Can simple dietary advice improve maternal and child health?

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Demonstrating the food intake: One of the intervention women demonstrates her food intake in the last 24 hours by weighing green vegetables and nsima (local maize porridge). Lead Investigator and young scientist grant holder Penjani Kamudoni on the left and the local community assistant in the middle. Credit: Åse-Marit Kristiansen

In Mangochi in Malawi, researchers have mapped local food intake and habits to arrive at simple and accessible nutrition advice for pregnant women. They are now testing how village volunteers can teach women to

make small modifications to common dishes. The aim is to improve the intake and uptake of important nutrients during pregnancy, and increase the weight of both the mothers and their babies.

'Food is medicine'

The researchers are examining ways of giving locally adapted nutrition counselling to pregnant women in the Mangochi District in central Malawi. According to WHO, around 5-18% of babies in this area are born with low birth weight every year, which increases the risk of death fourfold during the newborn period. Maternal nutrition is the main factor influencing birth weight in low resource settings. Sufficient follow-up of pregnant women in this area is a challenge, however, due to long distances between health clinics and the villages where the mothers live. Mothers have traditionally given birth at home and their first meeting with the health clinic used to be after birth. But also the clinics have challenges meeting all their needs. Kamudoni explains: 'Often when women come to the health clinic after birth, the child is already small and malnourished. In addition, nutrition supplements are regularly out of stock and unaffordable, as well as difficult to sustain in the long run, so it is difficult to provide adequate help. During my previous work at local health clinics, I saw a clear need to intervene at an earlier stage. This is what we are now trying to do; we are testing a way to avoid malnourishment in the first place. Our slogan is: Food is medicine, eat for your unborn child!'

Fish powder to sprinkle on vegetables: Research findings show that the women can meet most nutrient needs by increasing their intake of a few locally available foods: whole maize, beans, small bony fish, green leafy vegetables and papaya. In the inland villages, where fresh fish is not available, the pregnant women are encouraged to make dried fish powder to sprinkle on the vegetable relish for the nsima. Credit: Åse-Marit Kristiansen

Improving food habits

In addition to being dependent on income and availability, food is also culture. Before the actual counselling intervention could start, the researchers therefore explored food beliefs and investigated the actual daily dietary intake of 339 women throughout the Mangochi district. This constituted a large part of the study and enabled them to identify the types of food that result in the best nutritional improvement. Based on this mapping, the researchers have modelled the women's dietary intake and designed recommendations that form the basis for the ongoing nutrition counselling trial.

Minor changes to local dishes can improve nutrition uptake

The study's findings prior to the trial phase show that, if pregnant women increase their intake of a few locally available and frequently eaten foods in the area – whole maize, beans, small bony fish and green leafy vegetables, papaya and mangoes – in addition to taking iron supplements during pregnancy, they would be able to fully meet their requirements for most nutrients, and increase their intake of a few others, such as calcium, riboflavin, folate and niacin, although not fully meeting the required amounts for these. However, if the pregnant women also ate a more diverse diet of locally available foods, they could fully meet their nutrient requirement. These findings are now being promoted as an intervention.

Cooking classes demonstrating nutritious dishes: Some of the pregnant women

measure the soya drink they've made at their cooking class in Chembe village at Cape Maclear by Lake Malawi. The village volunteers organise regular cooking classes to teach new dishes and gather the pregnant women for nutrition advice and discussions. Credit: Åse-Marit Kristiansen

Dishes have been developed and tried out on local village women to identify which changes and tastes are actually acceptable. The researchers have focused on changing as little as possible of the local methods of food preparation and eating. At the same time, however, the minimal changes they are promoting are maximising the nutritional output. The dishes have also been adapted to which ingredients are available during the rainy season versus the dry season, respectively, and in different areas of the Mangochi district. For example, fish are always available near Lake Malawi, but in the inland villages where fresh fish are not available the pregnant women are encouraged to make powder from dried fish to sprinkle on their food.

This clustered randomised trial will now measure the effect of health and dietary counselling provided by local volunteer village women to mothers during pregnancy. More than 250 pregnant women in 20 villages (10 intervention villages and 10 controls) in the Mangochi district have been enrolled in the trial. Volunteers in the 10 intervention villages organise cooking classes, where they also explain the consequences of malnourishment during pregnancy, for example preterm birth or anaemia and being more prone to illnesses. The volunteers are first trained by the researchers. They then gather the pregnant women in the villages and demonstrate what small modifications can be made to the food to improve nutrition uptake, e.g. germinating maize by soaking the corns in water for two days, pre-soaking beans before cooking, or including a sour fruit and a little bit of meat when boiling beans.

Give birth at health clinic

Women in Malawi are encouraged to give birth at the nearest health clinic or hospital. Administered by the local village chiefs, the Malawian government fine women who fail to come to a clinic and instead give birth at home or on their way there. The fine of MKW 10 000 is a lot of money for most people. PhD student and district health worker Lillian Kaunda says: 'This may seem harsh, but the Ministry of Health assumes that the risk of the child or the mother dying from complications is greatly reduced at a health clinic compared to home deliveries. The government uses strong incentives to reduce infant and maternal mortality rates.'

All the study women must give birth at one of three health clinics included in the trial, and, in addition to cooking classes, they receive several individual home follow-up visits by the volunteers. In the 10 control villages, where the pregnant women do not receive the nutrition counselling, they are instead counselled to give birth at a clinic. They are advised, for example, to save money for transportation and for the possible waiting period at the clinic, estimated to MKW 4000 (the minimum monthly wage in Malawi is approximately 17 000). As soon as the women come to the clinic to give birth, their weight and health status can be measured. The researchers hope that similar region-specific nutrition interventions can be implemented throughout the country. The study concludes in autumn 2017. By then, we will have seen whether this type of nutrition counselling can result in healthier mothers and bigger babies.

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