

Harnessing local foods for infant nutrition

Malnutrition remains a significant concern for the health and development of children in developing countries. In Bugiri district, Eastern Uganda, World Vision programs - led by a group of caregivers - are actively tackling this challenge through innovative approaches such as Positive Deviance Hearth sessions and Nurturing Care Groups. Despite limited financial resources, caregivers are making remarkable progress in combating malnutrition by enhancing children's nutrition with locally sourced food options.

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As we walk to our meeting place, we're greeted by a lovely sight: parents feeding around 14 children, aged one to five. We are in the middle of a banana plantation, with a single traditional Ugandan hut that makes up a homestead. It is here, under the shade of the banana plantation leaves, that members of the Bulidha Parish Group hold their weekly Positive Deviance (PD) Hearth sessions.

The sessions, facilitated by World Vision Uganda, involve training caregivers in child care and appropriate feeding practices. This particular group is found in Bulidha Parish located in Nakyerike village, Bugiri district, in Eastern Uganda. Fred Kigenyi, a member of the Village Health Team (VHT), and Sajidu Obugu, the health assistant, provide support to the group.

Amidst the plantation, an interesting revelation emerges: each group member had a child who suffered from malnutrition. Through sensitisation from the PD Hearth sessions, solutions were found. 20-year-old Hafuswa Naitebe explains; 'We use locally avail-

able foods to make this porridge, which we feed children under 5 years, three times a day, for 12 consecutive days. This period allows us to monitor changes in their health.'

Naitebe joined the group after her child stopped breastfeeding suddenly. After a hospital visit, the doctor diagnosed the child with malnourishment. 'I took my child to different clinics, but they only prescribed malaria medicine without any diagnosis. After learning about the malnourishment, I started feeding him this porridge,' she explicates. 'After twelve days of rehabilitation, the VHT assured me of my child's recovery. His weight significantly increased from seven to fifteen kilogrammes.'

The energy-dense and nutrient-enriched porridge is made with various local foods like millet flour, sorghum, roasted soya, silverfish, fish, meat, eggs, vegetable oil, and ground nuts; all suitable for babies. Madina Namuluba, 23, noticed her one-year-old child losing hair, swelling, turning yellow, experiencing diarrhoea, and having a reduced appetite.



A mother serving energy-dense porridge to children in Bulidha

'When my child's hair started turning yellow, I visited the doctor twice, but the prescribed medication did not work. The doctor then suggested I join a group where they would teach us how to prepare 'ekitobelo' (a balanced meal). I agreed and joined the group.'

According to Namuluba, the training involved cooking demonstrations for infant meals. 'When I started preparing these meals for my child, his health improved. Today he weighs thirteen kilogrammes, compared to six before. It has been a year since. I noticed the changes after twelve days of feeding him the porridge, and continued with balanced meals.'

Through the PD Hearth sessions, parents learn how to care for and prepare balanced meals for infants and their families. Members are organised into groups and collect various foods like millet flour, sorghum flour, maize flour, sweet potatoes, cassava, eggs, cooking oil, Irish potatoes, 'matooke', silverfish, and vegetables.

Through the PD Hearth sessions, parents learn how to care for and prepare balanced meals for infants and their families

After collection, they prepare an assortment of foods, which are then mixed and fed to the children. They gain knowledge about cooking different foods, portion measurements, and the importance of food groups for children's growth. This knowledge is shared with the community, regardless of group membership.

Furthermore, members are taught about the three essential food groups: body-building (proteins), energy-giving (carbohydrates and fats), and protective foods (vitamins and minerals) that should be included in children's daily diet for proper growth and development.

They also learn to use affordable local protein-rich foods like soybeans, beans, chicken eggs, and silverfish as substitutes for expensive meats and fish. Combating malnutrition goes beyond a balanced diet and three meals a day. The community members now have the knowledge to address the root causes, starting with hygiene.

Today, they have improved sanitation by setting up plate stands, rubbish pits, and latrines. They proudly showcase clean compounds and the drainage of stagnant water. Naitebe and Namuluba, like other members, learned about the PD Hearth sessions from the VHT. During routine checkups on pregnant women, the VHT informs them about training focusing on the well-being of pregnant women and lactating mothers.

Challenges persist, with prioritisation being the most significant. Financial constraints force families to choose between basic needs, education, and purchasing high-end nutrients for a balanced diet. However, communities recognise and acknowledge the importance of good nutrition for the health of their families and children.

An integrated approach to combat malnutrition

Household food shortages, poor nutrition, and limited access to healthcare may seem like urgent problems that families should address by growing their food. Unfortunately, in Bugiri district, poverty drives the majority to lease family farming land for sugarcane planting instead of domestic farming for food and nutrition security.

This contributes to the persistent issue of malnutrition in the district. According to 2020 global statistics, approximately 149 million children under the age of five are stunted, 45.4 million are wasting (too thin for their height), and 38.9 million are overweight. The prevalence of malnourished children is highest in East Africa, at 39 percent.

Uganda has one of the highest rates of malnutrition, with three out of ten children under the age of five being stunted and 3.5

percent wasting. In Busoga Sub Regions, a study among households with children under five found prevalence rates of stunting (33.3%), underweight (27.4%), and wasting (18%). The percentage of malnourished children increased with the number of children in the households. There is also a high prevalence of malnutrition and household food insecurity in the sugarcane-growing communities of east-central Uganda (Lwanga, Wanyenze, Matovu, and Orach, 2015).

It is against this background that World Vision focuses on health programmes through Nurturing Care Groups and Positive Deviance Hearth Sessions in Bugiri district. According to Daniel Martin Kizza, a Project Officer of Health and Nutrition in the Nabukalu area programme; 'Due to high poverty levels in Busoga sub-region, most people have decided to hire out their land for as low as USD 290 annually per hectare for sugarcane planting instead of growing food to feed their families. This is why there is a high prevalence of malnutrition.'

In the effort to reduce malnutrition in the district, World Vision is implementing Health and nutrition in the Nabukalu sub-county. This is alongside a two-year Pfizer district-wide grant funded by the Pfizer Foundation, which is implementing ICCM and PD Hearth led by Isaac Charles Baigereza.

In 2019, the Nabukalu Area Programme, funded by the Australia World Vision Support Office, started implementing the Nurturing Care Group model. This model addresses issues around poor infant and young child feeding (IYCF), home management, and care-seeking for sick children—and promotes disease-preventive actions. It also addresses poor early child development, stimulation practices, water collection, storage, treatment, hygiene, and sanitation practices.

The PD Hearth programme was implemented in 2022 as part of the Pfizer Foundation project. The programme integration involves the collaboration of various technical programmes (Health, Nutrition and WASH, Child Protection, Literacy Improvement, and Community Engagement and Sponsorship). The goal is to transform the lives and well-being of vulnerable children and their families holistically. For example, health and nutrition efforts aim to ensure well-nourished children are protected from infections and diseases through meaningful community engagement.

Baigereza says the goal is to end malnutrition and stunting in infants by focusing on mothers' lifestyles before conception. 'If a mother is malnourished, it can lead to undernourishment in the newborn and long-term malnutrition and stunting. In other words, they do not attain the required height for their age. That is why these programmes were implemented to sensitise, educate and promote good feeding habits for both mothers and babies through local solutions.'

Today, the numbers tell a story of positive change. In 2022 during an initial assessment carried out in the sub-counties of Busoga, Bulidha, and Bulesa, 253 children were screened using a Mid Upper Arm Circumference (MUAC) tape. Nine percent were found to have severe acute malnutrition, eleven had moderate acute malnutrition, and nineteen suffered from mild acute malnutrition.

Of the 163 children that were rehabilitated in PD Hearth sessions, 67 suffered from acute malnutrition and the rest were at risk. 'After twelve days, the number of acute malnutrition reduced to forty-eight. After three months, a follow-up assessment revealed only 34 still suffered from acute malnutrition,' says Baigereza. 'In June and July 2023, more children were rehabilitated in the same sub-counties: 166 in Bulesa, 173 in Bulidha, and 181 in Busoga.'

Nurturing Care Groups – a tale of lead mothers

We cross into Nabukalu from Bulidha to meet with members of the 'Amagezi Bwe Bugagga' (knowledge is wealth) Care Group. Here, the success tale of lead mothers resonates—women trained by World Vision Uganda to educate mothers in preparing mixed foods, 'ekitobelo', to combat infant malnutrition. The care group teaches members how to cook the three essential food groups for children under 5: energy-giving, bodybuilding, and protective foods.

The care group aims to promote good health in children. This includes ensuring hygiene practices to minimise infections, providing affectionate care, and promoting adequate nutrition through exclusive breastfeeding (from birth to six months), diverse complementary feeding, and essential micronutrients. It also focuses on stimulating early learning and meeting the physical and emotional needs of children.

The initiative also aims to ensure expectant mothers attend antenatal clinics and have proper nutrition. It promotes family planning, good sanitation, immunisation, backyard vegetable gardening for food security, group expertise and the starting up of saving groups with low-interest loan rates. Founded in October 2019, the group has grown from fifteen, seven pregnant mothers and eight lactating mothers, to twenty members.

Financial constraints force families to choose between basic needs, education, and purchasing high-end nutrients for a balanced diet

Community members appreciate its positive impact, such as building energy-saving stoves, promoting household hygiene and sanitation, ownership of backyard gardens for better nutrition and healthy eating habits of their children, and saving for transformation. 'Lead mothers spread awareness about joining the group from one village to another. Then we all meet up and get trained,' says Mariam Nakitende, a mother of 13. They share knowledge about breastfeeding, keyhole kitchen gardens, and balanced diet meals.

'My late mother taught me that good hygiene is the first step to proper nutrition,' says Scovia Kwemogera. She emphasises the importance of exclusive breastfeeding and the care for babies from birth to the sixth month. 'From six months to two years, supplementary foods can be given alongside breast milk. However, moderation is key as the baby's throat is not yet fully developed. Meals should include energy-giving, bodybuilding, and disease-fighting foods.'

To ensure sustainability, families are encouraged to set up backyard and keyhole kitchen gardens (biofortification) using stones, sand, ash, compost manure, and dry cow dung. These are then mixed and a structure is built in which soil is added. As the soil level decreases, it is replenished with compost manure, serving



A demonstration of the use of an energy saving stove in Nabukalu sub-county

as a fertiliser. Keyhole kitchen gardens are used to grow nutritious, non-invasive vegetables like carrots, onions, and leafy greens.

Similar to the PD Hearth groups, women in the group are taught how to prepare balanced meals for their families, which complement measures to reduce child malnutrition. Nakitende joined the care group after her fifth child suffered from malnutrition. 'My mother-in-law used to care for my children. When she died I did not know what to do. I did not know about proper nutrition and how to feed my children well, which is why my child got malnourished,' she says. However, her knowledge and situation changed after joining the group.

Challenges persist, such as a lack of seedlings and affordable watering equipment for their gardens. Nevertheless, increased men's involvement, immunisation awareness, proper feeding, antenatal checkups, improved sanitation, hygiene practices, and handwashing have significantly reduced malnutrition levels.

World Vision initiated the Lead Mothers Programme by identifying two women per village and providing them with training before forming care groups. Currently, there are 104 registered lead mothers from 52 villages who are trained to share information through peer-to-peer learning.

Globally, Nurturing Care Group activities align with fulfilling multiple Sustainable Development Goals (SDGs). These include SDG 2 (end hunger, achieve food security and improved nutrition and promote sustainable agriculture), SDG 3 (ensure healthy lives and promote well-being for all), SDG 5 (achieve gender equality and empower all women and girls), and SDG 6 (clean water and sanitation).

A Nurturing Care Group consists of ten to fifteen women, mothers, and child caregivers. Led by community-based volunteer behaviour change agents (lead mothers), they meet every two weeks with VHT promoters for training. Through peer-to-peer learning,



Hafuswa Naitebe demonstrating how energy-dense porridge is made during a PD Hearth session in Nakyerike village, Bulidha parish, Bugiri district, Eastern Uganda

they disseminate key health, nutrition, and WASH messages at the household level.

'After training, they go out and create care groups where they conduct sessions on infant child feeding practices, nutrition, sanitation, and growth monitoring,' Kizza explains. To ensure they are well equipped to disseminate this information and monitor progress, they are provided with weighing scales, MUAC tapes and height boards centralised at health centres. They are supervised monthly by VHTs and receive coaching and mentoring from health workers every quarter.

'This enables them to carry out monthly growth monitoring, nutritional screening and rehabilitation of malnourished children. Severe cases are referred to health centres for treatment and further management. The lead mothers also educate caregivers and mothers on causes and signs of child malnutrition through peer-to-peer neighbourhood sessions,' he explains.

'Communities have been imparted with knowledge on assessing, counselling, and rehabilitating. Lessons continue in their care groups, equipping them with skills to handle cases using the locally made balanced diet of nutritious foods—'ekitobelo'. Lead mothers, with the help of VHTs, manage moderately malnourished cases among infants. Severely malnourished children are referred to health centres for professional health interventions by the OTCS, ensuring appropriate intervention.

'If a mother is malnourished, it can lead to undernourishment in the newborn and long-term malnutrition and stunting'

Scaling up nutritional security through micro-nutrient supplementation

Dan Irvine, Global Director of Health and Nutrition at World Vision International states; 'It starts with dietary diversity. Fighting hunger alone is not sufficient. We are just beginning to address and reduce micronutrient deficiency in large populations. People must support and advocate for this cause. More political and social will is needed to achieve it.'

Over two billion people worldwide may be suffering from micronutrient deficiency—lacking essential vitamins and minerals for proper growth and development. 'A lot of micronutrient deficiencies can be addressed through optimisation of a diet. This is by having a nutrient-dense diet with adequate diversity to cover human nutrition needs optimally,' he says.

World Vision operates in 100 countries, implementing a Children's Nutrition Strategy that promotes nutrition, prevents malnutrition, and detects and treats acute forms of it. Today, their global



Above: Demonstrating how to wash hands using soap and water on a tippy tap after using the latrine
Left: An arrangement of simple nutritious food groups prepared during PD Hearth sessions



Scovia Kwemwogera plucking leafy greens from her backyard garden in Nabukalu sub-county



ZERO HUNGER 2030

campaign on hunger and malnutrition focuses on micronutrient supplementation, combating 'hidden hunger' and ensuring diets are nutrient-rich.

Food fortification—adding essential vitamins and minerals to commonly consumed foods—is a scalable and cost-effective tool to reduce deficiencies and improve nutrition worldwide. 'Food fortification involves adding an additive to food to increase its nutritional value,' he explains. 'Examples include adding iodine to salt to address iodine deficiency. Or adding vitamin A to maize for fortified maize mill, or adding zinc to rice to get fortified rice. This can be done at small and large-scale levels.'

According to Irvine, another approach they have taken involves partnering with farmers to promote biofortified foods and educate them on cultivation and regeneration techniques. This helps ensure the sustainability of these foods in local farm systems and increases micronutrient uptake in the local food supply. For instance, in Tanzania, World Vision works on fortifying orange-fleshed sweet potatoes with higher Vitamin A content.

Marjella Bronkhorst, Lobby and Advocacy Officer at World Vision Netherlands highlights the collaboration between World Vision and DSM, a global food company, in addressing micronutrient provision. 'The partnership between World Vision Netherlands and DSM has been ongoing for years, with a focus on tackling micronutrient deficiency from various perspectives. In Rwanda, DSM improved the maize supply chain from harvest to milling to enhance maize quality. World Vision Netherlands focused on mobilising farmers.'

Other food fortification projects between them include increasing egg production to provide a critical protein source, especially for pregnant and lactating women. 'Scaling up multiple micronutrient supplements for pregnant and lactating women is being piloted in the Philippines to strengthen both the supply and demand chain,' she says.

One challenge in addressing micronutrient deficiency is the difficulty of diagnosis. Irvine explains; 'It requires blood sample testing of the population, which is not easily or regularly done at national levels. Usually, public health services rely on the available data to drive their interventions. However, in East Africa, we have made breakthrough innovations.

'Over the years, we have partnered with technology companies to develop a non-invasive procedure for detecting iron-deficient anaemia through haemoglobin testing. This real-time testing in communities eliminates the need for a clinical procedure and represents a significant technological achievement.'

He expounds that World Vision aims to create positive change by scaling successful interventions like Positive Deviance Hearth. 'It begins with a contextualised process called positive deviant inquiry, which assesses food security dimensions in the community and the availability of foods throughout the year.'

This assessment considers the nutritional value of foods and how local communities can use them to create balanced meals. Well-nourished families in the community serve as examples, showcasing their successful practices, food choices, and positive outcomes for their children. 'The process involves assessing, scaling up growth monitoring, identifying positive practices, and teaching families to adopt these practices over time.'

Additionally, upscaling involves various strategies, including social behaviour change approaches, that target household feeding practices and social norms related to dietary habits. This includes engaging influential grandmothers to drive behaviour change within households. However, one challenge highlighted by Irvine is the lack of global and national funding for nutrition as a development focus. 'Without a dedicated ministry of nutrition, it often receives insufficient attention in national plans, investment, capacity building, and system strengthening efforts.'

'Essential nutrition action delivery at the frontline of health systems poses challenges at the policy and systems level. Insufficient investments and capacities hinder the resolution of the nutrition problem. The health workforce's nutrition competence is typically below the recommended level of thirty percent. Moving forward without a competent workforce is difficult.'

While nutrition is a complex issue with various factors to consider, such as clean water and sanitation, education, food security, livelihood, and economic stability, Irvine states that they continue to monitor nutrition evidence and innovation. 'World Vision primarily focuses on children's nutrition, prioritising underweight, stunting, wasting, obesity, and micronutrient deficiency due to their dynamic nature.'