.



Participatory cooking of complementary foods

Major findings

1) The nutrition education intervention motivated the caregivers to improve the diversity and quality of complementary diets by using local food resources. As shown in Figure 1, at the end of the project (after the nutrition education was finished) more infants and children in the intervention group were consuming foods from the food groups fruits and vegetables, dairy products, legumes and nuts. However, low consumption of animal source foods, especially flesh meats (beef, poultry, fish etc.) and eggs, still persisted despite the additional training.

2) Infants and children 6-23 months received a more diverse diet after their mothers had been informed about better food choices. This was reflected in the dietary diversity scores whereby infants and children in the intervention group increased their score over the study from 3.5 to 4.2 food groups per day and the controls dropped from 3.5 to 3.3. The change in the intervention group was statistically significant ($P=0.001$) (Figure 2).

3) The nutrition knowledge of caregivers also improved as shown by a knowledge score reflecting the knowledge about three key nutrients. While the mean score (range 0-21) increased in the control group from 2.7 to 3.7 it increased in the intervention group from 3.1 to 8.2. Yet, it did not have a direct and significant effect on the dietary diversity score of children. While increased nutrition knowledge is an important factor, on its own it cannot lead to changes in behaviours but motivation/ incentives to change behaviours seem to be similarly significant.

4) Community health workers were highly motivated to pass on nutrition knowledge, yet, they received little or no training so far on human nutrition and had no reference or training material.



Nutrition education participants sticking food pictures to a food circle in Busia

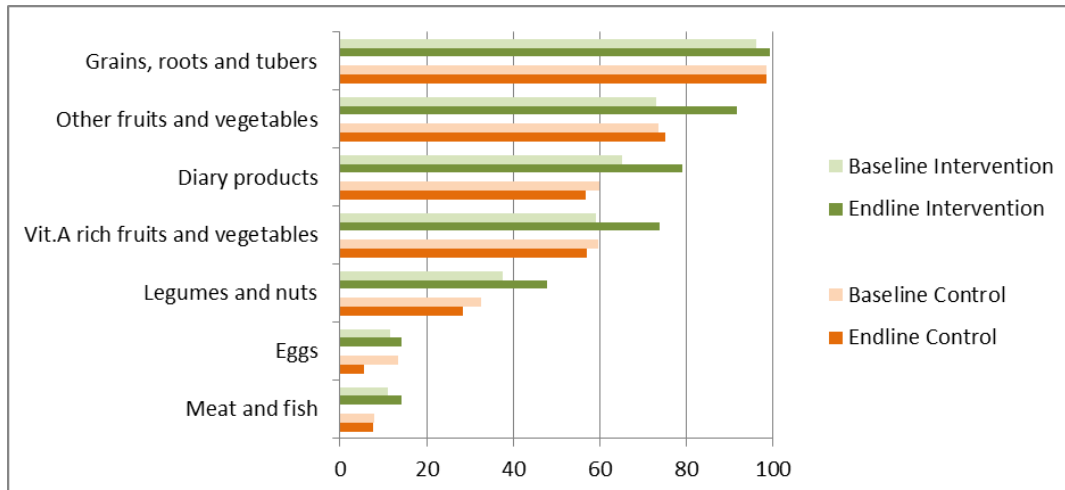
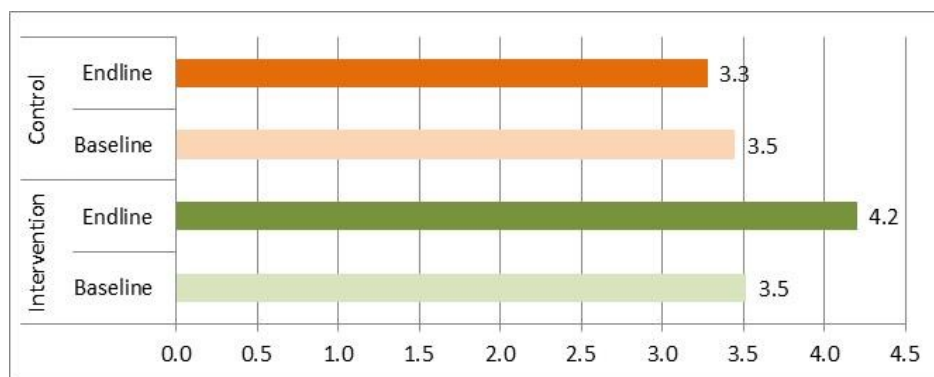


Figure 1

Percentage of infants and children aged 6-23 months who consumed foods from different food groups during the previous 24 hours at baseline (July/August 2012; $n=400$) and endline (July/August 2013; $n=407$) in the intervention villages (received nutrition education) and control villages in Western Kenya

Figure 2

Child Dietary Diversity Score (range 0-7 food groups) of infants and children aged 6 to 23 months showing the number of different food groups from which foods were consumed during the previous 24 hours; data shown for baseline ($n=400$) and endline ($n=407$) in intervention villages (received nutrition education) and control villages in Western Kenya



Summary of findings and recommendations



Community health worker teaching mothers during pre-test in Busia

- ✂ It is possible to improve the quality of the diet provided to infants and young children using combinations of local foods.
- ✂ Nutrition education in this study successful led to an increase in the diversity of children's diets, therefore it is suggested that nutrition education needs to receive more attention as part of a nutrition behaviour strategy.
- ✂ While community health workers in Kenya as elsewhere are important for the outreach to individual community members, they lack knowledge on nutrition – training community health workers would be a very efficient way to spread important nutrition information.
- ✂ As increased nutrition knowledge was not found to have a direct and significant effect on children's dietary diversity score, there may be additional benefits to nutrition education, such as providing motivation to change practices. Further research is needed to test if nutrition education may be more effective when it is combined with other strategies that enhance accessibility to affordable, culturally acceptable, nutrient dense foods, for example, when it is combined with agricultural activities.

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