Cowpea-based Feeding Study Offers Hope to Malawi's Children

Results from a year-long study on replacing complementary foods for infants in Malawi with a cowpea-based formula offer hope for reducing malnutrition and stunting in young children in developing countries. Stunting has been identified as the single biggest cause of child morbidity with effects lasting a lifetime, including 22 percent less life income, 17 percent reduced life expectancy, decreased likelihood of attending high school, and greater likelihood of developing chronic diseases, such as diabetes and heart disease. Forty-six percent of Malawian children suffer from stunting.

Mothers wait with their children participating in the study for measurements and weight to be taken.

In rural Malawi, children between the ages of six and 12 months normally transition from exclusive breastfeeding to mixed feeding with complementary foods. In traditional sub-Saharan African societies, complementary foods are dominated by monotonous, protein-poor, and micronutrient-poor starches, such as maize, cassava, and sorghum. Consequently, transitioning babies struggle to get the proper protein and nutrients they need to grow.

One-year-old Chisomo illustrates this trend. Although he is eating, Chisomo's mother Aisha has noticed he has been sleepier than usual and has decreased his time playing with his siblings. What Aisha doesn't realize is that Chisomo is in need of more nutrient-dense food to support his rapid growth than the traditional *Nsima*, a thick corn-based porridge, can provide.

Chisomo's health is deteriorating, and soon he will become, like too many other Malawian children, malnourished and stunted.

Physicians and scientists working with these populations have noted that stunting begins to occur shortly after the transition away from exclusive breastfeeding and increases progressively during the first several years of life, which let them to question whether a more nutrient-dense complementary food might help reduce stunting. They initiated a project with the Feed the Future Innovation Lab for Collaborative Research on Grain Legumes, led by Michigan State University, to learn what available foods might be fed to these children to improve their nutritional intake, choosing cowpea due to its 26 percent protein content (three to four times greater than corn) and richness in dietary fiber, starch, minerals, vitamins, and antioxidants. Cowpea also grows well in Malawi and is a hardy, drought-tolerant crop.

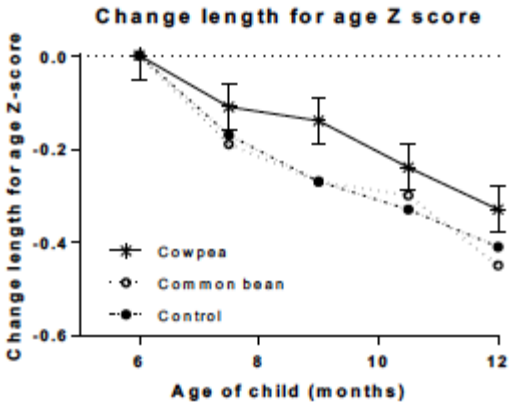
Infants receiving their cowpea-based flour for the next testing interval.

Project researchers first tested cowpea flour-based recipes to ensure they not only met World Health Organization (WHO) guidelines but appealed to infants and young children. The final recipe, tested on

more than 100 infants, used roasted cowpeas milled to a flour that infants loved. Using a corn-soy blend similar to *Nsima* as a control, they then conducted a randomized, double-blinded controlled clinical study to see if growth were better among infants fed the cowpea-based formula versus the control.

Because the infants and young children liked the cowpea-based foods, compliance was 98 percent, producing a very reliable assessment of its effect. The study was conducted in 17 villages in Southern Malawi between July 2015 and October 2016.

In order to measure outcomes, length and weight measurements were taken at regular intervals over a six-month period. A child is considered stunted when their length is less than the fifth percentile. In this carefully conducted randomized trial, cowpea reduced stunting among these children. The benefit particularly accrued from six to nine months. The grain legume cowpea as a complementary food in these children was shown to prevent stunting!



Test outcomes indicated that cowpea-based formulas provided the greatest protection against stunting in six- to 12-month-old children.

For families in Malawi to reduce stunting in infants, especially during the six-to-nine-month age, preparing cowpea flour porridge for infants is a viable option, even a key piece of the puzzle. As researchers continue to evaluate the potential role of cowpeas and other grain legumes in other aspects of infant health, hope is rising in rural Africa.

And Chisomo loves his cowpeas.