

Cookery demonstrations in GOAL supported clinics

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Malnutrition is a major health problem in South Sudan, especially in young children and pregnant-lactating women (PLW). It is often compounded by other illnesses, contributing to high mortality rates in pre-school children.

In addition to the well-recognized manifestations of acute malnutrition, kwashiorkor and marasmus, rates of stunting are high, and various micronutrient deficiencies, including those of vitamin A, iron, iodine and zinc are prevalent.

There are multiple causes of malnutrition in GOAL's operational areas, which are typical of many locations across South Sudan. UNICEF's conceptual framework of malnutrition [1] describes the underlying causes of malnutrition as 'inadequate food security', 'poor sanitation and hygiene' and 'inadequate care practices'. All of which contribute to the high levels of malnutrition in GOAL-supported sites, making it a difficult issue to address.

Poor levels of sanitation through minimal latrine usage, low rates of exclusive breastfeeding for children up to 6 months and poor food quantity and diversity in the household are the underlying causes seen in GOAL-assisted areas. Thus, GOAL projects are carried out at the same time as other multi-sectoral activities, each targeting different identified issues.

Cookery demonstrations aim to address the cause of poor household food supply and diversity. This is done by promoting a high-energy nutrient-rich meal for children aged 6-59 months and pregnant/ lactating women. The typical diet is based mainly on cereals and so, in order to improve the vitamin and mineral content, we encourage the addition of fruits and vegetables.

Before designing recipes, the GOAL team visits homes and surveys markets to see what is grown and available in each season and, thereafter, what is accessible in terms of cost. The team works with community representatives to see what would be acceptable, and then examines nutrient values of the recommended foods to identify recipes that provide 'balanced' meals. The recipe given below is an example of one that we designed in this way, but this will vary during the year.

For some time it has been recognized that inpatient



Figure 1. Cooking demonstration at Ulang Primary Health Care Centre, Ulang County (credit Hatty Barthorp)

care is not the ideal place for treating children with acute malnutrition without medical complications. It is cheaper and more effective to look after these children in the community, through Outpatient Therapeutic Programmes (OTPs), (which address Severe Acute Malnutrition (SAM)) and other community-based programmes such as GOAL's Nutrition Impact and Positive Practice (NIPP) circles (which tackle both curative and preventative issues of Moderate Acute Malnutrition (MAM)). Through these activities parents have an opportunity to learn, by active participation, the simple principles of child care and feeding.

Thus, the nutrition cookery demonstration activity has come to play an important role in mother and child health activities in GOAL-supported clinics and GOAL's community-based programmes. The emphasis is on giving simple and practical instructions to the parents, through a participatory approach, about feeding their children a high-energy nutrient-rich porridge made from locally available nutritious foods. There can be no better example for a mother, than to see her child gain in weight and vitality from the food that she herself has cooked and fed. (See figure 1)

Teaching parents about feeding children

Teaching a parent who comes from a poor background is not easy and several factors have to be considered:

- He/She may be illiterate or just able to read and write a few words, and, therefore, is unlikely to understand hand-outs or posters
- The material resources available at home and the number of cooking utensils may be limited

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Figure 2. Ingredients for the porridge at Aweng PHCC (credit Nicky Connell)

- He/She may have their own beliefs concerning foods and their suitability for children. Sometimes these beliefs are radically different from those being promoted by the health workers

- The men or the other elders in the family may play a significant role in decision-making, leaving mothers with little influence and ability to follow advice given by health workers.

It is difficult to tackle issues of female disempowerment to reach key decision makers through facility-based cooking demonstrations. GOAL attempts to overcome these issues through community based NIPP circles (with one activity being cooking demonstrations) – see below.

We remember ~20% of what we hear, ~40% of what we hear and see and ~80% of what we hear, see and do.

Cooking demonstration instructions are practical and simple, aiming to improve what the child is already being fed rather than introducing many new foods. It is better to teach a few simple recipes well, than to overburden a parent with too much information. Thus the kitchen, the utensils and the method of preparing and cooking are similar to those used within the homestead.

Establishment of rapport is an integral factor in successful nutrition cookery demonstration education. Therefore the instructor should preferably be from a background and social group with which the carers can identify. Often a carer who has attended cookery demonstration sessions makes the best instructor.

It is vital for a successful outcome of the demonstration (e.g. carers adopt recommended recipes), that there is a good relationship with strong bonds forged between the participants, and that lessons are practical, interactive and interesting. Indeed a study in 1994 [2] demonstrated that learners remember more when visual aids are used to support the verbal presentation, but 'best' when they practice the new skill.

Therefore, sessions always include interactive techniques and methods to help participants remember the desired positive behaviours.

Group discussions are particularly useful and are enthusiastically promoted with the active encouragement of carers teaching each other and giving demonstrations of what they have learnt. By creating dynamism within the group and focussing on a peer-led approach, the educational and behaviour shifting process is made more effective.

In rural areas most people eat foods which they grow (small scale subsistence farmers). So we educate the household members in simple methods of small-scale or kitchen gardening, composting and growing the foods which are used in cookery demonstrations. This is a key element that is incorporated into GOAL's NIPP Circles. In these all parents learn how to build and maintain a small garden, cultivating a variety of nutrient rich foods and subsequently use the produce for household meals. It helps parents to realise that the health of their children is very much within their own hands.

An example recipe for the cookery demonstrations: High-energy nutrient-rich porridge (see Figure 2)

- Sorghum flour (200g)
- Whole fat cow's milk (200mls) or whole fat powder milk (sourced only when price of fresh milk becomes prohibitively high) (30g - 6 desert spoons)
- Vegetable oil (30g - 6 desert spoons)
- Sugar (30g - 6 desert spoons)
- Groundnuts or sesame (30g - 6 desert spoons)
- Moringa leaf powder (24g - 3 tables poons)

Most are familiar with the ingredients listed above with the possible exception of moringa. Other cereals such as maize flour can be used instead of sorghum.

Note: As the size of spoons varies from place to place the number of spoonsful for each ingredient should be checked locally.

This recipe gives approximately 1400ml of porridge and:

- 1408 kcal
- 43 g protein
- 59 g fat
- 230 g carbohydrate
- 17.3 mg iron
- 115 mcg RE vitamin A (or 690 β carotene)

Moringa

Moringa is a plant which grows well across Asia and Africa and is promoted within a number of GOAL's livelihood projects. It is well-known for its nutritional, medicinal and water purifying properties. Moringa is a useful additional source of protein, calcium, potassium and vitamin A and, if fresh, vitamin C - especially where it is difficult to get these nutrients from the local diet. Therefore it is a good plant to promote within cookery demonstrations and through micro-gardening activities.

The use of moringa leaf powder in cookery demonstrations is more convenient than moringa leaves which need boiling until they are soft and then mashed and strained through a clean cloth. So for GOAL's cookery demonstrations, moringa leaves are dried in the shade for 16 hours to reduce loss of vitamins, especially vitamin A. The brittle leaves are then pounded and sifted to remove leaf stems. Leaves can also be rubbed over a wire screen to make a powder. The powder can then be conveniently added to meals. If the powder is stored in a sealed container and kept out of sunlight it should keep for several months.

Recommended amounts of moringa leaf powder are 6tablespoons (48g) per day for a nursing mother and 3tablespoons (24g) for children.

- Three rounded tablespoons (24g) of leaf powder satisfies around 42% of protein, 125% of the calcium, 71% of the iron and 272% of vitamin A needs for children aged 1-3 years.

- Six rounded tablespoons (48g) of leaf powder will satisfy half or more of a woman's daily iron and calcium needs during pregnancy and lactation [3].

Directions for cooking high-energy nutrient-rich porridge (at a cooking demonstration or, using smaller amounts, in the home)

These amounts make 3 1/2 full cups (400ml) of porridge.

- Mix one and a half cups of water (~600mls) with half a cup of cow milk (200ml) or ~30g/6 desert spoons of powdered milk and bring to boil in a cooking pot.

- Meanwhile mix half a cup of sorghum flour (~200g) with cold water to form a paste and add to the



Figure 3. Child eating high energy/nutrient porridge at Aweng PHCC (credit Nicki Connell)

Table 1: Nutritional value of Moringa fresh (raw) leaves and dried leaf powder [3]

Compound Analysed	Moringa leaves/100g	Moringa leaf powder/100g (~12 rounded table-spoons)
Moisture (%)	75	7.5
Calories (kcal)	92	205
Protein (g)	6.7	27.1
Fat (g)	1.7	2.3
Carbohydrate (g)	13.4	38.2
Iron (mg)	7	28.2
Vitamin A (mg) β carotene	6.8	16.3
Early readmission	2	1 (50%)

boiling water in a cooking pot. Let the porridge cook for 10 minutes.

- During the last 2 minutes of cooking, add 30g of oil (6 desert spoons), 30g of sugar (6 desert spoons), 24g of moringa leaf powder (3 table spoons) and 30g of sesame (6 desertspoons) or 30g of ground nut paste (6 desertspoons).

- Let the porridge cool while covered, then feed each child and/or PLW in the group. If the recipe is cooked in the home advise to feed it as soon as possible.

Note: One cup (~400ml) provides ~400kcal.

Although many children around the age of 18months and over traditionally eat family meals instead of porridge, the consistency of the recipes can easily be easily altered

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Table 2. Recommended kilocalories and amounts of high energy/nutrient-rich porridge for different target age groups

Age (average of ♂&♀)	Approximate RDA Kcal[4]	Recommended feeds of porridge per day	Kcal from porridge	Kcal from other sources
6-12 months	700	A third of a cup 3 times per day (plus breast milk)	400	350
1-2 years	900	Half a cup 3x per day (plus breastmilk)	600	300
2-3 years	1,100	1 cup 3 times per day + snacks	1200	~100
3-4 years	1,200	1 cup 3 times per day + snacks	1200	~200
4-5 years	1,300	1 cup 3 times per day + snacks	1200	~300
Pregnant women (additional energy requirements of pregnancy average of 2nd& 3rd trimester)	380	1 cup per day supplementary meal	400	~2,100 + depending on activity level
Lactating women (additional energy requirements of lactating women average of child 0-12mths)	570	2 cups per day supplementary meal	800	~2,100 + depending on activity level

Note: Breastmilk will continue to provide around a half or more an child's energy needs at 6-12 months and a third at 12-24 months

to suit growing children's preferences. GOAL however are actively promoting the consumption of different high energy micro-nutrient rich meals for children, to be served and eaten apart from the family foods. This ensures children receive a more balanced diet.

Family meals, even if they are prepared with a diversity of ingredients, often lack the required energy density that a child needs. Children need more energy/kg body weight than adults. However because children cannot physically eat large quantities, it is very important that their foods are energy dense.

GOAL has conducted cookery demonstrations using locally available foods in 19 clinics during 2012 (see figures 3) Sessions are carried out twice daily in the morning and afternoon during nutrition education sessions. Table 3 shows a summary of beneficiaries reached from January

– December 2012.

Cookery demonstrations are also incorporated into GOAL's Nutrition Impact and Positive Practice (NIPP) circles. NIPP circles are a GOAL initiated project, to address malnutrition in a preventative way through behaviour change, while rehabilitating MAM cases through supplemental feeding via the cooking demonstrations. With guidance, NIPP circle volunteers normally design the recipes for the cooking demonstrations and the participants of the circles provide the ingredients. A total of 7 NIPP Circles (7 female and 7 male circles) were formed during the pilot in 2012 in Twic County, Warrap State and Baliet County, Upper Nile State, with 64 households benefiting from improved knowledge and practice in cooking high-energy porridge.

References

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3. Price M.L. Revised by Kristin Davis. 1985; Revised 2000. *The Moringa Tree*. ECHO Repository: ECHO Technical Note. 16.
4. FAO. 2004. *Human energy requirements* Report of a Joint FAO/WHO/UNU Expert Consultation. Available: <http://www.fao.org/docrep/007/y5686e/y5686e00.htm>. Accessed 6th March 2013.

Table 3. Participant numbers for cooking demonstrations by County/Administrative Area during 2012

	Twic County, Warrap State	Baliet and Ulang Counties, Upper Nile State	Agok, Abyei Administrative Area
Men	20,269	1,524	0
Non-PLW	32,464	3,599	661
PLW	21,186	3,130	1,146
Children	28,906	3,118	283
Total	102,825	11,371	2,090