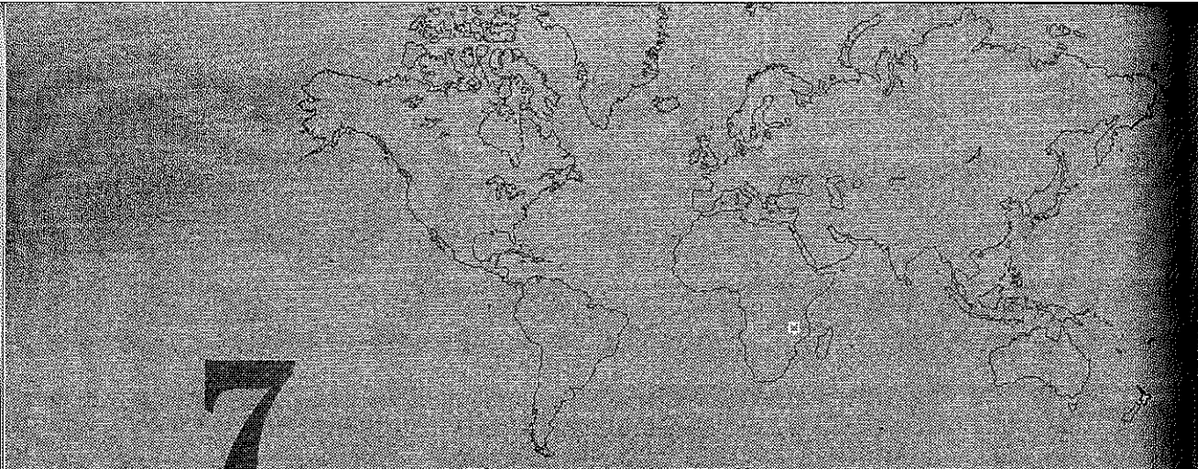

7 Disease, Illness, and Healing

Medical Anthropology: Improving Nutrition in Malawi

Sonia Patten

Applied anthropologists work in many settings. They may conduct government program evaluations, work on forest conservation projects, market or advertise products, staff rural development programs, establish foreign offices for nongovernmental organizations or corporations, or advise hospital staff, among other things. In this article, Sonia Patten describes her role as an applied medical anthropologist on a project aimed at the improvement of infant and child nutrition in the African nation of Malawi. As a medical anthropologist, her job was to collect cultural baseline data that would help to shape the program and make it appropriate to village conditions in Malawi.

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Malawi—Welcome to the Warm Heart of Africa. This is the sign that greets travelers when they arrive in this southeastern African republic. The warm, open response to visitors that I have enjoyed each time I have traveled to Malawi contrasts starkly to the poverty that plagues its citizens.

Malawi is a small landlocked nation in southeast Africa that lies south of Tanzania, east of Zambia, and west of Mozambique. The country is long and thin with its axis running north and south along the Great African Rift Valley. Part of the valley holds Lake Malawi, the third largest lake in Africa, which accounts for more than 20 percent of the country's total area of 119,100 square kilometers. Malawi is one of the ten poorest countries in the world. Its economy is based predominately on agriculture, which accounts for half the gross domestic product and virtually all the exports. Cotton, tobacco, and sugar are most likely to be sold to other countries. However, despite exports, food security for both households and the nation is a chronic problem, with annual "hungry seasons" a fact of life and the specter of famine never far from people's minds. Maize, or white corn, is the staple food for the nation, and it is rare when the nation's rain-fed agriculture produces enough of it to adequately feed the population. The Malawi government faces the enormous challenges of strengthening the economy, improving educational and health facilities, and dealing with the serious environmental issues of deforestation and erosion. The country depends heavily on the International Monetary Fund, World Bank, and bilateral and multilateral donor assistance. It was a small project funded by the U.S. Agency for International Development (USAID) that brought me as a medical anthropologist to Malawi several times during the 1990s.

Medical anthropology is difficult to define because it covers such a wide scope of research and practical programming. In the broadest sense, it can be defined as the study of human health in a variety of cultural and environmental contexts. Over the past three decades, medical anthropology has become a distinct and important area within anthropology. Presently it has three major areas of emphasis. One is the study of cultural differences in health beliefs and systems of healing such as alternative therapies, shamanism, and folk concepts of disease. A second consists of biomedical studies of human adaptations to disease, including nutrition, genetics, and demography. The third is applied medical anthropology, which focuses on the application of anthropology to health-related problems and possible solutions.

Medical anthropologists often carry out research as members of interdisciplinary teams, where their main contribution is to discover a people's cultural conceptions of health, illness, and the more general cultural context within which ideas about health are situated. It was as an applied medical anthropologist that I came to be a member of such an interdisciplinary team that would work in Malawi.

In the early 1990s, I was on the faculty at one of three universities that had joined together to apply for a USAID grant under a program called University Development Linkages Program (UDLP). Two of the universities were American and one was the agricultural college that forms part of the University of

Malawi system. A major goal of the UDLP was to strengthen developing nation colleges and universities by giving them access to U.S. faculties and other American university resources. The program also sought to increase the involvement of U.S. faculty members with faculty in developing nations so that students at U.S. institutions would benefit from an internationalizing of the curriculum.

In this case, scientists from participating universities were asked to devise and implement a project that would benefit all collaborating institutions of higher education. Many teams of UDLP scientists that applied for grants designed projects intended to strengthen curricula at developing nation institutions. Our team, however, opted to design and implement a project addressing a major problem, child undernourishment in Malawi. We recognized that three out of five children in the country were undernourished. Worse, the mortality rate for children under five was 24 percent or nearly one in four. The problem was caused by the fact that children received insufficient protein and calories, which left them vulnerable to a host of infectious diseases, potential mental impairment, serious deficiency diseases such as kwashiorkor and marasmus, and premature death. This is the story of the people from two central Malawi villages and three universities as we worked to craft a program to reduce child undernourishment and increase child survival on a sustainable basis.

Faculty members who were participating in this effort represented a number of disciplines: anthropology, human nutrition, cooperative extension, animal science, veterinary medicine, and crop science. Several of the participating faculty members from Malawi had grown up in small villages, still had extended family in those villages, and were familiar with economic and cultural factors contributing to child undernourishment there. From them and from field research we learned that mothers breastfeed their babies for two to three years, which assured that the children received sufficient protein and calories during these early years. However, that changed when the children were fully weaned. The indigenous weaning food is a gruel of water and maize flour, and babies receive small amounts of it beginning at about four months of age. When mothers wean their toddlers, it is this gruel that the children eat day after day. It is a nutritionally inadequate weaning food and children soon begin to show its effects—swollen bellies, stunted growth, and increased susceptibility to malaria, measles, and other infectious diseases. The weaning food is made from the same crop, maize, that constitutes the staple food for adults, a boiled maize flour dish called *nsima*. The problem of a nutritionally inadequate weaning food is not unique to Malawi—it plagues many developing nations. In these countries there is often a high-carbohydrate food such as corn or rice that makes up as much as 90 percent of children's daily intake. If people survive into adulthood, their bodies have made an adaptation to this low-protein diet. But young children do not thrive.

As our project searched for ideas about how to create a plan for addressing child nutrition, we decided to focus on a simple approach that would use indigenous resources and be manageable at the local level. This was the introduction of a protein and calorie-rich additive, goat milk, to the local weaning food. Although goats are plentiful in Malawi villages, they are meat goats, not dairy goats. They are like walking bank accounts, to be sold when a family needs money to pay school fees for the children, health care, and rites of passage such as weddings and funerals. It would be a bold step to secure approval from male village political leaders and elders for the introduction of milk-producing goats to provide milk for young children. Dairy goats would be put directly into the hands of women, not men. Would it work? Would women be willing to learn new animal management and food handling techniques? Would they have time to carry out the additional labor that would be required? Would the goat milk be given to the children who needed it? Would husbands or brothers take the valuable animals away from the women? Would the goats and the children flourish? As time went on, we learned the answers to all these questions and more. And the village women contributed very valuable insights and suggestions that made the project a model that has been adopted elsewhere in Malawi.

The Program

Our work began with a series of planning meetings. Our goal was to create a program that would enable women to raise and keep dairy goats on a sustainable and manageable basis, and use the milk that was produced to supplement their children's diets and increase food security for their families. The plan we generated would have three parts: (1) generation of a database on the milk production and biological characteristics of goats; (2) development and implementation of demonstrations and outreach programs for distributing milk goats to rural women and teaching them how to care for the animals; and (3) formation and implementation of outreach programs for rural women so they could learn how to safely handle goat milk and use it as a regular part of the diet, especially for their children who were under five years of age. At our planning meetings we had to figure out what we were actually going to do, and in what sequence.

The animal scientists on the team knew that milk goats introduced into local villages would have to be hardy or they would die. They wanted to try out some breeding experiments using local goats and imported breeds of dairy goats to see just what kind of a crossbred doe would result in the best combination of high milk production and ability to adapt to life in the village. So they worked out a breeding scheme using local Malawi goats and imported Saanen dairy goats from South Africa, Damascus goats from Cyprus, and Anglo-Nubian goats from the U.S. The breeding experiments were carried out at the farm that the Malawi members of our team used for teaching and research.

This kind of research can't be done in a hurry. Arranging for the importation of animals is a complex process because one has to find a supplier, arrange for payment, arrange for shipment (very few airlines are willing to transport

large animals internationally), work out how to feed and water the animals while they are in transit, secure permits from the Malawi Ministry of Agriculture, and quarantine the animals for a period of weeks when they arrive in country. Only then can the breeding research begin.

To our dismay, none of the imported Anglo-Nubian goats survived for very long in Malawi. And several of the Damascus goats also died. The Saanens, however, proved to be the hardier—not surprising, since they originated from relatively close by South Africa where environmental conditions were similar to those in Malawi. And when bred with local Malawi goats, the resulting crossbreeds turned out to provide substantial weekly milk yields that would be enough for the goats' kids as well as for the young children of rural families. So the team decided to import more Saanens and continue the crossbreeding program. Crossbred does would be distributed to village women and most of the crossbred bucks would be sold to support the project. As the program developed, team members discovered that some local does produced relatively high average milk yields; this finding became important as the project unfolded.

My work as the team anthropologist involved the human side of the project. With the help of team nutritionists and the extension expert, I designed a survey to collect baseline cultural information in the villages where the milk goats would be distributed. It was important to document such things as women's daily activities, the meaning and use of goats, relationships between men and women, and ways children were fed in the target villages before the milk goats were introduced. Later we would look for changes we hoped would occur after the new goats arrived and for unexpected problems.

To proceed with the social research, we selected three villages, all relatively close to the college campus in a rural setting about 25 km from the capital city of Lilongwe. To proceed, however, it was necessary to obtain permission from the people in each community. To do so we held meetings with the village headmen, men and women elders, mothers of young children who would be affected by our project, and anyone else from the village who was interested in learning about the program.

In the Central Region of Malawi where we were working, most people belong to the Chewa ethnic group. The Chewa have a matrilineal descent system and practice matrilocal residence. Thus, Chewa men and women inherit clan and lineage membership from their mothers. It is this membership that gives people the right to farm plots of land surrounding their villages. When women marry, most continue to live in the village of their birth with a group of related females—mother, maternal grandmother, mother's sisters and their children, sisters and their children, and eventually, adult daughters and their young children. When young men marry, most move to the villages of their brides. The village political leader is usually, but not always, a man. He cannot be the son of the prior headman because a son is not part of his father's matriline. Instead, he is likely to be the son of the prior headman's sister—a maternal nephew. This system creates a situation where almost all of the women and the powerful men in a village are maternal kin to one another.

To introduce the project, we had to recognize the matrilineal nature of village social organization and the need for people's approval. We met with groups of interested women and men and the headmen in two villages. We explained what we were proposing to do. We said we wanted to find out how the young children in the village were doing in terms of growth and health. Then we intended to make milk goats available to women who had children under five years old because we felt the children would benefit from goat milk in their diet. We noted that it would not cost the women any money. (Most rural women lack the means to purchase even local goats, because they cost from $30 to $50. Dairy goats would be much more expensive.) We said that women who received milk goats would be asked to return the first healthy kid, whether male or female, to the college farm and that this would constitute payment for the animal. We told them that women who took the goats would be asked to attend demonstrations to help them learn how to care for the animals, handle the milk, and feed the milk to their children. We also said that someone from the project would come to the village each week to weigh and measure the participants' children to see if goat milk in their diet was having an effect on weight and height of their youngsters.

Village women were uniformly positive about the project—they wanted to participate. But men, including the headmen, were more skeptical. They worried about the impact on social relations of such valuable animals going to women—it didn't seem appropriate—couldn't the goats be given to the men of the village? The goats were not to be sold or slaughtered, we said. They would be there for the benefit of the children, and their care would involve extra work for the women. Everyone knew that children were suffering because of malnourishment—sometimes a child would become so seriously malnourished that relatives had to take it to the district hospital for nutritional rehabilitation. This meant a three-week hospital stay with a family member right there to feed and care for the child. The cost to the family was considerable. And the death of a child was a great sorrow. So eventually the men agreed that the project should go forward. The headmen agreed that the goats should belong to the women and said they would resolve any disputes over ownership in favor of the women.

When we were ready to talk with people in a third village about the project, we learned something that quickly dissuaded us from continuing there. It seemed that there was animal theft going on in the area, and the prime suspects were a family living in the third village! Until the local system of justice had solved these crimes and dealt with the perpetrators, we could not take the risk of working in that village. Animal theft became a problem in the other two villages as well. The rural economy in Malawi has weakened in recent years because of droughts, floods, soil depletion, deforestation, erosion, low prices for commodities, and high rates of inflation. The annual hungry season, the period of time between when people consume the last of the food they have stored to the time when the next crops are harvested, used to begin in December and end in March. Now the hungry season often begins in September. People must

reduce the amount of food they eat at a time when they have to carry out the heaviest agricultural labor, preparing fields and planting them when the annual rains begin. Both men and women do this work and nearly all agricultural labor is done by hand. In the depth of the hungry season, people may turn to eating maize bran, the portion of the maize kernel that they normally feed to their animals, in order to have something in their bellies to assuage the hunger pangs. Under conditions such as these, it is no surprise that theft of animals is on the rise in the countryside.

Women in the two villages who received milk goats responded vigorously to the threat of theft once a few animals had been stolen. They began to take their milk goats with them as they went to work in the fields, tethering them nearby rather than letting them range free. They built pens against the sides of their mud or brick houses, to provide shade and security. At night they brought the animals into their houses so the whole family could guard them.

Our research team hired two young women who were both native speakers of the local language, Chichewa, and who had grown up in villages. We asked them to administer the baseline survey in the two villages and to continue working on the project. They would help to distribute animals to village women and later pay weekly visits to the recipients to weigh and measure their young children. One of these young women remained with the project throughout, and is dedicated to working with the villagers. She has been a key to the success of our work.

The baseline survey of households with children under five years of age revealed some interesting and useful information. Women headed 30 percent of the households; there was no adult male regularly living with them. Almost 75 percent of the women were nonliterate. A total of 35.4 percent of the children were underweight for their age and 57.7 percent were stunted (short for age). These figures are close to the national averages for a preharvest season, i.e., the hungry season. A surprising finding was that children in female-headed households were less likely to be undernourished or stunted. We can only speculate about why this was the case. Perhaps it has to do with groups of related women sharing resources in the interest of their children's well being.

We gave women who participated in the baseline survey the opportunity to volunteer to receive a milk goat, with the understanding that they would attend demonstrations that taught ways to manage the animals and keep them healthy, how to milk goats, how to keep the milk from spoiling, and how to add it to their children's food. We also pointed out that they would have to return first-born kids to project personnel so the does could eventually be distributed to other women, but that all kids born after that would be theirs to keep. The female goats would increase their flock of milk-producers, and the males could be sold to give the women much-needed cash. All women who received milk goats would also be provided with a bucket for milking, a pan for cooking, and a measuring cup to help them track milk production.

The program proved popular. Very quickly the project had more participants than it could accommodate, and we had to create a waiting list. We gave

priority to those women who had children under five that were most seriously undernourished. Other women on the waiting list agreed to this. We also provided animals to some grandmothers who were raising young grandchildren orphaned when their parents died of AIDS. Care for AIDS orphans has become a major problem in Malawi, and is reflected at the village level. It is common to see women, already struggling to care for immediate family members, stressed to the maximum as they undertake to feed and house children left behind by relatives who have succumbed to the disease.

Team members designed and began to present demonstrations for village women on goat management, goat health, milking, safe milk handling, and incorporation of milk in their children's food. Recipes using local ingredients and goat milk were developed and tested in the home economics kitchens at the college, and taste-tested by the women participants and their children at the village-based demonstrations. The recipes that passed the taste test were routinely used by the women; those that didn't were rejected.

When the women received their animals, all of the does were either pregnant or already had young kids. This is when project field assistants began their weekly visits to the villages. During each visit, the participating women gathered in a central area of the village with their children. Each woman would have her child or children weighed in a sling scale that was suspended from a tree branch. Once a month, team members measured the upper arm circumference and height of the children. The fact of high child mortality was brought home to me in a very graphic way during this process when some women initially objected to having their children's height measured because they thought it was too much like measuring the children for coffins. A few women persisted in their objection. In these cases, our field assistants could only estimate observable changes in height. The field assistants also asked women about the general health of their children during the previous week, the milk production of their goats, and the health of their goats. If a goat was ill, the field assistant arranged for a veterinary assistant or the team member who was a veterinarian to travel to the village and examine the animal. If there was a significant health problem with a child, the field assistant notified faculty team members who would then take the information to the nearest clinic where they could arrange transport of the woman and child to a hospital if that was called for. Almost all the women who received animals were committed to caring for them and using the milk for their children. Ninety-eight percent of the recipients returned the first kid to the project. This is an astonishingly high rate of return and it implies that rural women would be very good risks for other kinds of so-called "payback schemes" that make local efforts to improve economic security sustainable.

We were gratified to see that those children who began to receive even small amounts of goat milk as an ingredient in their daily diets showed steady weight and height gains even when they were sick. In time, however, we began to see children hit growth plateaus or even lose ground temporarily. We learned from village women themselves why this was happening. Women who made up village committees approached the project team with a proposal for a solution.

They told us that their milk goats had to have at least two kids before they could get a second high-yield doe, and this meant that there were periods of time when no milk was available for their children. The women asked if we could teach them how to grow soybeans. They were all familiar with soybean flour as a food for undernourished children because this is what they received when they took their malnourished children to maternal and child health clinics for treatment. Their plan was to grow soybeans and grind them into flour to feed their children when no goat milk was available.

Our project team went back to the drawing board and figured out how to incorporate this new effort. The team purchased soybean seed and distributed 5 kg of it to each woman in the two villages. The village headmen approved of this effort and in some instances designated land for use by those women who needed it. Malawi team members developed and presented demonstrations on how to grow and process soybeans. The women agreed to pay back the 5 kg of seed after their first harvest, again a way to perpetuate the program over time and make it sustainable, and all did so. Women have now completed three or four successful growing seasons with soybeans, and are many are growing and storing enough beans to see them through the periods of time when their does produce no milk. They also save enough seed for the next planting season.

It also became clear after a short period of time that we would have to change the goat crossbreeding program. The college farm could not breed enough hardy milk goats to keep up with the demand. The animal scientists on our team looked for local Malawi goats that were the highest milk producers and these, when pregnant or with a kid, were distributed to women on the waiting list. Simultaneously, plans were made to build buck stations in each of the villages and to provide each station with a Saanen or crossbred buck to breed with local goats. Village headmen oversaw the building efforts and other men and women helped to feed and water the buck. When a doe comes into heat, the owner can bring it to the station to be inseminated. In this way the Saanen genes for high milk production spread more rapidly into the village flocks. The villagers know that their bucks must be exchanged for others about every three years in order to avoid inbreeding.

I returned to Malawi for a short visit in the summer of 2004 and found that many positive features of the project were still in place. In discussions with groups of women who had received dairy goats, I learned that two-thirds of them still had their original project animals. The remaining third had lost their original animals to disease or injury, but not before the goats had delivered offspring that survived. Only one woman had sold her animal before it had given her viable kids; this is tantamount to a farmer selling or eating her seed! But the woman's situation was quite difficult. Her husband was seriously ill and could not assist with farm work, and as a consequence she had been unable to raise sufficient maize to provide for household subsistence. She was desperate for cash in order to purchase food, and it was out of this desperation that she sold her milk goat.

Several women had a sufficient number of animals that they were able to meet the nutritional needs of their young children and sell surplus goats, primarily to NGOs planning to launch similar efforts to address child malnutrition. For the most part, money earned in this way was used to buy commercial fertilizer in order to increase the maize harvest. Cooking oil, salt, and clothing were other items commonly purchased with these earnings. The loss of animals to theft had decreased due to the introduction of a community policing effort. Professional police have trained villagers to take turns patrolling the village and its surrounding area at night in order to discourage thieves, and it seemed to be working. But another danger had presented itself. Because the 2004 harvest was not a good one due to erratic rains, people were anxious about their food reserves, most knowing that they would run out long before the next harvest. One result of this is that domesticated dogs (every household has a watchdog) are not fed adequate amounts of cooked maize bran or leftover cooked maize flour. They are hungry, and they have begun running across the fields in packs, attacking kids and young goats belonging to people from villages other than their own. Some people have lost valuable kids in this way and were considering tethering kids while the does free range. Normally tethering occurs only during the rainy season after planting has taken place. There is the possibility that marauding dogs will be shot, but this raises the likelihood of inter-village conflict.

Of the four village buck stations erected as part of the project, three were in good repair and the bucks well cared for. The fourth was somewhat rundown and needed refurbishing. And it was clear that the buck needed better care. After some discussion and investigation, it became apparent that the headman had declared the buck was his personal property and only his relatives could use its services—anyone else would have to pay him a fee if they wished to bring their animals to the buck. Not surprisingly, people did not take well to this proclamation. They more or less boycotted the buck station, which meant that most of the care of the animal fell to the elderly headman and his wife. The station was repaired, the animal was provided with nutritional supplements, the household was provided with a new bucket for the dedicated purpose of bringing water to the buck, and the headman was informed that the buck would die or be returned to the college if it did not receive better care. In the end, it became clear that a miscommunication had occurred between the headman and project personnel, leading the headman to conclude that he was now free to charge for use of the buck station. By the time I left Malawi, the misunderstanding had apparently been cleared up. College personnel will continue to check on the well being of this valuable animal—it would be a great loss to the village if it were to die or be removed.

During group and individual discussions with women, everyone acknowledged the value of goat milk as a component of their children's diets. I was told that, since the milk had become available in the villages, no child had become so seriously malnourished that he or she had to be taken to the hospital for nutritional rehabilitation. This was a real change from an earlier point in time, and a hallmark of success for all of our efforts, researchers and villagers, to promote the health of children.

Conclusion

Our project team designed and tested a locally sustainable approach to alleviate infant and child malnourishment in rural Malawi. Data on changes in the participating children's weights, heights, and upper arm circumferences show that relatively small amounts of goat milk included in the regular diet make a substantial difference in promoting normal growth in children. Results from a rapid appraisal survey that I helped to design indicate that the project is highly valued by rural women. This is confirmed by key village women and by the fact that more women than project resources would permit sought to join the program. Presently some Malawi nongovernmental organizations (NGOs) have introduced similar efforts in other parts of the country. Several district hospitals that provide rehabilitation for severely malnourished children have established flocks of milk goats on their grounds and use the milk as an important part of the rehabilitation treatment. The agricultural college plans to offer training to Malawians and people from other southern African nations who are interested in replicating the program. And the project villages will be demonstration sites for trainees who want to see how the project works "on the ground."

It was important to have an anthropologist on the project team. As the team anthropologist, I participated in every phase of the project, including management duties at times when it was necessary to keep our efforts on schedule. I was responsible for providing an ethnographic account of local culture and using this information to help shape how we could present the program to villagers. I was not trained to manage goat breeding or conduct some of the health measurements, but I could point out how I thought villagers would respond to our plans and to suggest how best to make them full participants in project planning and implementation. It is easy for people from any society to believe that those who are from elsewhere still see the world in the same way they do. Since cultures differ (Americans, for example, find it difficult to understand the ramifications of a matrilineal descent system) anthropologists can translate information about such differences in ways that are useful to other members of interdisciplinary teams. Thus, we can shape programs to fit local conditions and help with cross-cultural communication. That is what I think happened in Malawi.

Connection Questions

1. In the framework of critical medical anthropology, what are the structural causes of child malnutrition in Malawi?
2. What is applied medical anthropology, and what role does it play in the programs described by Sonia Patten to improve child nutrition in Malawi?