IMPROVING NUTRITION IN EAST REGION, CAMEROON

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**Background**

Malnutrition is prevalent in much of the Congo Basin including in Cameroon. Over the last ten years, Cameroon has experienced a decrease in child malnutrition (stunting and wasting) nationally, but this is not the case in all of its regions. Particularly in the East region of Cameroon, malnutrition remains extremely high. The East region is rich in forests and freshwater sources, making its high rate of malnutrition somewhat puzzling.

Previous research has established a correlation between proximity to forests and improved dietary diversity in sub-Saharan Africa. Other studies have also found that many forest foods are rich in commonly limited micronutrients. Malnutrition is not only a result of poor diets, but particularly in children, also an outcome of poor care practices and infection.

In 2018-2022, as part of the Governing Multifunctional Landscape Project funded by the European Union, CIFOR-ICRAF in partnership with FOREP, University of Yaounde I, University of Dschang, University of Buea, and Virginia Tech University, carried out a study to better understand the causes of food security and nutrition in forested areas in the Congo Basin and to pilot some solutions. The project was carried out in two sites in Cameroon and two sites in the DRC, but this brief focuses on the activities and results in the Cameroon site.

**Method**

We worked in two sites in Cameroon, which were located in the far east of the country near the border with the Central African Republic. One site was a cluster of 15 villages around the town of Ndelele and the second site was a group of seven villages bordering the Boumba Bek national park.

The study sites were selected based on two main criteria - proximity to a major river and location in a forested area. Our first objective was to understand how people use the natural environment to meet their nutritional needs and how this can be reconciled with the high reported rates of malnutrition. The second objective was to use the information from the research to design pilot interventions to address the main nutritional challenges facing the communities and particularly young children.

With the aim to identify knowledge and practices around diets and WASH behaviors, we conducted focus group discussions to understand local dietary patterns, seasonal availability of different types of foods; perceptions of nutritious foods, food taboos, sources of available water, and use of toilets. We also surveyed 1009 mothers(or caregivers) of children under five in the rainy season (with a repeat for 818 in the dry season); the survey included socio-demographic questions, questions about WASH practices, as well as a 24 hour dietary recall survey of the foods that she and one of her children ate the day before the survey. In addition, we carried out an anthropometric survey of the women and...
children (weight, height/length, and mid upper arm circumference) and a parasitological analysis of children’s stools.

Figure 1: Map of Cameroon showing East region in green and the two sites in which the project was carried out.
Main results

The results of the study showed extremely high rates of chronic malnutrition with 43% of children under five in Ngatto Nouveau and 48% of children in Ndelele stunted (too short for their age). This is usually a sign of poor diets characterized by inadequate intake of key nutrients and/or high rates of infections.

Neither mothers nor children were eating a minimum diversity of foods. Nutritionists recommend that adults eat from at least five different food groups per day and that children eat from at least four. We found that 92% and 86% of mothers and 80% and 67% of children did not meet these recommendations in the Ndelele and Ngatto Nouveau sites, respectively. We also found that mothers consumed an average of 157 and 162 grams of fruits and vegetables while children consumed an average of 99 and 85 grams in the Ndelele and Ngatto Nouveau sites, respectively. The World Health Organization recommends that people consume at least 400 grams of fruits and vegetables a day.

98% of the households in Ndelele and 94% in Ngatto Nouveau did not treat their water before drinking. Untreated water is a major source of infections and makes people, especially children, sick.

A majority of the adults in Ndelele (64%) did not use toilets, while slightly more than half (57%) of the adults in Ngatto Nouveau used toilets. Furthermore, a majority of the households (56%) in Ndelele did not wash their hands with soap after using the toilet. This increases the risk of many diseases like diarrhea,
typhoid, cholera and hepatitis. In the Ndelele site where the infection study was carried out, of the 304 children who participated in the study, 203 (66.8%) were positive for one or more intestinal parasites. Double and triple infections were also common. About 11% of the children were infected by two or more intestinal parasites concurrently. Also, 75% of children were suffering from anemia probably due to a result of high levels of infections and poor diets.
Restitution & pilot interventions

The project team organized restitution meetings in all 15 villages where the results from the research were shared with the whole village and recommendations were offered in August 2020.

We selected six villages out of the 15 study villages and invited interested women from each village to form a group of 10-15 persons. We decided to only work with women because they were the ones directly involved in decision making about food in the households. The project team and the pilot group participants together discussed the issues revealed by the survey, e.g., lack of dietary diversity, particularly over-reliance on cassava as the staple food, low consumption of fruits and legumes, and poor hygienic practices, etc. Together, the project team and the group participants crafted relevant interventions to address the identified nutritional challenges. The interventions were designed to improve both diets and WASH practices.

We used a participatory approach in first identifying barriers to eating healthy foods, barriers to owning pit toilets and barriers to hand washing practices and then worked together to find possible solutions. Women were highly engaged in the activities because they proposed solutions to their own problems. For example, the participants suggested that they needed pit toilets but their challenge was in putting a concrete slab because they didn’t have the means or expertise. They were used to using wood, which rotted quickly because of the heavy rains in the region. They were tired of digging new toilets.

The project team helped to overcome this barrier by providing some of the material (cement, rods, and technician) while the group member’s husbands provided stones, sand, and manual labor for digging the latrines. We then saw a major decline in open defecation among group members from 80% to zero. We also found that although women grew maize, they did not eat it, but instead sold it or used it to brew alcohol. After introducing a recipe for a maize and soy porridge especially suitable as a complementary food for young children during one of the cooking demonstrations, the women explained that they were unlikely to make the recipe because they were not able to grind maize in the village.

They suggested that having access to a mill would enable them to grind the maize and soybeans necessary to prepare the porridge. The project was able to procure a mill, which was installed in one of the villages and is managed by a village committee, who have set fees to cover costs of maintenance. This has enabled community members to use the maize that they grow for their families’ consumption and not just for sale or alcohol.
INFO-BRIEF: IMPROVING NUTRITION IN EAST REGION, CAMEROON

Dietary Interventions

To diversify diets and improve food security, the women requested red-kidney beans seeds which the project provided. The project also recommended soybean seeds to improve intake of protein especially for complementary foods for children as they are weaned. The team prepared some dishes using soybeans which the group participants enjoyed and decided to try to grow.

We held cooking demonstrations using locally available foods to create new recipes. A total of six recipes were shared with the groups. Most of them have been adapted by the groups and adopted.

We carried out nutrition education on the importance of fruits and vegetables. We discussed with the groups which fruits they would like to grow more of and the groups chose papaya since it fruits year round. A nursery for papaya was established and seedlings were given to each group member.

We discussed the importance of eating vitamin A rich foods which we saw from the surveys was not being consumed in sufficient quantities to meet WHO recommendations. In addition to the papaya which is rich in vitamin A,
we also provided orange fleshted sweet potato vines which are very high in vitamin A.

A palm nursery was constructed in one of the villages with over 1000 oil palms. Each group member received five palm plants which will provide enough red oil palm for their households. Red palm oil is a very rich source of vitamin A.

**WASH activities**

We carried out education on the importance of using toilets and the problems associated with open defecation with women and children at schools. The project and the group members’ households constructed toilets for their families in a partnership arrangement in which the families shared 40% of the costs and provided the labor for construction.

We also conducted hand washing education in four schools with over 300 children who were educated on proper hand washing techniques. And we installed hand washing points at these schools.
Chronic malnutrition can result from both poor diets as well as infection. The two can also interact with poor diets affecting immunity and susceptibility to infection and infections causing weak appetite and affecting absorption of nutrients. Our pilot interventions targeted both the immediate causes of chronic malnutrition by providing access to pit toilets to reduce infection and by sharing information about healthy diets and promoting consumption of nutrient-rich available foods through new recipes.

The interventions were not all immediately successful and sometimes required adjustment. Some of our interventions were related to agriculture and so, it meant exercising a lot of patience. For example, some women only had a good harvest after the third round of planting beans/soya/sweet potatoes either because of delayed rains or as they had to become familiar with the requirements of the new crops. Therefore, it was vital to encourage them each time.

Changing dietary practices often takes time as people’s palettes and daily practices adjust to eating new foods or foods prepared in new ways. The successful adoption rates of some of the nutrient rich recipes introduced by the project is a very promising start to healthier diets as is the interest shown by other community members in growing the soybeans, red kidney beans, and orange fleshy sweet potatoes promoted by the project. The cultivation of these crops has expanded beyond the pilot groups as members have shared seeds with interested neighbors. While this is happening organically in the community, because the initial pilot groups were small, this process could be expedited with very little increased support.

We recommend the following:

1. **Educating stakeholders that poor nutrition is not only a result of poor diets, but also of Infection.** Thus, sources of infection need to be addressed, especially access to pit toilets and clean drinking water. In addition, education in basic WASH practices is vital at the individual level.

2. **Promotion of beans, soybean and groundnut production and consumption.** Although animal source foods are highly recommended as nutrient rich sources of bioavailable nutrients, plant based leguminous foods are also important sources of protein and minerals. While animal source foods are still very important, due to overhunting and overfishing, these foods have become less available. Thus, red kidney beans, soybeans and groundnuts can help to provide some of these important nutrients to fill in the ‘gap’. At the same time, because they are leguminous crops, they can also help to enrich the soils over time and to make other crops more productive.

3. **Installation of equipment to enable community members to process foods such as maize, which are already being grown, but are not being used optimally due to difficulties with processing.**

4. **Promotion of dietary and staple food diversity using local foods as much as possible, but also introduction of new foods that can be grown locally.** Such foods need to be tried by community members and discussions need to be held...
to ensure that they are desired. Only if the members are interested should they be introduced. In the areas where we have carried out our project, current local dietary patterns are not sufficient to enable people to meet recommended daily intakes for some nutrients, thus new foods and new recipes are critical in improving nutrition.

5. **To extend the activities of this pilot project to more community members and to a larger area.** Expanding to a health administrative area with government baseline data on malnutrition would allow for a rigorous evaluation of intervention impacts on malnutrition that could be then used for advocating the incorporation of such activities into wider programming.
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