

Research Application Summary

**Knowledge dissemination on improvement of traditional complementary foods for proper child feeding**

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**Abstract**

Traditional complementary foods in most sub-Saharan African countries are deficient in protein, essential minerals and vitamins resulting into sub-optimal growth and increased premature deaths among children below five years of age. Poor quality of complementary foods is a long term problem in Tanzania where most children are born with the recommended weight but retard in growth after the introduction of complementary foods. On the other hand, there is a significant association between low maternal literacy and poor nutrition status of young children, aged 3–23 months old. A community-based field attachment program (cFAPA) was carried out to enlighten the Kagera rural mothers and caretakers on improvement of locally made complementary foods using available technologies and resources. The five months program focused on knowledge dissemination through meetings, trainings, outreach and radio programs in Muleba and Kagera rural districts. Demonstrations on preparation methods for the locally available foods to fit child feeding were performed where blanching and germination techniques were introduced. These were based on indigenous technology which is cheap and easy to adopt, effective in nutrients' retention, increasing bioavailability of nutrients and reducing bulkiness. Villagers were eager to understand the underlying causes for high stunting rates in their region despite food availability. Some challenged the use of longhorn grasshopper (senene) to children worrying that it may cause diarrhea for its high fat content and to pregnant women worrying that it may result in overweight babies, leading to complications at delivery. Community health workers were encouraged to collaborate with members of the community in reporting mothers/caregivers who knowingly ignored proper child feeding principles leading to malnourished children. Dissemination of child feeding research findings proved to have the potential for behavioral change and positive impact in reduction of malnutrition rates.

Key words: Grasshopper, Kagera, nutrition, senene, Tanzania

**Résumé**

Les aliments complémentaires traditionnels dans la plupart des pays d'Afrique subsaharienne manquent de protéines, de minéraux essentiels et de vitamines, ce qui entraîne une croissance sous-optimale et une augmentation des décès prématurés chez les enfants de moins de cinq ans. La

mauvaise qualité des aliments complémentaires est un problème à long terme en Tanzanie où la plupart des enfants naissent avec le poids recommandé mais retardent leur croissance après l'introduction d'aliments complémentaires. D'un autre côté, il existe une association significative entre le faible niveau d'alphabétisation de la mère et le mauvais état nutritionnel des jeunes enfants âgés de 3 à 23 mois. Un programme communautaire d'attachement sur le terrain (cFAPA) a été mis en œuvre pour éclairer les mères et les aide-soignants de Kagera sur l'amélioration des aliments complémentaires fabriqués localement sur base des technologies et ressources disponibles. Le programme de cinq mois était axé sur la diffusion des connaissances à travers des réunions, des formations, des programmes de sensibilisation et de radio dans les districts ruraux de Muleba et de Kagera. Des démonstrations sur les méthodes de préparation des aliments localement disponibles pour s'adapter à l'alimentation des enfants ont été effectuées, où des techniques de germination ont été introduites. Celles-ci reposaient sur une technologie indigène peu coûteuse et facile à adopter, efficace pour la rétention des nutriments, augmentant la biodisponibilité des nutriments et réduisant leur volume. Les populations locales étaient impatientes de comprendre les causes sous-jacentes des taux élevés de retard de croissance dans leur région malgré la disponibilité de la nourriture. Certains ont contesté l'utilisation de la sauterelle à longues cornes (« sénééné ») aux enfants craignant qu'elle puisse causer de la diarrhée en raison de sa teneur élevée en graisses et aux femmes enceintes craignant que cela puisse entraîner des bébés en surpoids, entraînant des complications à l'accouchement. Les agents de santé communautaires ont été encouragés à collaborer avec les membres de la communauté pour dénoncer les mères / tuteurs qui ignoraient sciemment les principes appropriés d'alimentation des enfants conduisant à des enfants souffrant de malnutrition. La diffusion des résultats de la recherche sur l'alimentation des enfants s'est avérée avoir un potentiel de changement de comportement et un impact positif sur la réduction des taux de malnutrition.

Mots clés: sauterelle, Kagera, nutrition, sénééné, Tanzanie

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## Background

Child feeding is an essential foundation of a healthy and productive life. Following the six months of exclusive breastfeeding initiated right from birth of a child is the period of complementary feeding. This is where a child is introduced to foods other than breastmilk. It is a period of child growth in which protein, energy and micronutrient needs are high (Mosha *et al.*, 2000). Poor quality of complementary foods is a long term problem in Tanzania. Most children are born at recommended weight. However, evidence shows that growth starts to retard after the introduction of complementary foods. THDS (2016) reports that 92% of the complementary foods used in Tanzania are porridges made from single or mixed cereal grains. Children from low wealth quintile households are the victims of these cereal porridges as most of these households cannot afford animal protein (Muhimbula *et al.*, 2011).

The use of locally available edible insects as a protein and energy dense ingredient in enriching plant-based complementary foods in Tanzania proved improvement of the traditional complementary foods useful to the poor resource farmers (Mmari *et al.*, 2017). A community-based field attachment program (cFAPA) was carried out to disseminate knowledge on the use of edible insects in complementary feeding (Mmari *et al.*, 2016). The program focused on educating the Kagera rural mothers and caretakers on improvement of locally made complementary foods using available technologies and resources.

## Literature Summary

The problem of under-nutrition is traced from early days of a child life and prevails as a result of inadequate breastfeeding and poor complementary feeding (THDS, 2016). Lack of maternal education is among the determinant factors of a child's nutritional status, other factors being poverty, mothers' education and literacy. A number of studies report a significant association between low maternal literacy and poor nutritional status of young children, aged 3–23 months old. It has further been observed that the introduction of complementary foods to infants at an appropriate age (6 months) improved when mothers were educated (UNICEF, 2015).

Majority of locally formulated complementary foods, as well as some commercial complementary foods in Tanzania markets do not meet the quality attributes especially in terms of energy and micronutrient density as per Tanzania Bureau of Standards (TBS, 1984) standard number TZS 180:2014. While assessing complementary feeding patterns among children aged 3 to 23 months in Kilosa district of Morogoro region, Mamiro *et al.* (2004), reported plain maize porridge, finger millet, rice and peanut composite flour porridge as main complementary foods given to children in the district.

## Program rationale and objectives

The cFAPA was implemented in Kagera and Morogoro regions of Tanzania for five months. Kagera region is among the three regions reported to have stunting rates above 50% (UNICEF, 2015; THDS, 2016). The program focused in Muleba and Kagera rural districts, where the edible longhorn grasshopper *Ruspolia differens* harvesting and enterprise is endemic. Knowledge dissemination was through meetings, trainings, outreaches and radio programs. These involved community health workers (CHWs), District Nutrition Officers (DNUOs), Village Executive Officers (VEOs), secondary school students and mother/caregivers child pairs. The program was set up with three specific objectives. (i) conducting outreaches, trainings and demonstrations to mothers and CHWs on nutritional importance, proper processing methods and application of senene in formulation of complementary foods, (ii) conducting trainings and demonstrations on formulation of standard nutritious complementary flour to mothers and small scale complementary flour processors, and (iii) presentation of radio programs on appropriate complementary foods for children below five years of age.

## Results and discussion

The thirst for knowledge and readiness to learn was high for all stakeholders. Upon learning about alarming child nutritional status in their region, community health workers and village officials collaborated with the program through mobilizing their community members. Though eaten as delicacy for many years, Kagera natives had never thought of using edible insects in child feeding. The experience of grinding longhorn grasshoppers using traditional mortar and pestle to obtain porridge flour for child feeding was accepted and adopted. It was observed that the region had plenty of nutritious foods fit for complementary feeding but the community had no tradition of using them for child feeding. Some of these included orange fleshed sweet potatoes, soybeans, amaranth grains and leafy vegetables. Demonstrations on preparation methods for these foods to fit child feeding were performed where blanching and germination techniques were introduced. These were based on indigenous technology which is easy and cheap to adopt, effective in nutrients' retention, increasing bioavailability of nutrients and reducing bulkiness.

A radio program opened a room for live questions and answers where most radio listeners were eager to understand the underlying causes for high stunting rates in their region despite food availability. Some challenged the use of longhorn grasshopper to children worrying that it may cause diarrhea for its high fat content and to pregnant women worrying that it may cause them a big baby leading to complications in delivery. Community health workers were encouraged to collaborate with members of the community in reporting mothers/caregivers who knowingly ignored proper child feeding principles leading to having a malnourished child.

## Conclusion

Proper child feeding with right complementary foods was found to be the issue of public concern. Preparation of locally available foods for complementary feeding using the simple technologies introduced by the project was well accepted and adopted. Dissemination of child feeding research findings proved to have potential for behaviour change and positive impact in reduction of malnutrition rates in the region.

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