

The Rainbow Project: A Model to Fight Child Malnutrition in Zambia

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Abstract Child malnutrition in Zambia is a public health priority that must be addressed by networking local authorities, communities and non-governmental organisations (NGOs), through interventions focused both on treatment and prevention. The Rainbow Project, under the Pope John 23rd Association, is a large-scale model of care for orphans and vulnerable children which has been operating since 1998 in Ndola District. It runs a community-based programme that operates through supplementary feeding programmes (SFPs), run by local partner organisations and coordinated by professional figures working in cooperation with district health management teams (DHMTs). The Rainbow Project organises capacity-building activities for people involved in malnutrition projects at district and community level, radio programmes to sensitise civil society and avoid stigma, and urban agriculture horticulture programmes (container gardening). The networking community-based management is an effective and sustainable way to fight child malnutrition, a major killer for children under five in lower middle-income countries (LMICs).

1 Introduction

Malnutrition is a condition of poor nutrition, mainly used to describe undernutrition and refers to short- or long-term exposure to inadequate food in terms of quantity and quality.

Child malnutrition is a major global health concern especially among the poorest levels of society, leading to morbidity (malnourished children can become locked in a cycle of recurring illness that impairs immune function, intellectual development, working capacity and increased risk of disease in adulthood) (Michaelsen *et al.* 2009) and mortality (annually nearly three million of all deaths among children under five are due to malnutrition).

A Community-based Therapeutic Care (CTC) model was designed by Collins in 2001, integrating approaches of centralised in-patient treatment and community-based management treatment of severe acute malnutrition (SAM) (normalised weight-for-height score below -3 standard deviations) and moderate acute malnutrition (MAM) (normalised weight-for-height score below -2 standard deviations) (Collins 2001).

A general CTC model is based on four key components:

- *Community mobilisation* aimed at stimulating, involving and sensitising the local population to the problem of SAM and MAM;
- *Supplementary feeding programmes (SFP)* for children with MAM and no medical complications, providing supplementary food to take home and sensitisation for caregivers;
- *Outpatient therapeutic programmes (OTP)* for children with SAM without medical complications, providing ready-to-use therapeutic food (RUTF) and routine medication to take home; and

- *Stabilisation centre* for children with SAM with medical complications, providing therapeutic milks and specific medical treatment.

If properly performed and implemented on a large scale, community-based management of SAM could prevent the deaths of hundreds of thousands of children (Valid International 2006).

The first CTC programme was introduced in Lusaka District, Zambia in 2005.

Zambia has made great strides towards economic growth in recent years. In 2012 the World Bank reclassified the country as 'middle-income'. However, the economic growth has not translated into significant poverty reduction (UNDP 2013). Today Zambia is still facing major developmental challenges that include widespread poverty, HIV/AIDS, food and nutrition insecurity.

We now discuss the Rainbow Project, a CTC model, and its approach to malnutrition care, treatment and prevention in Ndola District.

2 The Rainbow Project

The Pope John 23rd Association is part of the Associazione Comunità Papa Giovanni XXIII that was founded in Italy by Father Oreste Benzi in 1968. The Association is a single spiritual family, composed of people of different ages and states of life, who are committed to answering the universal call to holiness, contributing to the realisation of the Kingdom of God and participating in the mission of the Church.

The Rainbow Project, under the Pope John 23rd Association, is a large-scale model of care for orphans and vulnerable children that has been operating since 1998 in Ndola and Kitwe Districts.

Rainbow supports different organisations in terms of financial, technical and logistical support for different programmes, including the one that addresses malnutrition.

The nutrition programme is present in 12 areas around the city of Ndola, collaborating with ten small non-governmental organisations (NGOs) and community-based organisations (CBOs). The different NGOs/CBOs are included in a networking system and the leaders of the different organisations (operators) meet regularly at the Rainbow office to discuss interventions and challenges regarding malnutrition.

The programme for malnutrition has several components that will be discussed separately to analyse the challenges they face and the achievements they have realised.

3 Supplementary feeding programmes (SFPs)

There are 13 SFPs in the Ndola area. All the centres are run in close collaboration with the local authorities (LAs) such as the district health management team (DHMT) and coordinated by professionals.

In the context of a traditional CTC, SFPs aim to treat MAM, thereby preventing deterioration into SAM. They also give long-term sustenance to recovery from SAM after outpatient or in-patient treatment. In international publications several guidelines regarding the different contexts for MAM interventions are discussed. In Ndola District the CTC does not cover the whole district and the availability of RUTF has been restricted and erratic at times, because the reporting and delivery system of the consignment has not been working properly. We have therefore included the children with SAM in the SFPs.

The SFPs are located in different areas, with 11 operating in ten different compounds of Ndola District and the remaining two being in rural areas. All the centres are run by operators from local organisations assisted by community volunteers of the same CBOs/NGOs, and operate in networks with the local clinics. Every centre can accommodate 25–30 moderate and severely malnourished children from six months to five years old. The activities for SFPs take place once a week. All the children referred from local clinics, hospitals, weighing points or from communities should be admitted into the programme if they meet specific criteria on admission (mid-upper arm circumference (MUAC) < 12.5 cm or bilateral pitting oedema or weight-for-age < -2 SD).

3.1 SFP activities

Anthropometric measurement and recording. Malnutrition indicators (weight, MUAC and bilateral pitting oedema) are checked at the SFP locations. Children found with any medical complication are immediately sent to the nearest local health facility for further investigation. All the data are recorded in specific registers to assess the child's individual growth and to monitor the evolution of the malnutrition rates.

Cooking demonstration. A balanced meal using locally available food is cooked by guardians under the close supervision of operators/helpers of the centre. Because the diet of these communities is often based on starch-rich

staples and minimal amounts of protein source foods, dietary management of malnourished children is based on improving the existing family diet. SFPs are provided with specific food allocations and follow the recipe book developed by the Ministry of Health to facilitate the introduction of traditional recipes for the different seasons of the year.

Meals together. A balanced meal is offered to all the children. Monitoring children during the meal is important to observe appetite and consumption patterns, and children who lack an appetite are referred to the clinic.

Health talks. Different topics – including hygiene, HIV/AIDS, child diseases and vaccines – are discussed by community health workers or lay counsellors with the guardians. Very often the environment in which the children live is unhygienic, resulting in exposure to recurrent infections through contaminated water, soil and pests. The awareness and knowledge provided in terms of health and hygiene remains as a personal and community heritage, locally relevant in an attempt to ensure effective practical implementation which translates into adequate home care. Different training materials have been provided to all the SFPs, including HIV nutrition counselling cards, infant and young child feeding (IYCF) documents and self-produced pamphlets.

Distribution of food supplements. Locally available food, including groundnuts, mealie meal, beans, sugar and cooking oil, as well as High Energy Protein Supplement (HEPS), is distributed every week. Food insecurity is a serious problem in the district and it is quite common for families to have only one meal per day. In addition, contributing to the household food security allows the mother to spend more time with her children, especially when they are sick. However, we recognise that food hand-outs can create a degree of dependence. In a few cases, it was observed that guardians refused to feed their children properly to avoid being discharged from the FSP.

Home visits allow volunteers to ensure that the food is correctly used for the children for which it is intended and not misused or sold. Malnutrition is a complex and multifactorial problem that starts at household level, so the rehabilitation of the child needs to include monitoring at home. Moreover, volunteers are able to identify the most vulnerable families and understand their specific needs.

In 2012 Rainbow SFPs in Ndola accommodated 1,088 malnourished children, with the following outcomes: 81 per cent cured, 7.5 per cent death rate, 11.5 per cent defaulters. The high mortality rates (SFP standards recommend not more than 3 per cent) are probably due to the inclusion of SAM children in the same programmes. With the inclusion of the SAM children the outcome for mortality meets the international Sphere Standards of less than < 10 per cent (Sphere Project 2004).

4 Outpatient therapeutic programmes (OTPs)

In 2008 the Rainbow Project started the first OTP in Ndola District. Contacts were made, with the support of the local DHMT, with Valid International, which conducted the preliminary trainings.

HIV and malnutrition screening was conducted in all SFPs to detect both HIV and SAM prevalence prior to starting the clinics. After collection of the data the OTP started at six sites, each run by a doctor from the Rainbow Project and a nurse from the DHMT. This liaison demonstrated the importance and viability of the networking between NGO and government.

At the start there was stigma and ignorance regarding malnutrition and the use of RUTF. With time the results were remarkable and the OTP has become busy and effective (from July 2008 to May 2011 district internal data report 827 new admissions; 73 per cent discharged as cured, 23 per cent default, 2 per cent non-cured, 2 per cent death rate). The biggest challenge to its effective operation has been the erratic supply of RUTF, which has put the survival of many severely malnourished children at risk.

After several orientations and intensive training, the Rainbow Project handed the OTPs over to the district in 2011. The six OTPs are kept up to date under the supervision of the nutritionist from the DHMT.

The importance of treating malnutrition in outpatient facilities is still not always fully understood, as the old adage that 'in-patient treatment is best' has not been eradicated in all health workers and lack of integration between the OTPs and routine running of the local clinics has in some cases disrupted the effectiveness of the programme itself.

5 Container gardening programmes

Starting in 2011 container gardening programmes were put in place for guardians accompanying children to SFPs. The aim was to improve the family diet through their own production of local vegetables to help meet nutritional needs. The programme was run by the Rainbow Project with the contribution of a local expert in agriculture and was endorsed by LAs. Tools, including seeds, containers and two days of agronomy workshops were provided. All the beneficiaries were followed up at home at least twice (at the beginning and for the follow-up).

By 2012, 190 guardians had benefited from the programme. Despite some challenges including access to water, soil composition and village chickens and rats eating the seeds, an internal monitoring survey showed that more than 70 per cent of the women involved were still cultivating and producing enough vegetables to meet home consumption needs on the second visit. Moreover, 11 per cent of the guardians have used the programme for income-generating purposes by selling part of the crops harvested.

The feasibility of rehabilitating malnourished children at household level depends on the family's access to food. Implementation of nutritional programmes with urban agriculture/horticulture components may have a key role to protect food security and to promote food diversity in the family.

6 Capacity building

At district level in the last few years, Rainbow has sponsored workshops and trainings for both nurses and doctors on the integrated management of MAM, SAM, HIV and nutrition, both in the OTP and the hospital setting.

At community level, similar training has been conducted both with the operators of the project itself and with community health workers from different local clinics (e.g. IYCF training, HIV and nutrition courses).

Supervision is one of the challenges of the capacity-building exercise. From our experience, lack of proper and continuous supervision results in frustration and makes the trainings and workshops a fruitless exercise.

Several radio programmes on nutrition issues and horticulture have also been aired to sensitise civil society and in this way to bring nutrition education closer to household level. The majority of the programmes were run with experts from LAs. Knowledge helps to reduce stigma and allay fears, including witchcraft, which is still a very real consideration in the poorest communities.

The need for competent and knowledgeable health personnel is vital for malnutrition reduction and every effort must be made to bring each health worker and community volunteer up to a standard at which they are able to recognise malnutrition and guide the patient through the correct treatment.

NGOs/CBOs should refer to LAs for trainings and workshops where the LAs have the capacity to perform those activities in order to allow all professionals and volunteers of the community to 'speak the same language' and 'share the same message'.

7 Monitoring and evaluation

Up to the time of writing, a proper impact evaluation of the Rainbow Project has not been conducted. In the absence of a baseline survey, impact would have to be assessed by matching Rainbow communities with other communities on key time-invariant characteristics and then retrospective questions asked to check that the groups were indeed similar at the start of the Rainbow Project.

A first process external evaluation of the activities of the Rainbow Project was conducted in 2002, examining the work of the whole project (Reijer 2002). The evaluation suggested identifying clear guidelines about when to refer a child to the clinic and how to improve the monitoring and evaluation system, and highlighted the need to standardise the protocols of activities for all the centres also in terms of food items to be taken home (it was suggested introducing HEPS in the home food ratio). It was also recommended to improve capacity building with the staff and look for additional sources of funding.

Since 2006, data from all the Rainbow activities – including specific field visits, questionnaires, registers, monthly monitoring tools and reports – are collected at community level and reported to the Rainbow office. All the data are fully available to the DHMT and are shared among the network system. In the last few years data from SFPs have been internally analysed to evaluate the validity of the intervention compared to international standards.

While the collection of data on a monthly basis is demanding, it is vital for Rainbow interventions to be accurately targeted, complete and to meet required

standards and norms. For example, through the review of our annual/monthly data we discovered a noticeably high percentage of defaulters, even if still below 15 per cent. As reported in other publications (Navarro-Colorado, Mason and Shoham 2008), the causes of defaulting may be influenced by seasonal factors, when access to the centres is reduced due to the rain or when in the harvest months other activities take priority for the members of the family, or by the performance of a single centre across all the activities. SFPs were also subjected to two external evaluations by Zambian professionals after the IYCF training, in 2012 and 2013.

The two evaluations have allowed the project to identify areas of weakness and strength and adjust interventions accordingly.

The first evaluation showed poor written planning and target identification, a lack of documentation of the activities conducted in the centres and a lack of supervised counselling. To standardise the activities we have created and printed a register for each centre to help operators document all the activities. We have also tightened up the supervision as part of technical support.

In the second evaluation, some areas of intervention, especially regarding the nutritional counselling, were identified. It helped us to see that our individual nutritional counselling was having trouble with identifying food quality assessment and failing to emphasise adequate (quantity and quality) food intake for catch-up growth of the malnourished child. We finally realised that nutritional counselling cannot be implemented by community staff despite all the meetings and trainings undertaken over the years and that it must be carried out by professionals, including nutritionists and trained nurses. Theory must be clearly and practically translated into real-life scenarios in order for it to be meaningful and become sustainable and it has to be given at the right time and place. It plays a key role not just to cure but also to prevent malnutrition. We acknowledge that Rainbow needs to do better in this regard.

A strong monitoring and evaluation system is essential for the effective functioning of any nutrition project. Monitoring is linked to project management and designed to assess and improve project performance while evaluation permits decision-makers to assess whether project objectives are met (Levinson *et al.* 1999). But critically, a supervisory system must be implemented and budgeted for before starting any programme.

8 Discussion and conclusion

Malnutrition is not a single-sector health/social-related issue but rather a complex issue that needs to be addressed at multiple levels of society and health-care platforms. It is unrealistic that government or NGOs can sustain such a holistic approach in isolation to deliver the full package of intervention for child and maternal nutrition.

In order to follow this holistic approach, real collaboration between government and CSOs must be functional, especially at district level, prior to starting any such initiative. Without the collaboration of strong leaders in

local government authorities and true dedication from NGOs, nutrition programmes become isolated interventions that will start and finish with the availability of donors and that will have very little impact or sustainability. Moreover, the sharing of goals, challenges and successes among stakeholders means that all interventions are inherited by the district and learning can be used for future interventions and solutions.

One of the characteristics of our model is the strong relationship with the LAs. This relationship is nourished by meetings, involvement in the capacity-building exercises, reciprocal help in terms of monitoring of the programmes and solving issues. The involvement of the LAs imparts sustainability to the interventions, enables projects to stay in line with the government's priorities and guidelines and facilitates the interaction between communities and district management by exchanging views on real situations at grass-roots level and implementing protocols at community level. Every district should not just welcome a single NGO's involvement but search for the full collaboration of all stakeholders in this type of relationship. The LA should also endeavour to reach small and minimally resourced CBOs/NGOs to allow everyone to reach the same level of knowledge and commitment.

Our approach is constantly updated by the continuous dialogue and work with communities in order to understand traditional beliefs, so that consequent interventions are relevant and respectful of the local culture. The same approach is used when networking with small NGOs/CBOs to recognise and address new challenges in nutrition, especially where cultural beliefs around food are concerned. A direct link with the community allows us to intimately understand the perceptions about malnutrition and to address those with greater insight.

Rainbow has been advocating for the creation of a district task force, which can coordinate the efforts, distinguish the roles, distribute the tasks and create intra- and inter-district nutrition protocols to guide new stakeholders into the interventions already decided and approved by the same task force. The leadership should come from dedicated district officials in charge of nutrition programmes and should include all stakeholders, such as line ministries, civil society and NGOs, that implement programmes or have a specific interest in nutrition and related issues. This innovative approach for Ndola District of networking and collaboration should be the tool used to guide new nutrition interventions, beyond personal or organisational interests to unify efforts and obtain successful outcomes.

In conclusion, our 15 years of experience with Rainbow suggests the following:

- Holistic approaches are needed to address malnutrition in Zambia. Everyone needs to work together towards a common goal and know their roles. Government and NGOs cannot do it on their own.
- The Rainbow model is an example of a Community-based Therapeutic Care model, one that has been running since 2008, confirming that the management of

malnutrition at community level must include different types of interventions: nutrition-specific or direct interventions (e.g. on-site feeding and food hand-outs), and nutrition-sensitive or indirect nutrition interventions (e.g. nutrition and health skills).

- The skills Rainbow demands from its leaders and workers are demanding: there are the harder skills from nutrition leaders – such as the ability to use M&E data and the foresight to design and commission impact studies – but also the softer skills: the willingness to

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build networks of relationships, to work with local authorities, to influence the creation of a district coordination task force, and the need to persuade health system leaders that the treatment and prevention of malnutrition must be embedded into health-care programmes.

- Finally, capacity-building development is a vital but often overlooked issue. Without strong frontline workers, nutrition specialists and good supervisors and managers, undernutrition will not be reduced quickly.

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