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ABYEI RURAL DEVELOPMENT PROJECT

REPORT ON THE HEALTH PROGRAM

JUNE 1978 - JUNE 1979

DANA LARSON M.D.

OCTOBER 1980



*Integrated Rural Development Project  
Abyei, South Kordofan, Sudan*

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## FOREWORD

The Abyei Development Project is an experimental integrated rural development project that is exploring the ways in which a range of developmental activities can be combined most effectively to improve the livelihood of a remote rural population in the Sudan. The locus of the project, on the border area between South Kordofan and Bahr el Ghazal Provinces, and also the border of the northern and southern regions of the Sudan, is probably as difficult, and inaccessible, and politically sensitive an area as can be found in Africa. It is cut off from the rest of the country during the six-month rainy season except for travel by foot and uncertain radio contact. The level of education, health, transportation and other government services is well below the low national average. Inaccessibility, past civil war and continuing political tension have all contributed to the record of neglect. On the other hand, the aspirations of local leaders, based on what they have seen in more favored parts of the country are far in excess of what is technically feasible, economically possible or politically likely for the foreseeable future. While the traditional system of transhumant cultivation and livestock raising provides a minimal livelihood, it has at least been the means of survival in an extremely harsh environment. Any modification of that system must inevitably be capable of functioning in that environment. Wholesale transplants of "modern" facilities or techniques into Abyei are both very costly and often unsustainable.

Because so little was known about the technical, economic, and political conditions of the Abyei area, the first concern of the Abyei

project was to gain a better understanding of those parameters in the context of carrying out a limited number of action programs addressed to the major problems originally identified by the local population. These main programmatic areas included agricultural production, water supply, education, health and communications. A joint team of Sudanese - mainly from the Abyei region - and expatriots has been carrying out activities in all of these areas since April, 1978. The results of these efforts are recorded in periodic progress reports and through more extensive reports on specific programs, of which this, on the health program, is the first.

These program reports are not intended to be definitive descriptions or analyses of the subject, but rather a combination of personal experience, casual and systematic observation, and program suggestion. These reports will feed into a comprehensive assessment of what has been learned in the process of implementing this first phase of the Abyei project and also, hopefully, into the elaboration of a longer term project for the development of the Abyei region.

The only health services in the Abyei area until recent times were the traditional healers and midwives. Their activities are described in Francis Deng's book, Tradition and Modernization, Chapter 8. Modern medicine was introduced by the colonial government and the missionaries and was initially resisted by the local populace, but soon became an accepted and popular service along with traditional medicine. In the mid-1970s the government built a health center in the town of Abyei. This facility has 20 beds, and several treatment rooms but no operating room. The health center is headed by a doctor, who is assigned to Abyei by the provincial authorities for a six-month tour of duty. The permanent staff consists of a medical

of the Sudan. Second priority is being given to training programs for upgrading the midwives and other health personnel so that they can perform their services better and also give support to the newly trained neighborhood health workers.

\* \* \* \*

Dana Larson served as the health specialist with the Abyei project for one year from June 1978 to June 1979. A graduate of Washington University Medical School, Dr. Larson had worked as a general practitioner in the United States, and in Ethiopia as a Peace Corps Volunteer with the Department of Medicine of the Haile Selassie I University Medical School from 1971 - 1974.

Because so little has been written, or is known, about health conditions and practices among the Dinka and neighboring peoples of the Sudan, much of Dr. Larson's efforts were devoted to getting acquainted and gaining some understanding of the area. Her report gives some valuable insights into the daily lives of the people and the problems that must be confronted in trying to introduce improved primary health care in such a remote and difficult area. Her personal courage and fortitude in serving under such conditions are also to be commended.

David C. Cole  
Project Coordinator

assistant, several nurses and some assistants. In 1978 there were also four dresser stations in outlying villages that were understaffed and underequipped. As Dr. Larson reports, several have since been closed down. The health center represented an important advance in the health services of Abyei and it was generally appreciated by the local people. It was, however, oriented totally to curative medicine and depended on people coming to it rather than bringing health services or health education to the people. The doctor, being assigned to Abyei for only six months, generally had little opportunity for or interest in, introducing a broader program of public health. As the local people were requesting an expansion of health services, this seemed to offer an opportunity for the Abyei project to introduce a new range of services that would both augment and complement those currently available through the government.

The health component of the Abyei Development Project was intended to:

- a) evaluate the health status and health problems of a remote rural population;
- b) complement the government's expanded health services, under the newly adopted National Health Plan, by experimenting with a health worker training program that would operate at a level of 40-50 families which would be below, but linked to, the community health worker, called for in the government plan, who is to serve some 4,000 persons or 800 families;
- c) help fill in some of the other gaps in the existing health services; and
- d) monitor the health status of the population both as a way of assessing the impact of other project activities on the well-being of the community and to explore opportunities for increasing the beneficial health effects of those activities.

Priority has been given in the project to the experimental health worker training program as a quick means of supplementing the existing limited services and also testing the relevance of this model for the longer term program of improving health service in Abyei and other parts

## INTRODUCTION TO ABYEI

Abyei is 5 hours from Khartoum by Piper Cherokee, including a refueling stop at El Obeid where we stood in a hot wind drinking strawberry sodas admiring the carefully tended flower beds laid out in the sand. The flight was pleasantly uneventful although we were a bit unnerved by the pilot's chain smoking which started before take off and continued throughout the trip.

From the air, Abyei looked larger than I had expected. In addition to the several hundred mud and thatch huts, there were numerous permanent buildings which turned out to be the health center and doctor's quarters, government rest house, assistant commissioner's house, boy's school, police and military headquarters, teachers' houses, Catholic church, the house and store of the most prominent merchant, several other shops and storehouses, and the mill. The Nyamora River, the branch of the Bahr el Arab that waters the town during the rainy season and part of the dry season, had been swollen by the May rains and presented an impressive sight as we circled the town before landing. The rains had also generated the lush green vegetation that decorated Abyei and the surrounding plains.

The plane was met by a crowd of people: little boys in ragged shorts or djellabias, naked babies and toddlers with their mothers in their gauzy tobes, young girls in colorful polyester Western style dresses, men in djellabias-laborers and farmers in worn grey ones, merchants and school teachers in well-pressed dazzling white ones, policemen and soldiers in green or brown uniforms, young men in European style trousers and shirts, teenagers and kids of both sexes in tee shirts and sweat shirts emblazoned with Walt Disney characters or names of American universities. Most people arrived on foot, an elite few arrived in government vehicles and about ten pedalled to the air strip on bicycles. One of the cyclists turned out to be Father Silvano, the newly arrived Italian priest, a man with 24 years experience in the Sudan. The arrival of an airplane is a big event in Abyei, a town which has no permanent roads and no public transport except for precarious seats on the top of a merchant's lorry. Everyone comes to see who has arrived and who will be lucky enough to get a seat on the plane back to Khartoum. On this day, all seats were spoken for by our project staff members, anxious to leave before heavy rains made departure very difficult. Abyei is cut off during the rainy season; the track to Muglad disappears under a sea of water and mud and can be negotiated only on foot or on the back of a hardy Baggara transport ox, or with two tractors to pull each other out of the thick, sticky mud. The landing strip, a cleared area outlined by whitewashed rocks, is useable only if it has dried out for four or five days. The expense of chartering a plane for the round trip is another limiting factor.

Our luggage was loaded into the back of a beat-up Land Rover pick-up, one of the two vehicles assigned to the project and one of the handful of vehicles in town, excluding the military trucks. A swarm of small boys clamored to be allowed to ride in the back; three were chosen to help with the unloading. We new arrivals sat packed together in the front seat for the hundred yard journey to one of the brick houses with a corrugated tin roof and high brick wall, the house designated for the Deputy Assistant Commissioner. He had not yet arrived and the house was occupied by project staff and supplies.

The house was built in the usual government housing pattern dating back to British colonial days. Two large rooms with high ceilings connected by a large central hall were backed by a screened veranda. Cooking was done in a separate small building where the cook and her two children also slept. Later I discovered that the prisoner who worked for the doctor slept there as well. The courtyard was divided by a wall to provide a separate area for Arab wives. There was a small shower room off the central hall with water piped in from the town's deep bore well. Only the health center complex which had its own well and a very few other establishments in town had piped-in water. The vast majority hauled their water in jerry cans from the well located on the edge of town near the air strip. The toilet consisted of a bucket placed under a concrete pedestal in a small brick house in the rear of the compound. The bucket was emptied on a somewhat irregular basis by the night soil man who arrived in the middle of the night with his horse drawn cart and accomplished his task amidst much clatter. He, in turn, emptied his cart near the air strip for the sun to dry and sanitize the material. This practice accounted for the characteristic odor that greeted air travelers to Abyei in certain prevailing winds. Since Dinka custom dictates that the body's eliminatory functions be carried out in utmost privacy and far from the home, these "modern" toilets facilities were limited to a few homes, the schools (where the latrines were in great disrepair), the military camp and the church.

Before the plane left on its return trip to Khartoum, we had breakfast with the pilot and departing staff. We were introduced to the staple food, a greyish lump of porridge made from sorghum and eaten with a tasty sauce of meat and okra. We were also served broad beans with onions and cheese, a tiny tough roast chicken, and peanut soup. Dessert was a bright orange colored custard with rice. This was a very sumptuous meal by Abyei standards. The usual diet of the Dinka townspeople is the porridge and okra sauce. Chicken becomes very scarce during the wet season and broad beans and cheese are brought in from the north and only the well-to-do can afford to eat them and the other imported foods such as rice, lentils and pasta with any regularity before the supply runs out in mid-rainy season.

After a short nap, sweating in the hot muggy oppressive atmosphere which precedes a heavy rain, I was visited by two Dinka ladies who spoke English and had participated in the nutrition survey the previous January. Christina, a pretty mother of five children, was headmistress of the girl's school. Her friend Marta who worked for the Rural Council said she was 34 and also had five children. They were surprised that we planned to move into traditional housing, especially since the huts were being built in an area far from the market, the well and on low ground so we would be surrounded by mud and water for six months of the year. Both urged us to stay in the comparative luxury of the commissioner's house. Marta lived in a well-built mud house in the best location on the edge of town, a small hill. During the wet season her compound remained dry but she had to wade through a small swamp at the bottom of the hill to get to town. This presented no big problem to Abyei people; people who lived on the other side of the Nyamora had to wade chest deep through water to get to market during the wet season. Christina and her headmaster husband lived in one of the other brick houses in town but had a compound full of mud and water for the six rainy months.

While we drank the obligatory glass of hot very sweet tea, we chatted about the concerns of the ladies. Christina was six months pregnant, due to deliver in October. As the mother of four girls and one boy, she was hoping for another son as was her husband, although girls are valued by Dinka since their marriages will bring the family more cattle. She was attending the Wednesday morning prenatal clinic run at the health center by the Arab midwife. All of her children had been delivered by this woman without difficulty, but Christina and Marta were concerned about the arrangements available for complicated deliveries, mainly the lack of transportation to the health center. Although, as town dwellers, this did not directly affect them, they had close relatives living a distance from the town. In the countryside the birth attendant would not be one of the trained illiterate midwives, all three of whom lived in Abyei, but an untrained older woman who would lend moral support and cut the cord. If there were complications, the pregnant woman might be carried to the health center on a litter or picked up by the health center lorry which served as an ambulance, depending on the fuel supply, roads and condition of the vehicle. Marta and Christina expressed reservations about some of the traditional midwives, complaining that most of them did not wash their hands and did not cut the cord properly. The woman who attended births in Marta's area when one of the trained midwives did not come, had a reputation as a heavy drinker. One of Marta's children had died several days after birth and Marta felt the death was related to the manner in which the cord was cut and that a number of Dinka

babies died for this reason.

Schools were another topic of conversation. Christina, who teaches several subjects, including health, said both boys' and girls' schools were understaffed. The girls' school was housed in mud and thatch buildings in very poor repair. Even the brick boys' school leaked and both needed benches and blackboards. School was supposed to be in session during the rainy season but some of the Arab teachers assigned to Abyei did not make it before the road closed. The school frequently closed in mid-session because of lack of food for the boarding students who used the classrooms as dormitories at night. Students who succeeded in completing six years in Abyei and passed the examination had to go elsewhere for secondary school because the planned secondary school on the outskirts of town had not been completed.

The ladies departed, promising to visit again and I set out on an inspection tour of the town. We crossed the large open cattle market near the Nyamora and went through the market -- five or six permanent buildings of whitewashed brick or cement and three streets of corrugated tin shacks-- then we wandered along the muddy paths winding between groups of huts where small children played in the mud between the huts, older boys kicked makeshift soccer balls, women cooked on charcoal braziers outside their front doors and men lounged in groups under the scattered trees. We rushed back to our temporary quarters just ahead of the six o'clock downpour which turned the ground into a shallow sea in minutes. The rain was very heavy, but ended within the hour.

Just before the light failed completely, we found our way around and through the mud and puddles to the doctor's concrete block house behind the health center. Dr. Raafat, the doctor assigned to Abyei for the six month rainy season, and his new bride, Norma, a trained nutritionist, had arrived in town four days earlier from Kadugli, the provincial capitol, traveling with the newly appointed police chief and his new wife. We sat outside in a swarm of insects attracted by the fluorescent light powered by the health center generator which ran four hours a night during the dry season. The health center, medical assistant's house, police club and military headquarters had electric lines but a shortage of light bulbs and other problems prevented most of these buildings from being lighted. The insects attracted bats, swarms of which inhabit the corrugated tin roofed buildings of the town, including the health center.

Norma, raised in Khartoum, excitedly told me about a scorpion in the Land Rover on the trip and the snake they killed in their garden that very day. She also explained that the broken concrete blocks scattered about the compound were to keep ones feet dry while the ground was muddy. Their quarters housed one of the three kerosene refrigerators in town and I stored some of our drugs

next to Dr. Raafaat's drugs, batteries, cold water and butter and cheese in UNICEF tins. Dr. Raafaat explained that he bought the butter and cheese at a very low price. The food was donated to schools but the children didn't like it so it was sold to buy local food.

The next morning at the health center -- a concrete block complex built in the sixties with Russian aid, I met the doctor. The doctor's office in the last of the three parallel wings besected by a covered walkway, looked like a somewhat spartan office anywhere, with a desk, examining table, scale, drug cabinets, sink with dripping faucets, blood pressure cuff, ophthalmoscope and otoscope. He showed me his medicine stocks: tetracycline, penicillin, ampicillin, triple sulfa, INH, thiacetazone, chloroquin, vitamins, iron tablets, and a number of preparations for parasites. He thought he was fairly well prepared for the rainy season, but hoped additional supplies of intravenous fluids and chloroquin would arrive from Kadugli before the road disappeared. He was not dismayed by the almost total lack of laboratory facilities since even in Kadugli, his previous post and a major provincial hospital, X-ray and lab facilities were only available part of the time and each doctor had to rely on his own diagnostic skills and judgment. Exploring the shambles of the store room, Dr. Raafaat had found three microscopes donated by UNICEF, a box of unlabeled and probably outdated stains, a UNICEF centrifuge but no microscope slides. I volunteered to supply the latter and he planned to try doing some lab work himself.

From the office we went to the dark, damp room where the medical supplies were kept in a complete mess. Boxes, bottles, bundles were jumbled together, some leaking their contents, some crushed, some water marked, all dust covered. Wading through, we found an abundance of cherry syrup and plaster of paris and a good selection of outdated drugs. Later, we were reassured by the medical assistant that all of the useful drugs and supplies were removed from each new shipment and stored in other rooms. Dr. Raafaat planned to have the storeroom cleaned out and organized.

Next to the storeroom we visited the kitchen, a large steaming room furnished with two large size charcoal stoves and a rough table. There was a bag of charcoal in the corner and tins of sugar, salt and rice on the table along with a pile of the local flat, round bread. Two big pots simmered on the cookers, a thin stew of tomatoes and okra which would be the 10 o'clock breakfast for all the patients. The afternoon meal at 4 would be the same. Dr. Raafaat told me that the food budget was 200 Sudanese pounds a month.

After visiting the market later, I realized how little this sum was. By the time staples such as bread, okra, salt, sugar, tea, and vegetables in season were bought, there was little left over for such things as eggs, milk, meat or chicken. The health center had its own garden but the few vegetables that survived the insects and marauding goats were sold to augment the petty cash used to buy insect spray, pay the gardener and provide gratuities for the volunteer workers.

The operating theater was also in the third wing. It contained a stretcher type table and two rough tables with a miscellaneous collection of instruments, most donated by UNICEF. The nurses entered in bare feet as a sanitary precaution. There was only one pair of gloves, one bent needle holder and very little suture material. Dr. Raafaat had planned to do some surgical cases but after reviewing the theater supplies, he realized that he would have to limit himself to very minor procedures. (In October he demonstrated his skill and resourcefulness by performing an emergency Caesarian section on Christina, the school mistress. The baby died but Christina recovered completely.)

The room next to the theater, the private ward, was set aside for army officers, merchants, school teachers, government officials and other important people who required hospitalization. The young lieutenant we saw, recovered from malaria, was ready to be discharged and his friends were there to help him carry his bed, sheets, mosquito net, bedside table, flashlight, thermos flask, tape recorder and dishes back to the military quarters. The health center had beds and what passed for bed linen but these were limited and those who could were expected and usually preferred to supply their own.

We jumped off the veranda into the grassy space between the wings and climbed up onto the veranda of the two men's wards. Like all the rooms, these two were large and clean but since there were no screens anywhere in the health center, flies were everywhere. After sunset, the mosquitoes came in swarms. We saw an old man recovering from pneumonia who complained of aching joints, a jaundiced young man in coma, a farmer with a snake bite on his hand which was swollen, and another young man with fever, aching joints who was being treated for malaria. We moved across the central corridor into the other half of the wing to see the three women's wards. We visited an 18-year old recovering from malaria, a middle-aged lady with pneumonia, a 14-year old girl with probable osteomyelitis after a compound fracture of her right femur

several months earlier, a young girl recovering from a gluteal abscess secondary to an intramuscular injection of chloroquin, another woman with malaria and a woman who had been beaten and was admitted for observation as routine police procedure. The third room was kept for women with obstetrical and gynecological problems and had two women in it. One of them was three months pregnant with vaginal bleeding and the other lady had delivered at home with a traditional midwife and been brought to the health center with a retained placenta which had been removed by one of the trained midwives.

Across from the female rooms was the room reserved for children where we visited a malnourished baby with diarrhea and a chest infection, another baby recovering from pneumonia, a 6-year old boy who had been in the health center for three weeks with tetanus and was now able to sit and walk, although somewhat stiffly, a little girl with a snake bite on her left leg who was ready to be discharged. She had had local swelling and pain at the site of the bite but had recovered quickly and completely.

Dr. Raafaat told me that the health center had twenty beds but that patients frequently brought their own or slept on grass mats. Most people brought a friend or relative to stay with them, the verandas accommodating the overflow. In addition to the mosquitoes and flies, bats living under the tin roof were a problem. The doctor hoped to do something to get rid of them and also planned to have all the mattresses recovered and mosquito nets made and the compound cleaned to get rid of the rats and snakes that lived in the tall grass.

After the 10 o'clock break we met again in the doctor's office where Dr. Raafaat saw patients referred to him by the medical assistant who conducted the outpatient clinic. Patients needing admission or who returned because of no improvement or who had complex problems were sent to the doctor. Some people, those who felt too important to see the medical assistant or those who were quarreling with him, came directly to the doctor's office although this practice was discouraged. On this morning he saw 10 people of whom he admitted one, a 9-month old boy with an ear infection who was also malnourished.

We talked about the five dresser stations in the surrounding area serving the rural community. Dr. Raafaat had not yet visited them but knew that at least one of them was closed down because the dresser running it had been jailed. None of them was staffed by nurses or medical assistants but rather by "servants" whose training had been "on the job" at some time in the past.

Drugs were supplied on a very hit or miss basis depending on the supply which reached Abyei. Although the health center had its own truck, it frequently did not work or had no fuel or the tracks were impassable so supplies could not be delivered. The dressers walked to Abyei for their salaries from the Rural Council and carried back whatever drugs they could get from the health center. The three trained midwives in the area all lived in Abyei, although two of them should have gone to outlying villages. They refused because of lack of housing and personal problems. In Abyei they did less than five deliveries apiece a month and the two young Dinka midwives were working at the health center as nurses. I learned later that most people came to the health center when they were in town for market or relied on traditional healers.

Dr. Raafaat said that the health center had plenty of staff in numbers although most of them lacked training. There were four fully trained male nurses and another four nurses in training, as well as the two midwives who were performing nursing duties. About six men and women worked as servants doing menial chores while acquiring some skills. In addition to this paid staff, there were a number of local ladies who worked on a volunteer basis, hoping to become paid servants when a vacancy occurred. According to the Ministry of Health, the health center should also have had a laboratory technician and an operating room technician plus a health visitor to run MCH services and supervise the midwives. Two area men were training as community health workers and with their return they would take over two of the dresser stations and convert them to the primary health care units specified in the five-year health plan.

At noon I met the Arab midwife, Atoma, who conducted a prenatal clinic every Wednesday. The pregnant ladies had started to gather at 10 o'clock, mostly Arab women, wives of soldiers or policemen, a few Dinka ladies, including Christina, all dressed in their best bright filmy tobés. Atoma weighed the women, listened to their complaints and comments, examined each one's abdomen, listened for fetal heart tones and handed out prefilled paper horns of iron tablets. She referred some of the ladies to the doctor for further evaluation of complaints of abdominal pain, vaginal bleeding, dysuria, or fever. Although she saw 10-20 women per week she said she would not be called to all of their homes for the deliveries; many of the women would have a traditional midwife, a neighbor or their own mother. Atoma is

the best established of the three midwives, being the oldest and the only married one with children. Her long residence in Abyei and good reputation have counteracted the prejudice against her as an Arab.

My third day in Abyei, I visited the outpatient clinic and made the acquaintance of the medical assistant, Zacharia. He was a Dinka from one of the divisions of the town's leading family and had been assigned to Abyei for a number of years. Two of his four wives worked as servants and a male relative either father or brother, was reputed to be the most famous kajur or traditional healer in the area. Since doctors were assigned to Abyei for only six months at a time, the medical assistant had the main responsibility for the running of the health center. His job was complicated by the arrival of a new young doctor twice a year with new ideas. Zacharia seemed to have learned to adapt to this and usually managed to enlist the new arrival on his side of the perpetual family and town feuds. These feuds affected Zacharia's role as a health care provider since a number of people were reluctant to consult him in this capacity if they had disagreed with him.

On this Thursday morning the outpatient clinic was very busy, since many people combined a trip to the big market with a visit to the health center. Zacharia saw over one hundred people, most of them complaining of fever and headache, colds, eye problems or gastrointestinal problems. He referred about twenty of them to the doctor, four for admission.

After breakfast, Norma and I went to the market ourselves. The Arab merchants were well stocked with goods brought in from the north; broad beans, lentils, rice, white flour, milk powder, tinned pineapple from China, Sudanese jelly, tea, sugar, the Chinese equivalent of Tang, custard powder, salt, whole spices such as black pepper, cinnamon and cloves, baking powder, pasta, batteries, perfume, yard goods, tennis shoes, plastic sandals, razor blades, soaps, and orange lollypops. The row of tailor shops displayed ready-made djellabias, shorts, and children's clothes as well as a selection of yard goods. Norma pointed out the man reputed to be the best tailor of women's clothes.

The country women with goods to sell were gathered in an open space in front of the mill. They had milk in gourds, a few early tomatoes and tiny okra, dried tamarind, two or three eggs, some scrawny chickens and some simply woven grass fire fanners for sale. Next to them, fish from the

Nyamora were displayed on a narrow bench; there were several different kinds and all of them were inexpensive. The dogs were gathered around the lean-tos that housed the meat market, although all the meat is sold in early morning immediately after the ox is dispatched.

These were my impressions of Abyei in June 1978.

Dana Larson

I. HOME VISITS

Since there was no specific plan of health program activities for the rainy season of 1978 and my Sudanese counterpart was not in Abyei, it was decided to make use of the skills of Norma Louis, Dr. Raafat's wife. Norma was enlisted to help make home visits to corroborate information obtained by the joint HIID-MOH Department of Nutrition survey, to introduce ourselves to the community, and to observe women and children in their homes.

Norma and I drew up a brief questionnaire (See App. 1, "Questionnaire for Home Visits") based in part on questions used at the nutrition centers in Khartoum where Norma had worked. The questions were revised as we became more familiar with local attitudes and customs in our visits and responded to advice from our guide/translator, Acai.

The home visit team consisted of myself, Norma, and Acai (a trained but illiterate midwife) who was seconded to the team by Dr. Raafat. She had several qualities and skills that made her especially useful. She spoke Dinka and Arabic, she knew everyone in the area, she was well regarded in the community. She was an intelligent woman and rapidly picked up and used bits of child care and health information, telling the women without prompting from us.

Most of the visits, which began June 24 and were completed on July 30, 1978, were made to compounds in Abyei town and immediate surroundings up to a distance of about 2 kilometers from the market. Two women were interviewed on a joint agriculture-health visit to Thithiei. Acai

was our guide and usually decided where we should go each day. The amount of water and mud in an area also were taken into account. We tried to visit compounds in all the different sections of Abyei and visited women in 16 different areas as identified by Acai. The visits were conducted in the morning starting at 7:30 -- 3 to 4 per day. On days with heavy rain no visits were made. We had anticipated that some of the women would not be available because of work preparing the mid-morning meal or in the garden plots. In fact, the women were happy to talk while cooking or to suspend operations during the visit which lasted about 30 minutes. Field work did not seem to be pressing at this time. This may have been because many of the women did not have plots of their own, as well as the fact that it was after planting and before harvest.

The conditions of the compounds and huts varied little. The wives of policemen and army men tended to have compounds on higher ground and hence less muddy. Their huts were more likely to have doors and screened windows. Most of them had more in the way of possessions such as thermos flasks, tape recorders, matching sets of glasses. In general, the family the woman and her children and her husband if he is present -- all sleep in one hut. Beds vary from metal framed and sprunged to wooden frames strung with hide to grass mats. Most families have mosquito nets, although not necessarily enough to go around. Cooking is done outside or in a rakuba (grass lean-to) or, during the rains, in a hut which may also be the sleeping hut. Animals -- dogs, chickens, goats and sheep -- wander freely about the compound and in and out of the huts, eating out of dishes left within their reach. Water is stored in kerosene tins, clay pots or buckets, usually uncovered. The water may come from the deep bore well or the river. Poorer families are likely to use river water to avoid the small charge

levied at the bore well.

All of the women visited were married and most had children. Most were Dinka, representing all of the nine lineages, with Dinka husbands. Seven women were Arabs, wives of military men or policemen; one was Felata, the wife of a tailor. She and her husband had lived in Abyei for many years. In several instances, two women interviewed were wives of the same husband and shared a compound.

Without exception, the women seemed to be glad to see us and responded openly to our inquiries, even those about such potentially sensitive areas as children who had died and the health of living children. We ran into some problems with audience participation, however, spectators answering the question rather than the interviewee and influencing her answer. Also, when we moved on from house to house we would find that the women had already heard the questions and the answers given by their neighbor (s) and would repeat the same answers. We tried to discourage this by limiting the audience to the family and by increasing the distance between compounds visited on the same day while remaining in the same area for our own convenience.

The questionnaire asked about infant feeding and weaning practices. The majority of women breastfeed their children. Only two had ever used a bottle, both because their breast milk declined after initial breast feeding (one started using a bottle when her child was two months old and used cow's milk; the other used powdered milk starting when the baby was six months old). Children are usually breast fed until they are two years old. The reason for weaning at this age was given as "custom" although some women said it was because the child could walk by then and therefore walk over and share in the family bowl of food. Other reasons for weaning were pregnancy (the

only child weaned at less than one year was weaned for this reason), return of menstruation (milk of menstruating women is considered harmful to the child), and husband's desire to resume sexual relations, which are usually abstained from while a woman is nursing a child.

All of the children except the two bottle babies mentioned above and four other children whose mothers had obtained bottles from the Arab merchants were weaned to a cup or spoon-shaped gourd.

Few children receive supplementary food before the age of one year. Two Arab women said they start giving custard to their babies when they are 5 months old. Children between the ages of 12 and 24 months still on the breast may also be given cow's milk, bread custard (made from custard powder by the addition of milk or water), asseda (sorghum porridge) or medida (thin sorghum porridge with milk or water). Rarely will a child this age be allowed to eat moola (stew of okra with or without meat), eggs, meat or vegetables. The weanling is allowed only "soft" foods. Adult foods such as moola, kissera (flat flimsy bread made from sorghum), and broad beans, meat and vegetables are introduced gradually or not at all until it is three years old or walks over to the communal bowl and helps itself. Adult foods, especially meat and moola, are thought to cause diarrhea, and eggs are withheld from young children because they are thought to make a child slow to talk. While breastfed children are fed on demand, weaned children usually are fed at the same time as the rest of the family, twice a day. A few mothers give their small children a third meal, usually a hunk of bread.

The majority of the children are cared for at home by their mothers, an older sibling or a female relative. In only two instances had children been sent to live with a grandmother, according to Dinka custom. Although

children are commonly sent to relatives in other areas where the food supply is better, this is on a short-term basis.

The diet of older children and adults, except for military families, was consistently reported to be moola, asseda, akobe--the local foods -- with few people buying broad beans, rice, lentils or other imported foods from the local merchants. Some of the women indicated a desire to purchase these things for their families but did not have the necessary cash. Military families, almost all Arabs and accustomed to eating broad beans etc, were supplied with these foods by the Army.

Of the 30 women asked if they had a garden, 23 had one of their own, 4 said the garden belonged to their husband and 5 had no garden. It cannot be assumed that the remaining 20 women had no gardens as this question was introduced in the middle of the interview cycle.

We asked 28 women what they thought were the major health problems in the community. All of the women regarded disease of one kind or another as the biggest problems. This type of answer was encouraged by Norma and Acai. The breakdown follows. Each women gave more than one answer.

Malaria	21	Meningitis	10	Small pox	1
Measles	15	Jaundice	6	Headache	1
Whooping cough	13	Chicken pox	2	Back pain	1
Diarrhea	13	Trachoma	2	Rheumatism	1
Mosquitoes	1	Colds	1	Don't know	1

(The one vote given to mosquitoes was made by a young girl visiting her mother from Khartoum where there tend to be fewer mosquitoes).

We tried to assess the women's attitudes towards western medicine and traditional medicine. Almost all of them use the Health Center. Since we were visiting people in Abyei, they all lived close to the Health Center and convenience may be a factor in their willingness to make use of the facility as well as the fact that there is no charge. Most of the traditional

healers live outside of Abyei and require payment.

Western medicine has by no means superceded traditional healing, and the kajurs<sup>\*</sup> are highly regarded. Most of the women differentiate between problems to be dealt with at the Health Center (malaria, for example) and those that are better handled by the kajur (female infertility, conditions thought to be caused by the evil eye).

We also questioned the women about their beliefs about the cause and treatment of disease. Questions about the cause of a specific disease such as measles, diarrhea or malaria usually provoked no response or the reply that all diseases are from the kajur. One women stated that the kajur was causing more people to be sick now that they were going to the health center. As far as treatment of disease is concerned, many women said they do as they are advised at the health center. We were unable to discover many consistent traditional treatments for specific diseases, but they gave similar answers when asked what they would do for a child with measles. The child would be given only milk for two months and must not be fed any meat. One woman said the mother could not eat meat either. The rash would be bathed with cold water; some ladies would add onion, red pepper or sorghum to the water; a few would have the child drink the concotion in addition to putting it on the rash. One lady told us that fat children die from measles while thin children might live. All of the women felt that children with diarrhea needed medicine from the health center. Most of them mentioned that these children should be prevented from eating meat, moola or heavy foods, while they may be allowed

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The term kajur is used in several ways. One usage is as the name for a traditional healer; another is a word similar to evil eye.

to drink milk. Several ladies during a group discussion agreed that vegetables are associated with malaria, making people more likely to get the disease.

We experimented with questions about the requirements of healthy children trying to use the questions and answers as an introduction to a discussion of nutrition for the family. By and large, this approach was not successful. The women seemed to find the whole concept bewildering. The difficulties of translation from English to Arabic to Dinka might be part of the reason for this failure. In addition, Acai, our translator, tended to be somewhat authoritarian and did not allow discussion but rather ordered the women to feed their children properly.

In all, we visited 50 women in their homes and were well received by all of them. From this admittedly limited experience, I would judge that this method of information gathering is useful in Abyei. The women do not seem to resent questions about their lives put to them by other women and are willing to interrupt daily activities for thirty to forty minutes. The questions must be kept to a number that can be answered in fifteen to twenty minutes as the rest of the time must be given over to amenities.

Results are detailed in Appendix 2, "Reproductive Record . . ."

Briefly, they include:

50 women interviewed:

210 pregnancies - 2 current  
191 live births  
16 abortions 1 still birth

191 live children born

52 subsequent deaths

14 within 28 days of delivery

- 5 on day of delivery

14 between 1 month and 12 months of age

20 between 13 months and 5 years

4 older than 5 years

Mean number of pregnancies per woman 4.2

Mean number of living children 2.8

Norma and I also visited children we had seen at the health center who had a nutrition problem and whose mothers were interested in having us see the children. We saw 5 families on more than one occasion and probably another 5 one time only.

This activity was time-consuming and a bit frustrating but did build up a rapport with the community. The people learned what to expect from us - physical examination of the child, including weighing and then advice, no medicine. This approach to individual nutritional problems requires a lot of staff time and the same thing could be accomplished more efficiently if women attended discussion groups with their children or if someone at the health center could be trained to recognize and deal with nutritional problems.

The women expressed a desire to have discussions about health and child care with us (motivated partly by politeness). A few young mothers indicated that they did not feel that their mothers and neighbors had told them all they needed to know about caring for children. One woman said she learned about child care by observing her Arab neighbors. Using information gleaned from our visits and Norma's experience in centers in Khartoum, we planned and carried out a program of women's classes during the latter half of the rainy season.

#### Women's Discussion Groups

Having completed the 50 home visits to women in Abyei town by the end of July 1978, Norma Louis and I decided to try a short series of meetings with interested women to discuss aspects of child care, first aid and health, topics in which the women had displayed an interest. We decided on a discussion format rather than didactic lessons on the assumption that all the participants, ourselves included, would benefit from hearing the ideas of everyone in the group. Norma and I chose several discussion topics based on

those used in Khartoum nutrition centers and the books Nutrition for Developing Countries and Where There is no Doctor. Additional material was discussed according to the desires of the women attending.

In addition to the discussions led by Norma, we weighed the children of the women as an added incentive to attend and to introduce the concept of weight and its importance. We used two balance type scales from the health center and made a cardboard card for each child for the mother to keep, as well as keeping a record for ourselves. We did upper arm circumferences on children between 4 months and 5 years. Children who exceeded the 16 kilogram limit of the scales and were less than 5 years old had the arm circumference only. Acai and Fatima, the Dinka midwives, agreed to attend the sessions to take part in the discussions and to help with the weighing and measuring. Norma and I hope that eventually they would be able to lead the discussions themselves.

The first discussion was scheduled for August 14 at the church. This initial attempt was fraught with disaster. Word went out that it was to be Sunday, August 13, instead, and a number of women turned up a day early. At 10:30 am on August 14 the heavens burst and the first session was rained out. The second "first session" was at the school on Thursday the 17th. On arriving there, we found the room very dirty and most of the benches broken. We quickly brought in functional benches from other rooms and settled down to wait for women to arrive. Three Arab women, dressed in their best, arrived at 12:30, so Norma presented the topic to the three, plus Acai and Fatima and the fourth woman who arrived 10 minutes into the discussion. In the midst of an animated discussion of foods for children, five more well-dressed women appeared with their children, and chaos reigned while the newcomers arranged themselves. Norma and the midwives weighed the assembled

children, after which the four original women left and the discussion was repeated with the new arrivals. Throughout, the noise level and confusion was increased by the presence of a number of small boys hanging in the windows. Acai and Fatima tried to discourage them, which added to the problem.

We arranged with Father Silvano and Mario, the schoolmaster, to use the church and boys' school as meeting places; the church at 11 am Monday and the school at 12:30 pm on Thursday. Two different sites and times were selected in order to appeal to a larger number of women; the Monday church class would be convenient for women who lived in the area. Also, the women who attended church Sunday evening would be reminded of the Monday meeting by an announcement. The Thursday school lesson was aimed at women who came to the big Thursday market, as well as women who lived near the school.

On August 21, the first successful session was held at the church. Once again, we had to deal with the staggered arrival of the women, four women arrived by noon and five more during the next hour. The church proved to be physically more appealing than the school with a large clean room, plenty of benches, a walled yard where the children could play and which discouraged the presence of disruptive onlookers.

The second discussion topic was presented at the school on August 24 to five women, one of whom spoke only Dinka. Acai translated from Arabic for this woman. The same topic was discussed at the church on August 28 with eight women.

Following these first meetings, we evaluated these sessions and decided to discontinue meetings at the school because of the physical problems of dirt and noise and the difficulty in collecting the group

together. The church sessions were to continue, but with more effort being made to remind the women of the time. In order to do this, we made a practice of visiting Anyesa, the catechist's wife who lived in the church compound, on Sunday to remind her to announce the meeting at church the preceding evening. We also went to the church an hour before the Monday lesson to help round up the women.

Most of the women who attended the first four meetings were from "central" Abyei and lived in the immediate vicinity of the school or church. Norma suggested that we try to reach more women by going out to Gum Bial and other areas of Abyei two days a week and have the sessions there on a regular basis. We initiated our satellite lessons in September, after Ramadan, in the home of a woman named Nyanbol in the Gum Bial area near the new secondary school. Besides Nyanbol, two of her neighbors and a young girl were present and all took an active part in a discussion of foods for young children. They expressed a desire to have us return weekly. From Nyanbol's house we walked further out to the home of Asunta and had a second discussion with her and three of her neighbors, plus assorted young girls and children. We weighed the children at both compounds on a Salter scale. The good response of the women to this arrangement of gathering neighbors in one woman's compound prompted us to return weekly to Gum Bial and make similar arrangements in the Deng Majok area. We went to the same houses each week at approximately the same time of day and waited 15-20 minutes while the woman gathered her neighbors and their children.

This system worked very well and had several definite advantages:

- a) the women did not have to leave their home area and therefore did not feel it necessary to dress up;
- b) work was not necessarily interrupted; some of the ladies continued to grind dura, or cook during the discussions;
- c) the meetings were not interrupted by late arrivals since only women in the

immediate neighborhood came and we waited for them to arrive; d) the women at each session knew each other well and felt comfortable talking before each other. In some of the early discussions I had the impression that a mixture of Arab and Dinka women led to some constraints in the discussion, especially on the part of the Dinka.

The meetings at the church were interrupted by the end of Ramadan, the first week of September. When we resumed we found that the Arab women who had attended regularly throughout August had dropped out. Anyesa reported that they had done so because they were disappointed over our failure to give them anything tangible, such as medicines or food.

Anyesa's reasoning about the Arab women's defection highlights one of the project's problems. Most (or all) of the women attending the discussions had expectations of western medicines or at least supplies of powdered milk, sugar or soap coming their way by virtue of their association with the foreign women. In order to do something towards meeting these expectations without adding to them, I started carrying a small medical kit containing eye ointment, cotton, vitamins, gauze and an antibiotic (the vitamins, cotton and gauze were courtesy of the health center). When possible, we gave the women materials appropriate to the discussions, e.g. boric acid solution and cotton when the discussion was on eye problems, glucose for the rehydration discussion. This was done in a very limited way, since we had few supplies during this season, but served the purpose of satisfying the women's feelings that they needed something more than discussions, without building up great expectations.

Sick children and adults were advised and referred to the health center. Limited supplies did not permit me to attempt to treat them except in the rare instance when I had a drug not available at the health center. Also it

was not our goal to provide curative medical services.

With the end of Ramadan, the leisurely days during which no food was prepared and the women had much free time also ended and I am sure this factor contributed to the drop in attendance. Although these women never returned, several of their daughters, 8-10 years old, continued to attend faithfully, so perhaps they carried bits of discussion home to their mothers. A number of Dinka ladies continued to take part and may have felt freer to discuss in the absence of the generally better off and more sophisticated Arab wives of police and military men.

Heavy rains in October prevented us from keeping our scheduled visits to outlying Abyei. We were gratified by our warm reception in Gum Bial at Asunta's when we returned after a three-week absence. The meetings at Nyanbol's were discontinued when she took her children to the countryside. We tried to extend our endeavors to the police chief's compound but were met with indifference by his three wives with their numerous children.

In the Deng Majok area, we routinely went to the compounds of Michael Deng and Ali Deng and elicited a good response in each place. We attempted to branch out to Kuol Deng's compound but found that the women there were not interested in the discussions, although they did like to have their children weighed. It may be that our failure to contact them first, as members of the elite family, was responsible for our rather cool reception there. However, the women at Michael Deng's and Ali Deng's were also of similar status and this did not inhibit them. I do not know the educational backgrounds of the women but perhaps they had more education and, for this reason, felt they would not benefit from the discussions.

All of the individual lessons were well received and generated active

discussion which gave us information about local beliefs and customs. Our ideas about foods for babies and small children were met with a mixture of skepticism and amusement. Discussions of nutrition per se were probably less valuable than trying to bring up good food practices in association with other topics, e.g., in a discussion of eye problems, we mentioned that green leaves would help make children's eyes stronger and healthier. Or, when we talked about colds and respiratory infections we suggested that good food would make a child strong and less likely to get colds. <sup>1</sup>

As an example of the Dinka attitude to nutrition, Marta (Adel) one of our local staff and educated to lower secondary level, expressed the belief that Dinka are strong because they do not eat much and have to fast frequently in times of scarcity or trouble (with the Arabs).

Breast feeding is well entrenched in Abyei so that the "Breast is Best" lesson is not as crucial as it is in Khartoum. Positive reinforcement of a local practice is never a wasted effort, however, for the bottle is making an insidious appearance via the merchants who also stock various powdered baby formula preparations. This may well become more of a problem in the future, so we included breast feeding in our discussions. Dinka custom dictates that a child must be weaned when the mother resumes menstruation or if she becomes pregnant. We discussed this and encouraged the women to continue breast feeding in both events, but a change in this practice will be difficult to effect.

We had a meeting about basic hygiene which was received with the usual polite interest. The crux of the problem is the availability of water, so suggestions and expectations had to be tempered by the realization that all water is carried from the river or bore well by the women. It was reasonable to suggest that food be covered and dishes kept out of the reach of foraging

dogs, goats, and chickens and that hands be washed after defecation. Toilet facilities in Abyei are very primitive. Adults answer calls of nature in open areas on the edge of town and children usually go on the paths around their homes. We asked the women to train their children to defecate away from the huts and to cover the results. Even this was not very realistic; away from their hut probably means near a neighbor's hut; there is no loose dirt in the dry season and no dry areas away from the huts in the wet season. The problem of waste disposal in Abyei is a major one, with no easy solution, and is something which should be addressed by the project in the future.

Diarrhea is common during and after weaning and during the latter part of the dry season. The usual approach to the problem in Abyei is to take the child to the health center for medication, usually an anti-diarrheal such as Kaopectate and an antibiotic, chloramphenicol. If the child is still receiving some breast milk, this may be discontinued on the grounds that it is "bad" and the cause of the diarrhea. One of our discussions was on the reasons for diarrhea and treatment by rehydration. Among other things, we implicated unboiled river water as a cause and suggested that either water from the bore well or boiled water be used for small children.<sup>2</sup> The women enjoyed making the mixtures of sugar, salt and water and passing them around to be tasted. The children cooperated by drinking the mix without complaining about taste. The week after the discussion at the church, one of the ladies who had been present competently demonstrated the procedure for a woman who had not been there. Belief in rehydration as a treatment for diarrheasis is still a long way away, however. After these meetings, I changed my tactics to emphasize the rehydration mix as a medicine for diarrhea which must be given mixed with the proper amount of clean water and given frequently in order to work and also explained that

it should be given, as well as the medicines from the health center.

(Ready-made packets such as Oralyte would help this approach.) Given the people's expectations of Western curative medicine, (and the local staff's) this approach seemed to work better. <sup>3</sup>

We encountered several physical hurdles to be considered in teaching women to make up sugar-salt solution at home. a) The tea glass used in Abyei is smaller than an 8 ounce glass; more like 6. There are several sizes of enamel cup; the most commonly used is considerably larger than 8 ounces. A Camel beer bottle filled to the top is 560 cc, so two of them are approximately 1100cc and can be used to make the liter quantity of the solution. b) Both salt and sugar are in short supply at the end of the rainy season so a mother may not have the ingredients. c) Glucose is much finer and less sweet than market sugar so the three-finger grab method will yield differing concentrations and tastes. d) Market salt comes in lumps and is frequently mixed with red pepper.

The children frequently have runny, red eyes so we had a discussion about eye infections with emphasis on cleanliness and ways to reduce the fly population around the compound. This reinforced the lesson on home hygiene and afforded an opportunity to put in a plug for green leaves as food for children, although vitamin A deficiency does not seem to be a problem. We also demonstrated the proper way to wash out children's eyes and gave out supplies of boric acid solution and cotton, courtesy of the Health Center, to mothers of children with runny eyes. I gave my carefully hoarded tubes of tetracycline eye ointment to those who did not improve with twice daily washing with boric acid. (The health center had no eye ointment during the 1978 rainy season.)

The ladies particularly enjoyed discussions on pregnancy and delivery and were eager to relate local customs. We had a drawing of a full-term fetus showing its position inside the mother and a Newsweek cover of an immature fetus: both pictures were viewed with great interest. The topic of nutrition during pregnancy was a delicate one, since both Dinka and Arab women fear that eating too well will lead to big babies and difficult deliveries. We emphasized the need to eat proper foods rather than large quantities of food. Another Dinka custom is to continue to work even harder during pregnancy. The women seemed more willing to abandon this practice.

Most of the women deliver with a traditional midwife in attendance. Traditional midwives are women, usually elderly, who make a practice of attending births. They have no training and do little more than cut the cord. Conditions are less than hygienic; the delivery usually takes place kneeling on the dirt floor and the cord is cut with a razor blade, knife, spear, or sharp splinter of dura stalk. In our discussion we suggested that the mother have a clean mat and a new razor blade ready for her accouchement and that the midwife should wash her hands before the delivery and the mother's perineum with soap and water. (See Appendix 4, Suggestions for Midwives). As for care of the baby, we talked about putting it to the breast and making sure it was kept warm. The Dinka usually wash the baby in warm water either the day of delivery or the next day; although the practice in the West is to leave the protective covering on the baby until the third day, we did not attempt to influence the local bathing practice.

Contraception was not one of our planned discussion topics but was introduced on several occasions by the women both in groups and during home visits. The women's attitude towards contraception is ambivalent. On the

other hand, large families are demanded by the culture. We answered questions and reinforced the idea of family spacing-- two to three year intervals between pregnancies. This tends to occur naturally because of the practice of breast feeding for two years and the avoidance of sexual relations during that time. The tradition of abstinence is dying out, however, probably because more men have only one wife instead of two or three. Consequently, women are tending toward more frequent pregnancies which leads, in turn, to earlier weaning and possibly an increase in malnutrition. The Sudanese Government does not have an official stand on contraception and the Sudan is regarded as an underpopulated country. With this in mind, as well as the Dinka cultural views, we felt it was not our part to advocate family planning.<sup>4</sup>

The discussion of first aid for wounds and burns was uncontroversial. Although we had been told that sugar was the accepted Sudanese treatment for burns, the women do not use it (perhaps because of the difficulty in getting sugar in Abyei). Instead, they wash the burn with water in which a bleach cube has been dissolved. There is also a substance prepared from a plant called "areng" which is used on burns and wounds. As in other discussions, we emphasized that people should use the health center and gave guidelines to when the wound or burn was beyond home treatment.

We used visual aids in the form of home made pictures either drawn free hand or traced and embellished with colored pens and water colors. Inspiration came from Where There is No Doctor, Nutrition for Developing Countries, Primary Healthcare Program Handbook and a number of the other project books. The pictures were appreciated by the ladies, none of whom seemed to have any cognitive difficulties. I doubt that this would be much of a problem even in the countryside, since Arab and Western

influences are marked in this area. The only criticism we received was leveled at a picture traced from Nutrition for Developing Countries which showed a pregnant woman nursing a baby (to illustrate that breast feeding can continue during a subsequent pregnancy.) Our audience pointed out that the woman appeared to be at least 7 months pregnant while the infant in her arms was no older than 4 months, a definite incongruity.

In future training programs, it would reinforce the discussions if each participant could have a picture to take home. In order to do this, some method of duplication would be necessary, either mimeographing or possibly employing a staff artist. Anyesa, a faithful discussant at the church meetings, expressed a desire to have her own set of pictures to use to remind herself of the lessons and to show to her neighbors.

The final meetings were held November 4 in Gum Bial and November 6 at the church. No set subject was discussed. We used the time to review points made previously and to answer questions. During October and November we also made a number of home visits to weigh newborns or to check up on children seen previously at home or the Health Center. These visits did not include formal discussions.

Originally, we had planned to try to have a formal evaluation of the program. We were not so naive as to expect to see behavior changes on the basis of these meetings but we were interested in seeing how much information had been conveyed and retained. We wanted to have a brief oral quiz for the regular attenders covering the main points and also to ask the same questions to a group of non-attenders. This didn't happen but we did have opportunities to review the discussions with Anyesa at the church, Jovanna, another regular participant at the church sessions, and Asunta from Gum Bial. We were pleased by the responses of these three, who remembered most of the

significant points of the discussions. Admittedly, these women constituted a biased sample, as they had displayed the most interest in their respective groups.

Since there would be no health staff (project) in Abyei during December and January, we tried to plan for at least a token health program by supplying Anyesa, Jovanna, and Asunta with boric acid solution, gauze, cotton, soap, glucose and vitamins so that they could act as health advisors in their neighborhoods. All of them were enthusiastic about this plan.

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In general, the concept of discussion groups worked well amongst the women of Abyei, a total of 22 discussion group meetings were held at the church, school and compounds in Gum Bial and the Deng Majok area, with 41 different women participating, usually in groups of 3 to 5. Nine different topics were discussed in the sessions which lasted about 20 minutes each.

In rural areas, meetings should be held in private compounds for women of the compound and immediate neighbors. This could be repeated in 4-6 different compounds on one day. If transportation were available, the project health staff could set up a regular monthly schedule for the discussion groups and combine the rural visits with weighing, recording of births and deaths, and visits to the group farm health worker.

In Abyei, I would suggest continuing along the lines of the meetings in Gum Bial -- setting up a number of meeting places around the town and drawing the group from the immediate neighbors, expecting to have from three to six participants each time and meeting on the same day, roughly the same time, every week or two.

Attendance at the discussions plateaued at four or five women per group from an initial six to eight. This is to be expected, as a number of people will come to a new activity for the novelty and gradually drop out, leaving only the truly interested. There are several things that could be done to increase interest in groups like this: a) offer simple medical services such as dispensing boric acid solution or eye ointment, gauze for dressings, ready made packets of rehydration mix while continuing to advise people to use the health center. The offered services should be kept very specific and limited so people will learn what to expect from the project. Try to avoid building up expectations or a dependency on the project medical care that is available at the Health Center. b) Improve the weighing program by the addition of "Road to Health" cards.

Norma Louis was an invaluable asset and contributed substantially to the success of the venture. Future programs will need someone enthusiastic, who speaks Arabic and who has rapport with the local ladies to lead the discussions. Ideally, local women could be recruited and trained to do this. (How to give the ladies an incentive to do this is a difficult question). We had such plans for the illiterate midwives, Acai and Fatima, but failed to supply sufficient incentive in terms of material rewards for them to remain interested in the project.

The discussion topics all seemed to be interesting to the participants and dealt with things that were important in their lives and that they all had knowledge of and opinions about. Further topics can be added easily and the original ones repeated for new participants. Home economics, gardening and other topics which contribute to the health and well-being of the family should be added. The women enjoyed crude visual aids. Any additions, such as posters, flannel-graphs or even slides would be an added

attraction to the program. If any arrangements can be made for mass production, handouts of pictures illustrating important points would act as a drawing card.

The meetings created good will for the project during the 1978 rainy season when not much else was visible to the community, but we failed to capitalize on it. Having programmed Anyesa, Asunta and Jovanna to be the focal points for neighborhood health, Norma and I both left Abyei in November and these women were without any liaison with the project staff until my return the first week in February. At that point, I was the sole health staff member and failed to contact the three immediately to provide them with continuing information, support and supplies and thereby lost the advantage gained by the rainy season activities. This situation should not have happened. In future very tight plans must be made for continued contact and activities with interested people. (See Appendix 5 on "Women's Classes.")

#### WEIGHING PROGRAM

As part of the 1978 rainy season activities, Norma and I weighed the children of the women who attended the women's classes. We recorded at least one weight on 39 children; 18 of these have more than two recorded weights over a period from August 17, 1978 to November 4, 1978. The accuracy of many of these weights is very suspect because the balance scale used at the classes held in the church was in poor condition. We used a Salter spring balance scale for weights done at other lessons and at the last two lessons at the church. Ages were recorded as near as possible using the age-event list developed for the nutrition survey. Given the problems with the scale and the age data and the limited number of serial weights recorded over a very short period of time the collected weights

are not very informative. The exercise was carried out mainly as an added attraction for the women at the women's classes and to introduce the concept of children's weights being useful information to the midwives and mothers.

In April 1979 Marta Adel joined our staff. She is a Dinka woman who went to school in Wau through the third year of senior secondary school and speaks quite good English. The mother of six children, she worked for the nutrition survey in January 1978. She was seconded to us from the Rural Council where she had worked as a secretary. At the time I left, plans were underway to make her secondment permanent.

Adel was already familiar with the Salter scale and, after reviewing its use, she set out to find and weigh the children who had been weighed during the women's classes. She succeeded in finding and weighing nine children previously weighed and in weighing four children whom we had seen but had only done upper arm circumferences. She also weighed two children born to women who had been pregnant at the time of the classes. Her search was hampered by the grossly inaccurate rendition of Dinka names by Norma and myself (our guide and interpreter had been illiterate.) Many of the families had moved from the area either temporarily for the dry season or permanently. There were a couple children on the list whom Adel did not weigh and who were easy to find. I think this may have had to do with family rivalries.

After this, Adel branched out to weighing as many children as possible all over Abyei. I tried to concentrate her efforts on the areas of the group farms at Thithiei and Nyincuor and to arrange for her to have transportation to these places with the agricultural team. By mid-June, she had weighed 141 children, several of them twice. She made occasional mistakes in recording the weights and I have been checking the questionable values with

her and going with her to reweigh the children. She has to be reminded to note the ages as accurately as possible with the month or season, as well as the year. She is familiar with the age-event sheet but doesn't always look at it.

I made up record sheets for her with the names and previous weights of the children to encourage her to reweigh the children during the rainy season. Once again I emphasized that we were especially interested in the children in Thithiei and Nyincuor.

Of interest is that Adel reported some opposition to having children weighed. She said that she ran into opposition to weighing during the nutrition survey, also. Adel, Alual and I went to Thithiei together on May 7th to weigh children and to interview four mothers. Adel returned on May 21st to continue the process. On this visit, women were reluctant to have their children weighed. The reason they gave was because the three-year old son of the sheik who had been weighed on May 7th had not recovered from his diarrhea. This, despite the fact that the onset of the diarrhea was prior to the weighing. He had been to the health center for medicine the day he was weighed. Adel and Alual had advised his mother about fluids as well.

As well as weighing the children of the group farms, we tried to get some baseline information on the families. To this end, Adel and I drew up a questionnaire for her to administer. We pre-tested it on Nyanwut's neighbors in Mitrok and subsequently revised it. By mid-June, fourteen mothers had been interviewed and Adel was going to try to see all the wives of the group farm members in Thithiei and Nyincuor.

Children weighed in each area as of June 1979

Nyincuor	7	Police area	19	Duop	19
Thithief	8	Deng Majok area	3	Abyei	3
Abyei (near market)	28	Abianton	23	Gum Bial	9
Mitrok-Golgol	20				

Ninety-five upper arm circumferences were measured on children between four months and five years (in fact the youngest child measured was 6 months old). The results:

9.5 cm or less	2 children
9.5 cm to 12.5 cm	23 children
12.5 cm to 13.5 cm	27 children
13.5 cm	43 children

According to these results, half the children measured are of good nutritional status; 27 are borderline; 23 are moderately malnourished and 2 are severely malnourished.

In view of the doubts about the usefulness of this method and assuming that a weighing program can be continued, there is no reason to carry on with upper arm circumference measurements. If time and personnel permit, these measurements could be done along with weight (for age) and a comparison made between the nutritional status as indicated by these two parameters.

In general, the act of weighing the children went over well, partly for its entertainment value, and the women began to take an interest in their children's weights.

Weights of children on group farms could be done at intervals, e.g. monthly, and "Road to Health" cards should be kept for each child. The two workers trained so far were both literate and could be taught to use these cards. If illiterate workers are trained, as was the plan, some other arrangement would have to be made. It is possible that illiterate persons could be taught to fill out the cards, otherwise a team from the project

center could come at intervals to weigh the children with the assistance of the health worker.

Cards given to women who came to the discussion group meetings survived quite well and were brought to the meetings with surprising regularity. In future, however, more durable cards with plastic envelopes should be used.

We weighed 15 relatively new babies in the Health Center and at home. Some of the infants were more than 30 days old so these weights cannot be regarded as birth weights.

This activity, like birth and death registration, is one that should be instituted in the group farm families by the health workers. Another possibility would be to supply the Abyei midwives with scales and teach them to weigh newborns after delivery. Although Acai and Fatima are illiterate, they could use the Salter scales and could report births and weights to a project staff person for entry into a record book. This involvement of the midwives might raise the issue of remuneration for their participation. If they were instructed by the Rural Council or the health center physician to weigh newborns as part of their routine, this issue might be avoided.

#### HEALTH WORKER TRAINING PROGRAM

The long planned volunteer health worker program was initiated on April 18, 1979 when Salvatore Atem asked the assembled group farmers from Nyinchuor to choose someone from the area to receive training in nutrition, first aid, hygiene, and treatment of certain diseases and be responsible for dispensing certain medical supplies to the farmers and their families. Atem told the farmers to choose someone who belonged to the family of a group farmer, who was willing to do the work, who was respected in the

community and who was intelligent, although did not necessarily read and write. They were told that this person could be either a man or woman. The men immediately nominated Nyanwut Bagat, although her husband works for the Rural Council and is not a member of the group farm.

Nyanwut is a woman of about 35 years who lives in Mitrok, an area across the Nyamora next to Nyincuor. She was educated in Wau for seven years, speaks and reads English although she is very shy about speaking, and worked with the nutrition survey team in early 1978. She has five children ranging in age from 10 months to 14 years, (in April 1979). When I met her I was impressed with her obvious intelligence and concern. We arranged to have the first lesson on April 21 at her house in Mitrok.

The topics for discussion in the training session were developed from the women's classes of the 1978 rainy season and the Community Health Worker training syllabus. I followed the latter fairly closely so that when trained health workers arrive in the area, our volunteer health workers would not differ with them in such things as dosages of chloroquin for the different age groups. Atem was asked for suggestions, but limited his participation to attendance at some of the lessons. The supplies were given out to each worker at the end of the pertinent lesson. Following the initial training, new supplies were given out in monthly allotments calculated to stretch existing supplies to the end of the rainy season (through November). Simple drawings were used as teaching aids and copies given to each trainee at the end of the lesson. The teaching sessions were done individually, mainly for the convenience of all concerned, avoiding the problem of trying to get a number of people coordinated to arrive in one place at one certain time. In addition, I think individual lessons are better as long as a translator has to be used. Although the farmers

and took an active interest which I tried to encourage. Nyanwut was supplied with gauze, Dettol and the appropriate drawings.

The May 5th topic at Mitrok was malaria and the dose of chloroquin plus the use of aspirin and was discussed by myself, Adel and Nyanwut. Nyanwut was given supplies of chloroquin and ASA with drawings illustrating the doseages. I also gave her an exercise book divided into sections with English headings to record the amount of each medicine given out by making a tick under the appropriate heading. These records were checked periodically by myself or Atem.

Atem and I took 20 ready-made rehydration packets to Nyanwut on May 12 and talked about their use for children and adults with diarrhea. We supplied her with drawings indicating the amount of water to be mixed with each packet and the number of glassfuls to give to children and adults. At that time I presented the rehydration mix as a medicine for diarrhea that would work only if mixed with water and taken as instructed. I did this because of previous experience with the difficulty of trying to convince mothers that children with diarrhea needs fluids rather than drugs from the Health Center to cure the diarrhea. During this lesson we used a series of drawings in the book Where There is No Doctor, demonstrating the transmission of diarrhea from person to person via animals feet and a mother's hands which Nyanwut found very entertaining and promptly showed to her neighbors.

After the discussion, Nyanwut brought up the fact that she had not received any money at the end of April and that £5.00 was not enough. Her neighbors came to her for advice and medicine at any time of the day or night and she was having difficulty finding time to do her own work,

were given the option of choosing a man or woman, I was pleased that a woman was nominated. I felt that I was likely to have a better rapport with a woman and that she would be more interested in topics related to child health such as hygiene and nutrition than a man. I also felt that a woman would be more conscientious.

For the first lesson, Atem and I went to Nyanwut's house in Mitrok where we discussed eye disease and its treatment with her while sitting under a large tree surrounded by the stakes for the family cattle. We attracted a crowd of interested women and children and were able to demonstrate the proper way to clean children's eyes and apply eye ointment on one of the children.

Nyanwut came to my compound the following day before attending church and Atem reviewed the previous day's lesson with her. We gave her supplies of boric acid, cotton wool and tetracycline eye ointment, as well as a drawing illustrating the application of eye ointment. We asked her to make a tick in the area beneath the picture each time she gave out a tube of the ointment. She asked what she should tell parents of children with diarrhea since this is a common problem at that time of the year (April). Many children have required hospitalization for diarrhea and a number have died. I told her that we had no medicine for diarrhea and that it was very important for children with diarrhea to drink plenty of milk or water and suggested that she tell this to the parents and refer them to the health center as well.

On April 28, I went to Mitrok with Bulabek, a student employed as translator, and Marta Adel who speaks quite good English and is employed on the health project. The three of us plus Nyanwut and her neighbor, Acai, discussed first aid for wounds and burns. Acai attended many of the lessons

especially making beer which she sells for extra income. We talked about the problem and advised Nyanwut to tell her neighbors to come to her at certain times on two or three days of the week. Atem volunteered to go to the group farm and explain this to the farmers and did so on May 13th. We also discussed the very tricky issue of the £5.00 and tried to explain that it is not meant to be a salary but rather a small gift in appreciation of all she does.

On May 17th when Nyanwut came to my compound to meet Jonathan Fisher, (who was to take over the health program while I was on maternity leave) and to learn about scabies, she reported that her "on call" time had been scheduled and she was able to do her own work. As far as scabies was concerned, she recognized the disease but said that there seemed to be less of it around now. She was given a bottle of benzyl benzoate and a plastic measure.

Jonathan, Adel and I went to Mitrok on May 26th. Nyanwut, her children told us, had gone to the river to get water. We decided to go to the river to meet her and check out the water supply. The path wound through an acacia wood for about a mile. At the river we found a woman collecting water hyacinth seeds which would be used as a vegetable. Adel volunteered to collect some "good" drinking water for us and waded waist deep into the river out past the reeds where she beat the water vigorously with her hands and then collected the "clean" water in a gourd. When we returned to Nyanwut's house we had a lively discussion about nutrition and different types of foods. Adel thought she had seen a carrot once when she was up North. Nyanwut said that meat and milk were the best possible foods, and associates ill health with lack of these foods. She doesn't give her family much in the way of vegetables and thinks they are of little value. Her children have breast milk supplemented with cow's milk until

they are one year old when she starts giving them bread and porridge. She was very interested in our copy of Nutrition for Developing Countries and demonstrated her ability to read English so I left the book with her.

With the exception of the nutrition lesson, all the health training sessions had to do with treatment of medical problems. I tried to fit in discussions of hygiene, general child care, nutrition and preventive medicine when the topics occurred naturally, rather than scheduling them. I found that these rather difficult topics are better received when handled in this way. All of the staff and people in the area are accustomed to and expect medicine to be in the curative, western mode.

I saw Nyanwut in town several times before I left Abyei in June and we discussed various aspects of the lessons; she remembered it all quite well. She had given out all the rehydration bags and was also doing a very brisk business in chloroquin and aspirin. I reminded her that she would only get a certain amount of each medicine per month and should be careful that she gives them to people who are sick and not to those who want to build up a supply.

The Thithiei group farm members were asked to choose a person to be trained as a health worker on April 20th. On the 30th, Abdul Nasser brought Alual Majok to meet me. Alual is a 16-year old school girl who would be in the sixth form during the 1979 rainy season. She is the daughter of a group farm member who lives in Nyinkuac, about half way between Thithiei and Abyei. She reads and writes Arabic, speaks no English. We arranged that she would come to my compound for the lessons with Atem and myself.

On May 2nd, Alual had her first lesson, on eye disease. She was familiar with the role of cleanliness and flies in the cause of the diseases, having

learned this in school. Mariano (Awit) acted as interpreter/teacher and displayed great facility in this role. We asked Alual about her plans for continuing her education beyond the sixth form. She replied that her father had told her that if she wished to continue into secondary school she should do it that year somewhere other than in Abyei, where the school is not good. She had decided that she did not wish to leave her family. I told her that her position as health worker was not equivalent to a full-time job and that there was no possibility of it becoming a Ministry of Health job with chances for upgrading and government salaries. I wanted to make sure that she did not see this as a career and would not be mistakenly influenced in her decision not to continue her education. She said she was aware of all this.

The next lesson was on May 7th when we discussed malaria, first aid for wounds and burns and the use of aspirin. Alual related how the last time she had malaria she required two injections to get well after tablets failed to do the job. This view, that injections are better than tablets is widely held and difficult to deal with. The health center doctor usually gives his important patients chloroquin injections rather than tablets even in cases of mild malaria. I stressed the use of tablets as safer to both Alual and Atem and the importance of saving injections for the seriously ill person. I doubt that I made much impression on either of them.

Following the session, we picked up Adel and all went to Thithiei to visit and weigh children. While we were there, several mothers brought sick children and I took the opportunity to watch Alual deal with them, which she did very capably. We stopped at her home on our return journey to have tea and meet her family. We were told that the family used to live further away from Abyei but moved closer to town for fear of attacks by Arabs. One of the women in the group complained of weakness in her left arm and leg

and I demonstrated hand gripping exercises. Atem suggested she needed some undefined treatment not available in Abyei. Another member of the group living in the compound turned out to be the woman kajur whom Norma and I had visited last rainy season.

We met again on May 9th and discussed the use of rehydration mix. Alual brought in a list of people to whom she had given chloroquin and aspirin since May 2nd. She also gave follow-ups on each person. All the people given chloroquin tablets had responded well to the treatment. She requested guidelines on the amount of aspirin to give people with chronic joint pain, her mother being one such person. We decided that she could give them enough for one week, this being 28 tablets. I gave her an exercise book for her records which she keeps in Arabic complete with the name of the person to whom the particular medicine was given.

On the 24th, Alual was accompanied by her three-year old brother to the lesson on nutrition. She said that milk is the best food and that breast and cow's milk are all a child needs until he is one or two years old, although medida can be given in the second year. Her little brother eats milk, porridge and eggs of which he is extremely fond. She, like Nyanwut, was quite interested and slightly amused at my ideas of proper nutrition.

Alual made an unscheduled appearance at the compound on the 25th of May with a list of names written by the Thithiei group farm time-keeper. These people, she reported, were very ill and needed injections. No one being readily available to act as translator, Craig Wynn (our agricultural specialist) and I struggled with the problem in both Dinka and Arabic. The people were supposed to have malaria, but had not taken chloroquin tablets. The reason for this was not clear but may have been because the time-keeper thought they were too ill. We told Alual that they should be given the chloroquin tablets and those who were confused or vomiting should be taken to the health center

for the injections. Unfortunately, neither of our Land Rovers was available, so we could not provide transport to the health center.

On her next trip in, also with her little brother, Alual talked with Rick Huntington (Research Coordinator for the Project), about the families in the group farm. On the 31st, after the heavy rains at the end of May (119 mm on the 29th), she reported that the road to Thithiei was good except for waist deep water in some areas. Shortly after this, on June 2nd, the topic of the £5.00 was brought up by her. She felt that it was too little, considering that she went to Thithiei two days a week to be available to the farmers when they worked in the field and had to wade through deep water. This question was referred to the staff and she talked to Atem and Adel with apparent understanding and satisfaction.

When I left in June, I tried to ensure that Alual and Nyanwut would be supported in their activities as much as possible. I suggested to Atem that he visit each of them at least once a month to check their records, give them the monthly drug allotment, see if they were having any problems and to record births and deaths in their respective areas. From field reports it seemed that although Atem has shown little interest in the women, they had continued to work conscientiously.

My conclusions are that, as indicated above, the incentive/remuneration of the health workers is a problem. In the original design of the program, this was not adequately discussed. Somewhat idealistically, I had thought that the approval and respect of the community would provide adequate reward to the health worker who would also feel much internal satisfaction. In addition, I had hoped that the training and continuing education programs

could be more elaborate, with the trainees seeing slides or film strips and having access to printed materials and posters to take to their homes, so that the entire process would have a certain status attached to it and act as a reward in itself. I had also considered the idea of providing the health worker with certain goods such as a torch or bicycle which would be useful for their work. Another possibility was to set up a system whereby the health worker charged a small amount for the medicines, taking a percentage for herself and using the rest of the money to restock her supplies. A trial of this was scrapped for lack of time. Another idea, and in many ways the best, was for each group farm to arrange to compensate its health worker with cash or a portion of the crop.

None of the above being possible at the time the training program began, for various reasons, I decided to pay the trainees a small sum of money as an incentive. £5.00 was settled on rather arbitrarily. Dr. Raafat had suggested £3.00 on the basis that volunteers in the health center receive nothing. The illiterate midwives receive £10.00 per month from the Rural Council. Problems arose from this decision. The money was regarded as a salary and the health worker as a project employee rather than a member of the group farm like the farmers. As a salary, the money was considered grossly inadequate (Abdul Nasser complained it isn't even enough to buy soap) by the health workers and our local staff who did not understand the concept of "volunteer" workers very well. (In the past, one of our staff had ridiculed the midwife, Acai, for helping me do home visits without payment from the project. After that, Acai gradually lost interest and returned to her duties at the hospital.) Poor communication between myself and the staff and between Atem and the group farmers contributed to the misunderstanding. Discussions among all concerned eventually resulted in an improved understanding of the situation.

In the future, the use of money from the project as incentive should be avoided. The status of the trainees' position should be made very clear to each new trainee before he/she starts. The September report from the field contained a listing of the rules for the Thithiei group farm and I was delighted to see that the health worker would receive a portion of the crop. Each group farm should be encouraged to provide for their health worker (s) in this manner.

Other points which should be taken from this initial experience: (a) the trainee should be a member of a group farmer's family. Nyanwut is not and I think this might make a difference in the willingness of the group farmers to vote her a share of the crop. (b) the trainee should live in close proximity to the other group farm members. (Alual has had some problems with distance during the rainy season.) (c) it should be suggested to the trainee and the farmers that a schedule be set up when the health worker will be available to see sick people and to dispense medicines.

I think that this initial effort was successful and every attempt should be made to expand this project to the other group farms at Mabok and Mabior. Both of these places will need at least two health workers because of geographical and family divisions. In addition, Alual and Nyanwut, who have shown themselves to be capable and conscientious workers, should have review sessions, be introduced to new topics and trained in new skills and have their pharmacies expanded. The idea of cooperative pharmacies should be given further thought and perhaps a pilot project initiated, rather than depending on the project for drugs.

Combined training sessions for all the workers might be held at the project center although we had individual lessons at the homes of the trainees both for our and their convenience. I was the primary trainer using Marta,

Salvatore Atem or a student as translator; this is not an ideal arrangement. For the plan to be well done and so that the health advisor has time for other project activities, a Sudanese should be found who can take over some of the lessons and supervision of the health workers.

As was explained to Alual, the project-trained group farm health workers do not become part of the Ministry of Health hierarchy nor are they part of the Ministry of Health payroll but remain part of the community. However, the health workers could fit into the Ministry of Health Primary Health Care Program as the most basic unit, coming one step closer to the people than the Ministry of Health Primary Health Care workers who would man the Primary Health Care Units. When Primary Health Care Workers are available in Abyei, group farm health workers would be able to help them identify problems in the community, disseminate information, conduct weighing programs, keep track of births and deaths and numerous other tasks.

The project could also assist the Primary Health Care Workers by providing emergency transportation for sick people and supplies or by helping to upgrade current dresser stations to Primary Health Care Units.

The project could also participate in continuing education for the Primary Health Care Workers. This would require an Arabic-speaking staff member with suitable medical background.

### 1978 RAINY SEASON ACTIVITIES

#### Health Center Activities

In 1978 I attended health center rounds for two reasons: (1) to obtain information about the problems encountered and how they are treated in the health center and (2) to strengthen the relationship between health center personnel and the project. Both purposes were accomplished.

Follow up of children admitted to the Health Center

Dr. Raafat took advantage of Norma Louis' and my presence by setting aside a ward in the health center for use as a malnutrition unit where the children would be followed daily by all three of us. Norma and I planned to fill out a data sheet on each child - birth date, birth order, weaning age, supplementary foods, diet, other medical problems - and to supervise the diet in the health center while discussing nutrition with the child's mother or whoever accompanied the child. We did this for five children, two of whom we followed for several months.

We discovered that, although many of the children admitted to the health center with gastroenteritis, respiratory infections, malaria or other problems had some degree of malnutrition, there were few children with frank marasmus, kwashiorkor or severe protein - calorie malnutrition. The children admitted with infectious diseases were all discharged as soon as the illness permitted (and the relatives demanded early discharge) so we had few admissions to our ward. We filled out a number of our information sheets but made the not too surprising discovery that mothers of sick children were not pleased to be interviewed; in addition, the children were often accompanied by a relative other than their mother who could not provide accurate information.

We learned a number of things from the children that we were able to follow, mostly about the health center. The health center diet was not ideal for treatment of malnutrition; it usually consisted of bread, broad beans, and okra stew with occasional meat stews. Of these items the stews and broad beans were considered unsuitable for sick children by the health center staff. The doctor's routine diet for children was custard (corn flour and milk and sugar) and eggs, if available. By working with health

center staff from cook to doctor and the child's relative we managed to add meat and vegetables to this diet. This improved diet, however, did not extend to other children at the center, which led us (Norma and myself) to feel that we were being humored by the staff. In addition, the mothers (or sisters) of the children remained skeptical about our ideas of nutrition. The children themselves were enthusiastic about their varied diet and frequent meals, as was the older sister of one patient who ate the malnourished sister's food.

Although this effort was short and not notably successful, it was informative. A malnutrition war per se seems unnecessary, but continued efforts to upgrade the health center staff's understanding of nutrition and to improve the diet for children should be made. Rather than having someone from the project appear at intervals to exhort the staff, patients and mothers, it would be better to educate a health center staff member. There are a number of volunteer workers in the health center -- women who work as servants/nurse aides -- who might be interested in enlarging their roles. Some type of incentive would probably have to be provided by the project such as a small monthly bursary. (Problems of rewards for "volunteer worker" are further discussed in the section on health worker training.) Improvement of the health center garden is another possible approach to improvement of the health center diet. Garden produce could be used to feed the patients and proceeds from the sale of surplus food could be used to buy imported foods in the market. The present small garden is maintained for the benefit of army personnel who buy most of the produce; the money goes into health center petty cash.

#### Review of records

The only health center records available were for 1974 and part of 1975.

The records for 1976 and 1977 were not located, although they were said to exist.

The 1974 records showed 69,455 outpatient visits, 530 admissions, 43 deaths and 177 births. The incomplete records for 1975 seemed likely to be inaccurate as well, showing 10,000 plus outpatients visits for the month of September.

The inadequacies of these records led up to keep our own for a period of time in 1979.

#### Review of birth records

Norma and I took the names of the 90 children on the birth register kept at the health center for the period of September 1, 1976 through August 31, 1977. With the midwives as informants, we discovered that there had been 2 deaths, 83 children were still alive and 5 not accounted for by reasons of being unknown to our informants.

The birth register does not reflect births in Abyei. Children are registered only if their parents desire a birth certificate; registration usually is done some time after birth so children who die within two months or so are not registered.

An accurate birth record for the area would provide valuable information. An attempt should be made to register births in the group farms. This could be done by the health workers in each group. He/she could keep the record or if illiterate, report births monthly or bimonthly to a designated staff member for entry into a record book. The project could, in turn, report birth to the health center so that birth certificates could be issued.

A death register could be kept in the same manner. There is no record of deaths kept at this time.

School Health Education Program

The school was in session intermittently during the season depending on available food supplies. There was a very unfavorable student-teacher ratio because a number of teachers failed to report to Abyei and several left in mid-season. The teachers themselves did not have time to add new topics to the curriculum but would have been pleased to have an outsider come to address the students or to have films or demonstrations. We did not have the staff or equipment to carry out a program of this nature.

Steve Gulick and Mariano (Awet), the training specialists assigned to the project, set up a microscope demonstration on one occasion, which was received enthusiastically by the teachers and about 100 students. This was not repeated, despite its success, because shortly afterwards the school disbanded.

Greater use should be made of the school system for dissemination of health education. At the very least, the project should arrange for the school to use the TALC slide sets. Should more project health staff become available, they can take a more active role in school activities by setting up health clubs or taking part in the classroom lectures and discussions. (See App. 6, "Suggestions for Teaching Medical Care.")

1979 HEALTH CENTER ACTIVITIES

During the period from March 27 to April 26 there were 83 admissions, 4 deaths, all children with gastroenteritis.

Age and sex breakdown as follows:

83 admissions

adults		children to age 12		sex not recorded
♀	♂	♀	♂	
31	9	13	24	6 all children

Diagnosis:

ob/gyn	gastroenteritis	bronchopneumonia
18	21 (all children)	6 (all children)
malaria	snake bite	mixed (GE, BP, ?Malaria ? TB)
10	4	5
other		
19		

Daily rounds are time-consuming and, depending on the health advisors, other commitments could be cut to twice a month. This would still offer the current Abyei doctor an opportunity to discuss cases with another health professional and keep the health advisor abreast of problems in the health center.

Outpatient visits at the health center were routinely recorded by a clerk under headings for name, sex and diagnosis. On April 18, a secondary school student started keeping another outpatient record for the project, including name, age, sex, diagnosis and address. The records, kept in Arabic, continued until June (and possibly longer) and may be used to ascertain utilization of the health center by persons from different areas as well as by age and sex. Records for an entire year would be useful to establish patterns of disease as well as health center utilization during different months. The student proved an able clerk; the records are easily translated from Arabic to English by someone with only rudimentary Arabic skills (such as myself).

OTHER PROBLEMS AND CONSIDERATIONS

Relationship with Health Officials

The health center physicians in Abyei during the 1978 rainy and 1979 dry season were agreeable young men who expressed interest in the project.

This helpfulness included use of health center facilities and supplies in a limited way but did not extend to taking an active part in teaching. These young men are assigned to Abyei, a hardship post, for only six months and so do not get very involved in the community.

Zacharia, the medical assistant at the health center is a Dinka from Abyei and deeply involved in family feuds and political activities. He runs the health center efficiently, taking each new doctor in his stride. He has been polite and agreeable to the limited use of health center facilities but is opposed to the project in general. In his middle forties and having received his medical assistant's training in the 1950s, he has established his own routine, methods and treatments and is not open to change or new information. Although he does not oppose any of the health activities, he will not offer active help. He should, however, be kept informed of the health plans.

The Assistant Commissioner for Health for South Kordofan was not in Kadugli at the time of my visit there in February 1979. I saw his deputy, Dr. Abass, and left an outline of project activities with him to give to Dr. Kintebye, the Assistant Commissioner. Dr. Abass appeared to be completely disinterested in Abyei and our activities there. Richard Fuller, Project Co-Director, confirmed this opinion when he met Dr. Abass in May 1979. At that time, he left a copy of the January 1979 project document, together with a current progress report. Dr. Kintebye, who was absent from Kadugli for some months following a car accident, is reported to be a committed man who would be interested in Abyei and the project.

In Khartoum, the main contact has been with Dr. Ali Karar in the Department of Nutrition who has been associated with the project from the beginning. In March 1979, I visited Dr. Kabbashi, head of the Primary Health Care Program, and gave him a document summarizing project activities to that time. He was

interested but said that our main contact with the Ministry of Health should be through the provincial officer.

Ties with the Ministry have been somewhat tenuous and an effort should be made to improve communication between the project and the Assistant Commissioner for Health in Kadugli, who should receive periodic progress reports.

#### Sudanese Counterpart for Health Advisor

The man assigned as health advisor counterpart arrived in Abyei in March 1979, eight months late, and then did not prove to be a useful person. Although trained as a nurse and then as a medical assistant, his medical knowledge was unreliable. He was not inclined to teach, having had little or no experience in that line. He seemed to feel keenly the lack of a Land Rover, office and house which he considered suitable to his position as a medical assistant. His training and past experience were all oriented to curative medicine - diagnosing and prescribing - and this is all he wanted to do. We did not have the medical supplies to allow him to take on this role since curative medicine was not part of the program. In addition, I was not sure of his competence.

A Sudanese counterpart is of utmost importance to the success of the health program. A young, flexible person is required, preferably someone who speaks English, Arabic and Dinka and has experience with preventive health and teaching. If possible, a Health Visitor should be found for the project, either as the counterpart or in addition to the counterpart.

#### Staff Health

Sudanese staff felt strongly the lack of project provision for staff health during the 1978 and 1979 seasons. Future plans should make provision for medical supplies for staff and staff family use. These could be bought from the project at cost. Problems arise in deciding the extent to which

the project should provide for staff families which are extensive and for the increasing number of employees, e.g. brick workers. In addition, someone must take responsibility for seeing that appropriate drugs are stocked and that these are dispensed with the correct instructions. A clinic could be run for staff and employees by the project health advisor or Sudanese counterpart. Or an arrangement might be made with the health center physician and medical assistant to see staff and employees and write a prescription for the necessary medicine which could then be obtained from the project stores.

#### Staff Attitude to Preventive Medicine

All the Sudanese staff and many of the American staff have no concept of primary health care and understand only the western curative approach to health. This view is shared by the people of Abyei. In order to establish credibility with the people (and, I might add, the staff) the health program must include an aspect of curative medicine. The staff-employee health program, coupled with the curative portions of the group farm health workers' duties, should be enough to fulfill the expectations of the community.



Appendix 1

Questionnaire  
for Home Visits

1. Mother's name
2. Husband's name
3. Residence
4. Subtribe
5. NUMBER OF PREGNANCIES
6. Number of live births
7. Living children -- name, sex, age, state of health
8. Dead children -- sex, age at time of death, cause of death
9. Age at which children are weaned.
10. Why children are weaned at that age.
11. Is a cup, bottle or spoon used?
12. Are children given food other than breast milk before weaning?
13. What supplementary foods are used and why those foods? At what age are they started?
14. How many times a day do the young children eat?
15. Who cares for the young children?
16. What do the older children and adults eat? (Later amended to include a query about the diet of the weanling.)
17. What foods that she doesn't have would the mother like to have for her family? (Omitted after initial group of visits. The women all listed the foods stocked by the merchants e.g. lentils, broad beans, etc.)
18. Does the mother listen to the nutrition program on the radio?  
(This question was omitted after we discovered that almost no one has a radio.)

Added after the first 15 visits:

19. Does the family go to the Health Center?
20. Beliefs about disease -- what is the cause of malaria? diarrhea? measles? What is the treatment for these diseases?
21. Does the family go to traditional healers?
22. Does the woman have a garden? What grows there?
23. What are the major health problems in the community?

## Appendix 2

Reproductive record of the fifty women visited at home

Woman no.	No. of pregnancies	No. of live births	No. of abortions
1.	6	5	1
2.	4	4	
3.	5	4	1
4.	1	1	
5.	3	3	
6.	2	2	
7.	pregnant now		
8.	3	3	
9.	4	4	
10.	5	5	
11.	2	2	
12.	4	4	
13.	1	1	
14.	2	2	
15.	0	0	
16.	3	1	2
17.	3	3	
18.	6	5	1
19.	2	1	1
20.	4	4	
21.	4	3	1
22.	7	7	
23.	3	3	
24.	7	7	
25.	4	4	
26.	8	6	2
27.	4	33	1
28.	7	5	2
29.	1	1	
30.	8	8	
31.	2	2	
32.	9	7	
33.	0	0	
34.	6	6	
35.	4	4	
36.	6	6	

BEST AVAILABLE COPY

Woman no.	No. of pregnancies	No. of live births	No. of abortions
37.	4	4	
38.	2	2	
39.	6	6	
40.	1	1	
41.	7	7	
42.	3	3	
43.	7	6	1
44.	2	2	
45.	6	6	
46.	7	7	
47.	5	5	
48.	7 (pregnant now)	5	1
49.	3	3	
50.	9	8	1 (still birth)

Child deaths reported by the fifty women of the home visits

	Visit No.	Age	Sex	Apparent cause of death (according to mother)
1.	1	7 mo	M	Diarrhea
2.	1	1 day	M	Died just after birth
3.	2	4 yr	F	Diarrhea and vomiting
4.	2	7 mo. gest	F	Born alive but died soon after
5.	2	6 mo	M	Diarrhea and vomiting
6.	3 days	2 days	F	Unknown
7.	3	2 days	M	Fever
8.	3	3 mo	M	Diarrhea and vomiting
9.	9	4 yr	M	Measles
10.	9	2 mo	M	Fever
11.	12	3 yr		Fever
12.	17	7 days		Midwife did not cut cord properly (? tetanus)
13.	17	9 mo	M	Lost appetite, became thin and died
14.	22	2½ yr		Measles
15.	23	18 mo	F	Fever caused by kajur
16.	23	7 mo	F	Diarrhea and vomiting; caused by the kajur
17.	24	3 yr	F	Measles
18.	24	7 days	F	Fever and fits (? tetanus)
19.	24	2 yr	M	Diarrhea after weaning
20.	26	4 days	M	Fever and stiffness (? tetanus)
21.	26	1 yr	M	High fever
22.	26	9 mo	F	Diarrhea and vomiting
23.	30	8 yr	M	Abdominal pain, diarrhea and vomiting
24.	30	7 yr	M	"
25.	30	5 yr	F	"
26.	30	4 yr		"
27.	34	2½ yr	F	Measles
28.	34	4 yr	F	Diarrhea
29.	34	18 mo	F	Diarrhea, still on breast
30.	36	18 mo	F	Diarrhea, on the breast. Died in Health Center
31.	37	4 yr	F	Fever. Died in H.C.
32.	37	2½ yr	F	Screaming and vomiting. Treatment from H.C. and kajur.
33.	38	1 mo	M	Fever. Died in Sennar
34.	39	1 mo		Fever
35.	39	2 mo		Fever

BEST AVAILABLE COPY

36.	40	6 mo	F	Sudden onset of paralysis one day. Died the next.
37.	41	6 yr	M	Meningitis
38.	41	2 yr	M	Abdominal pain, diarrhea and vomiting caused by the kajur
39.	41	3 yr	M	Fever, caused by the kajur
40.	41	1 yr	M	Measles
41.	43	soon after birth		Prolonged labor, finally taken to H.C.
42.	43	"		Mother jaundiced at time of birth
43.	45	5 yr	M	Tetanus
44.	45	6 yr	M	Cough and fever. Died in hospital in Omdurman
45.	45	7 days	F	Refused breast
46.	47	2 mo	F	Diarrhea
47.	47	18 mo	M	High fever and paralysis
48.	48	12 mo	M	Diarrhea and vomiting after weaning
49.	48	12mmo	M	"
50.	50	2 $\frac{1}{2}$ yr	M	Diarrhea
51.	50	7 days		Fever
52.	50		F	Died day of delivery

Number of living children per mother on home visits

Mother number	Number of children	Mother number	Number of children
1.	3	37.	2
2.	1	38.	1
3.	1	39.	4
4.	1	40.	0
5.	3	41.	3
6.	2	42.	3
7.	preg	43.	4
8.	3	44.	2
9.	2	45.	3
10.	5	46.	7
11.	2	47.	3
12.	3	48.	3
13.	1	49.	3
14.	2	50.	5
15.	0		
16.	1		
17.	1		
18.	5		
19.	1		
20.	4		
21.	3		
22.	6		
23.	1		
24.	4		
25.	4		
26.	3		
27.	3		
28.	5		
29.	1		
30.	4		
31.	2		
32.	7		
33.	0		
34.	3		
35.	4		
36.	5		

## Appendix 3

### Local Beliefs and Customs

#### Ideas about pregnancy, delivery and lactation

1. Pregnant women should not eat too much or they will have big babies and difficult deliveries. They should drink a lot of milk but avoid meat. (Anyesa, Christina, most women)
2. Work hard so will have a small baby and easy delivery. (same)
3. If sexual relations are discontinued after six months' gestation, the baby will be born clean, without the white covering that is "dirt" from the men's discharge. (Anyesa and Govanna)
4. Intercourse shortly before the onset of labor will insure an easy delivery. (Arab wife of Arab nurse at Health Center)
5. The woman must bathe in hot water (preferably sit in a hot tub of water) and eat warm foods for a time after delivery so that all the blood will come out. She should avoid meat. (Anyesa)
6. The baby should be bathed in hot water the day of delivery or the day after. In some cases daily for 40 days.
7. The mother stays at home for 40 days and should have chicken or chicken soup every day. (Muslim custom; Abdul Nasser)
8. Traditional delivery is done with mother kneeling on the floor. Amelia said her knees and toes hurt for a long time after her last delivery.
9. Cord is cut with spear, razor blade, any sharp object. The midwives ask the woman to provide a razor blade. Adel says a splintered dura stalk is best. She is sure one of her children died as a result of improper cord cutting by the Arab midwife.
10. Acai and Fatima, the two illiterate Dinka midwives, both refused to attend the delivery of Amelia's last baby. Amelia says it's because she is poor. It was also the first day of the Ramadaan feast.

Results

50 women ranging in age from 15 to 50 (approximately)

		Mean	Range	Mode
Total pregnancies	210 (2 current)	4.2	0-9	4
Number of live births	191	3.8	0-8	
Number of abortions	17	0.3	0-2	
Number of dead children	52	1.0	0-4	2
Current living children	139	2.8	0-7	3

191 live births

52 deaths

0-28 days	1-12 months	Total 12 months or less
14	14	28

13 months -5 years	older than 5 years
20	4

## Ideas about disease - Cause and Treatment

1. Sick children are fed milk, no other foods (women at hospital waiting to see Medical Assistant)
2. Aspirin is for headache; injections are better for arthritic pain (ox trainer who had a vial of penicillin and wanted me to give him injections for his arthritic pain and general run down condition. He eventually got the injections and said he felt much better.)
3. People learn from experience that certain symptoms are best treated at the Health Center.
4. Treatment of sciatica: tie a rope just below the groin, move it a couple inches down the leg each day to force the bad blood down. Make a series of cuts on the foot to release the bad blood. This treatment is widely practiced in the West for leg pain.
5. A young mother with abdominal pain was told by the doctor that she had worms and was given medicine to take which she did. She woke that night with burning pain in her abdomen and called a neighbor who advised her to consult a kajur (she felt the kajur may have caused her to have the pain). The female kajur came and placed a sheep on the woman's abdomen; the snakes in the sufferer's belly transferred to the sheep who immediately died (sacrificed?). The snakes were found in its belly when it was cut open. The animal could not be eaten because of this. The kajur charged ₧4.00 for the treatment which was only effective temporarily. At the time of the interview, some two months later, the young woman was troubled by abdominal pain.
6. Whooping cough is treated by having the child drink donkey's milk. The disease is recognized by the fact the child coughs up blood.
7. Jaundice is treated by drinking tea brewed from a particular vine type plant very common in the rainy season. Traditional healers treat jaundice by making a series of small burns on the arm of the sick person.
8. Whooping cough is treated with a soup made of cow's eyes.
9. When a child is sick, the illness has been caused by someone doing magic. One woman gave as an example that her child was made ill by a kajur who "magicked" a coal inside his body where it burned his heart. Another kajur called in to treat the child could do nothing and the child died.
10. A mother reports that someone has made her daughter have diarrhea. She thinks someone is offended (jealous) of the child's brown color. The mother is very black.
11. All sickness is from the kajur (evil eye).
12. A woman with fever went to the Health Center where she was given no treatment. She consulted a kajur who requested that she prepare meat and arroque and leave them under her bed at night. He came during the night and ate and drank. She was given a liquid to drink and recovered from her fever.
13. Pregnant woman with fever, headache and backache who refused to go to the Health Center consulted a kajur and sacrificed a goat by drowning since her mother's family was associated with river spirits. The woman improved but later miscarried at about seven months.
14. Burns: Put sugar on them. This is done all over the Sudan. Clean them with water in which a bleach cube has been dissolved.
15. Tie a string around the head for treatment of headache.
16. Kajur treats chest infection with small cuts at tip of scapulae and anterior costal margin.
17. Malaria: In children it can be recognized when a child feels tired, vomits and his heart falls down in his body.  
Vegetables predispose one to get malaria.
18. Wounds are cleaned with a feather.

19. Diarrhea: Treatment is to drink milk.  
 Drink special brew of tree leaves.  
 Children with diarrhea should be given custard and rice.  
 It is caused by flies. People with diarrhea should not eat raw food or drink water.  
 The doctor told a mother to give her child milk every hour.  
 It is caused by air.  
 It is caused by moola.
20. Measles: Give only milk for two months to a child who has had measles.  
 Prevent sick child from eating much. Don't let him have meat or water.  
 He can eat robe, sour milk.  
 Mix cold water with dura, onion to rub on the rash. The child should drink only milk. The child should drink half of the cold water potion.  
 Brew tree leaves with onion, red pepper for the child to drink as well as milk. No other foods.  
 Bathe rash with cold water. Do not drink water.  
 Both mother and child refrain from eating meat. The child is fed only milk for two months and then light foods are gradually introduced. Fatty foods are avoided.  
 Bathe rash in cold water. Do not give the child meat.
21. Meningitis "catches people from the back."

#### Plants used in treatment of disease

1. Areng - a succulent, saprophytic plant which is found growing wrapped around a tree trunk, usually a small acacia. It is put in the fire and the liquid which oozes out is collected to use on wounds and burns.  
 The liquid will sting the eyes.
2. Tamarind tree: leaves (arirar) are brewed with water to treat vomiting.  
 Fruit is used to treat malaria, made into a brew. The fruit and tree are both called cuei.
3. Nim: tree leaves made into a brew used to wash infected eyes.

#### Ideas about Nutrition

1. Young children must eat light foods such as milk, rice, custard. Moola must be introduced with care because it will upset the child's stomach.
2. A child eats adult food when he can walk over and pick it up by himself.
3. Two-year olds eat custard, rice with milk, occasionally broad beans.
4. Two-year olds cannot eat adult foods such as moola but must stick with custard, milk, nisha and milk.
5. A three-year old child can eat adult food.
6. Do not feed eggs to a young child or he will be slow to speak (in learning to talk).
7. Children should not eat green leaves. The children are too small and green leaves are not nutritious.
8. Young children are fed twice a day. They are small and do not need much food.
9. Young children are fed three times a day.
10. After weaning the child eats bread, asseda, cow's milk.
11. After weaning the child can eat family food including moola.
12. A child is weaned at one year, has cow's milk until two years old and then eats with the family.

13. Weanling is fed watery porridge - medida.
14. Give young child only breast milk for two years, or until three years, or until eighteen months.
15. Start medida and sour milk (robe) at one year.
16. Bread and milk may be given before weaning.
17. Start supplementary foods from five months, custard, medida.
18. Wean at two years as custom dictates. This is also about the time a child walks, according to the women.
19. Wean at one year.
20. Wean when next become pregnant. One child was weaned because of pregnancy at age six months. He started out on cow's milk and was switched to goat's milk because of diarrhea. His diet was supplemented with tahnia and biscuits until he was 12 months old and started to eat with the family.
21. The child is weaned when the women start to menstruate again. Milk of menstruating women is "bad."
22. Weaning occurs when the husband wishes to resume sexual relations.
23. Children weaned at two years so they won't get diarrhea.
24. Cups or spoon-shaped gourds are used to feed the children.
25. Bottle used for weaning.
26. Child started on bottle and cow's milk at two months because of insufficient breast milk. Started on bottle and powdered milk at six months for same reason.
27. Anyesa bottle feeds her children because she has no milk. Most recent child, born Dec. 1978, died from dehydration and diarrhea in April 1979.
28. Alual, the health worker from Thithiei, says that children should have breast milk and cow's milk only until the age of two or a bit before. She later said that medida could be introduced after the age of one. Children can start eating green leaves at three or four years old. Her three-year old brother eats milk, porridge and eggs of which he is very fond.
29. Milk and meat are best says Nyanwut from Nyincwuor, who gives her children only breast milk until the age of one and then starts cow's milk, medida and bread.
30. Adel feels that fasting is good and in general, Dinka are strong because they eat little.

## Miscellaneous

### July 1978 Visit with traditional midwife in Thithe

She said she catches the baby with the mother in a kneeling position on the dirt floor. The baby is laid on a mat and she cleans its nose, breathes in its mouth, cuts the cord with a razor blade, not necessarily new and ties it with a double thread. Some women "tuck" the cord in on itself after it is tied. The women in the group believe that this practice results in umbilical hernia and pointed to two children present to prove the point. Both had small hernias and were said to have had their cords tied in the questionable manner.

#### Divorced women

1. Two children from previous marriage live with their father in Khartoum. Woman now married to her cousin.
2. Divorced after third child, remarried same man and had fourth child. Re-divorced and thrown out of the compound with her children by the new wife. Now living on £S2.00 per month from her husband and charity of the neighbors.
3. Amelia, a 40+ year old with eight children, divorced for many years. The children are fathered by different men. The Rural Council has arranged a job for her as a school cook so she can support her family. (Information from Govanna. ? gossip and ? accuracy. The job isn't much use as the school was in session very little.)

#### Second wives

1. The husband of Adel, our health worker, took a second wife two years ago. Adel resents the woman and admits to trying to make her do all the work saying she (new wife) is a bad woman. Adel and her husband are Christians.
2. The headmaster of the boys' school plans to take a second wife. Christina, his wife and mother of five, is very bitter about this. She is headmistress of the girls' school.

#### Infertility

1. If a woman is not pregnant after a year of marriage, a kajur is consulted. The usual fee is a sheep.
2. A particular woman: married 12 years, bore one child 10 years ago which died. She has been to doctors in El Obeid and Khartoum and was told her tubes are closed. She has been to several kajurs and paid or sacrificed cows and sheep with no results. She is planning to go south to consult a kajur who has the reputation of being very good with this problem. She says she must have a child or when she is old and cannot work she will be forced out of the compound by her husband's other wives. A child cares for its aged parents.

#### Visit to a kajur

Yenjit Wunjok from Nyincuo

She became a kajur when she was a young woman (she is now 50+). She was pregnant and near term when a gourd fell out of the sky hitting her on the head. She delivered a baby boy the next day only to have him disappear without a trace. The gourd was magic and by striking her on the head, indicated that the kajur had chosen her to be his servant. She and her neighbors believe that a certain old man who had recently died had been the previous servant. She uses the gourd to treat eye diseases, abdominal pain, paralysis and female

infertility. She treats no other diseases and she herself goes to the Health Center for certain problems such as malaria. She refers people to other kajurs and to the Health Center as appropriate. She charges a goat to treat barren women. Treatment for the four problems consists of waving the gourd. At the time of the visit she gave each of us (Norma and myself) 25 pt saying the kajur had told her to do this since she had no tea to offer us.

She came to visit me in the hey compound several times in November asking for various things -- tea, sugar. We gave her small amounts as gifts initially and received sesame seeds in return.

Appendix 4  
Suggestions for Midwives

Midwives (May 1979)

Kuol Deng Majok area:

Amiir Alwaj mother of Acai Kuol  
Yenaway Majok a wife of Deng Majok

In or around Thithiei:

Nyanlony Deng  
Nyancor Col  
Alual Nyiok

Mitrok, Nyincuor areas:

Anyiel Deng  
Nyandel Bor  
Nyanlek Deng  
Anyang Deng  
Alual  
Kuei Aluol  
Nyanthong  
Nyanguok Mabior

### Suggestions for Traditional Midwives

Since the traditional midwives limit themselves to catching the baby and cutting the cord, the first lesson for them should be on how to accomplish these two deeds hygienically. Various implements are used to cut the cord -- knives, spears, splintered dura stalks. The use of a brand new razor blade for each delivery should be stressed. Each pregnant lady could purchase a razor blade or the project could invest in a quantity of blades to give to the midwives or to distribute to the pregnant women through the health workers. An explanation, with illustrations, of how to cut the cord can be found in the Primary Health Care Program Handbook section 5/21. The local women usually use thread or bits of string pulled out of a rope to tie the cord; this should be replaced with new thread.

Additional points to stress in a first lesson: midwives should a) wash their hands, b) wash the mother's genital area, c) use water from the donkey or boiled river water, d) use clean cloths to wipe the baby and mother and to wrap the baby, e) have the mother get a clean mat on which to deliver. (See section 5/17 of the handbook.)

If the lessons can be continued beyond the initial effort pre- and post-natal care could be discussed. The midwives usually know who is pregnant in their neighborhood and they could be taught to recognize problems such as malaria, vaginal bleeding, swollen legs, excessive vomiting, possibly even abnormal presentations and refer these women to the health center or one of the trained midwives. Although it is a difficult topic to discuss because of strong traditional beliefs, proper nutrition in pregnancy should be discussed in the pre-natal class and reinforced at every reasonable opportunity.

The midwives could be encouraged to take an interest in post-natal care by visiting new mothers. Since the Arab custom of 40 days of home rest for the mother and baby has been adopted by many Dinka this time period could be used. The midwife could visit daily for the first week and then weekly for the remainder of the 40 days. She should check the baby to see that it is being kept warm and clean, that the cord is healing and that it is nursing. The mother should be checked for signs of infection such as foul discharge, fever, abdominal tenderness. Additional lessons for the midwives could equip them to give advice on breast feeding, nutrition for the mother and care of the newborn.

All of these lessons would be appropriate for the health workers as well. Even if these women are not actually delivering babies, they can share their knowledge with the mothers and reinforce the midwives.

Appendix 5  
Women's Classes

1. Both Norma and I felt that a demonstration baby would have been useful in our discussions. It might be possible to "acquire" a demonstration child by personal contact with a Dinka woman with a young child (for example Marta, who has a new baby). If one woman can be persuaded to start supplementary feeding at four to six months and later to give her toddler a good diet, her example will influence her neighbors (assuming that her child thrives).
2. My Sudanese counterpart has said that if drinking water from the Nyamora (unboiled) was bad for Dinka, there wouldn't be any Dinka. He made this remark as his contribution to a discussion about diarrhea in small children.
3. Anyesa attended nearly all our discussions and took an active part in them. She demonstrated her ability to make up the sugar/salt solution. When her four-month old son developed diarrhea in April 1979, she took him to the Health Center where he was admitted and treated with chloramphenicol, an antidiarrheal agent, and 5% dextrose and saline by mouth. I saw her son daily as I was attending morning rounds during that month. I never saw her son (nor any other child with gastroenteritis for that matter) receiving fluids in any form. He improved somewhat, becoming more alert with cessation of the diarrhea but still had signs of dehydration and died suddenly five days after admission.

Her husband, who had been in Kadugli, thought that the boy had died because the medicine he had sent from Kadugli did not reach Abyei. Later, the priest, Fr. Silvano told me that the husband thought that the child had become sick through drinking the breastmilk of a pregnant woman, Anyesa being again pregnant.

This sad tale illustrates several points. Rehydration is not handled well in the H.C.; the staff do not seem to realize and certainly do not encourage the mothers to give the children fluids frequently, indeed every few minutes. Anyesa, despite her understanding of the rehydration solution preparation, did not really know how to use it or why to use it and did not even grasp the idea of frequent fluids of any type. She and her husband, along with everyone else in Abyei, including H.C. staff, rely on antidiarrheals and antibiotics to cure diarrhea. A change in this attitude will be difficult to effect and will require a concerted effort on the health advisors' part. The first target should be H.C. staff, since they set the standard for treatment of diarrhea in the area.

4. A case in point is that of Anyesa, the only wife of Aleysio, who was (or thought she was) pregnant four months after delivery.

Women's Classes - Attendance and Meetings

Boys School A

August 17, 1978

9 women

August 24, 1978

3 women

Church

August 21	August 28	Ramadan	September 11	September 18
8 women	8 women	--	5	3
September 25	October 2	October 9	October 16	October 23
5	4	4	3	5
October 30	November 6	Total number of attendances		
children	2(review)	excluding Oct. 30, Nov. 6		45
weighed		Average/session (45/9)		5
		Individual women		17
		Women who attended only once		6
		Women who attended only twice		6
		Women who attended more than twice		5

Outlying lessons

Gum Bial

September 12	September 20	September 27	October 4	October 11
7 women	6	4	4	cancelled
October 28	November 4	November 14	Number of attendance	
7	3	Review	31	
		Average/session (31/6)		5
		Number of women		12
		Women who attended once		4
		twice		3
		more than twice		5

Deng Majok Area

September 29	October 7	October 10	October 17	
5 women	6	5	3	
GRAND TOTALS (ex school)		Number of attendances		19
# women	41	av/session (19/4)		5
seen once	16	Number of women		12
twice	13	Number who attended once		6
more than twice	12	twice		4
		more than twice		2

Topics

Boys School

- Aug. 17 Children need plenty of different kinds of food
- Aug. 24 Supplementary feeding/Breast feeding

Church

- Aug. 21 Food for children
- Aug. 28 Supplementary feeding/Breast feeding
- Sept. 11 Basic rules of hygiene
- Sept. 18 Diarrhea and home treatment
- Sept. 25 Colds and flu
- Oct. 2 Eye infections
- Oct. 9 Pregnancy
- Oct. 16 Delivery and care of the newborn
- Oct. 23 First aid for wounds and burns
- Oct. 30 Cancelled - children weighed
- Nov. 6 Review for Anyesa and Jovanna

Gum Bial

- Sept. 13 Food for children
- Sept. 20 Weaning and supplementary foods
- Sept. 27 Rehydration
- Oct. 4 Colds and flu
- Oct. 11 Cancelled
- Oct. 28 Review Supplementary feeding and Rehydration
- Nov. 4 First Aid for Wounds and Burns
- Nov. 14 Review for Asunta

Deng Majok area (Michael Deng, Ali Deng, Kwol Deng compounds)

- Sept. 30 Basic food
- Oct. 7 Supplementary feeding (M.D.) Basic foods (K.D.)
- Oct. 10 Foods for children (A.D.)
- Oct. 17 Pregnancy and delivery (A.D.)
- Nov. 1 No lesson - weighed newborns (A.D.)

Discussion topics - Outline

I. Foods for children

A. Children need plenty of good food

1. To grow big and strong
2. To grow smart
3. To stay healthy

B. Children need different kinds of food

1. Body building food
2. Energy food
3. Protective food

Goal: To learn that children need plenty of different kinds of food.

Visual Aids: Samples of foods  
Pictures - hand drawn

II. Feeding babies - Breast and supplementary foods

A. Breast is best

1. Mothers' milk is perfect food for babies
2. No preparation, always clean
3. Breast feed as long as possible
  - a) good for baby
  - b) (family spacing) good for mother

B. Supplementary foods

1. When to start - 4-6 months
2. What to start - medida

Goal: To know that breast milk is best for babies but they need to start other foods after 4 months/what foods to start.

Visual Aids: Pictures

III. Basic hygiene and safety

A. Cleanliness

1. Compound - defecation, garbage
2. Kitchen - cover food, dishes away from animals
3. Personal

B. Safety and prevention

1. Compound, kitchen - fires, sharp objects, poisons (kerosene)
2. Bedroom - mosquito net, "isolation" of sick persons

Goal: To know some basics of hygiene and safety

Visual Aids: Pictures

#### IV. Diarrhea: Causes and home treatment

##### A. Causes

1. Dirty water
2. Dirty food
3. Weaning, new foods, malnutrition

##### B. Treatment

1. Sugar/salt solution - demonstration
2. Sugar/salt solution - make your own and taste
3. Doseage - adults: one glass after each loose stool  
babies: three glasses/day

##### C. Danger signs - to Health Center

1. Sunken fontanel
2. No urine
3. Diarrhea not improving - 1 day small child  
2-3 days adults

Goal: To know how to start treatment at home and when child or adult needs to go to the H.C.

Visual Aids: Glass, water, salt, sugar  
pictures

#### V. Colds and flu

##### A. Signs and symptoms - cough, runny nose, tiredness, aches, fever

##### B. Treatment at home

1. Fluids
2. Honey and lemon as cough syrup
3. Aspirin
4. Health Center for high fever, coughing blood, persistent cough,  
trouble breathing, no improvement

##### C. Prevention

1. "Isolation" - sick children - not to sleep with well children
2. Cover mouth when coughing
3. Do not spit or blow nose in house

Goal: To know home treatment for colds and flu. To know when to go to the H.C. and to know some ways to prevent colds.

#### VI. Eye problems

##### A. Cause

1. Flies
2. Other people

##### B. Treatment

1. Wash eyes twice daily with boric acid solution (demo)
2. H.C. if no improvement

C. Prevention

1. Wash hands and face
2. Decrease fly population - garbage disposal  
defecate away from house
3. Avoid sharing towel or bed with someone with infected eyes.
4. Good food - green leaves for children

Goal: To know causes of eye problems; prevention  
To know how to wash a child's eyes

VII. Pregnancy

A. Foods to eat during pregnancy

1. Body building
2. Energy
3. Protective

B. Signs of pregnancy

1. No menses
2. Enlarged breasts
3. Enlarging abdomen

C. Common problems during pregnancy and home treatment

1. Tiredness
2. Constipation
3. Heartburn
4. Frequency of urination
5. Swollen ankles
6. Nausea and vomiting

D. Ante natal care at Health Center

Goal: To know signs of pregnancy; to know common problems and what to do about them.

VIII. Delivery and care of the newborn

A. Cleanliness

1. Midwife - wash hands
2. Mother - wash perineum
3. Equipment - clean mat, new razor blade

B. Newborn

1. Wrap warmly
2. Put to breast soon after delivery

C. Problems

1. To H.C.

Goal: To know about a clean delivery

IX. First Aid for wounds and burns

A. Wounds

1. Clean - wash hands, clean wound with soap and water
2. Dress - with clean gauze or cloth
3. Re-dress - after two days
4. Danger signs - pus, increasing redness, - go to Health Center.

B. Burns

1. First Aid - cold water
2. Danger signs - go to H.C. - if burn is larger than a child's hand.  
if skin is broken
3. If smaller than a child's hand, red skin with blisters
  - a) clean with soap and water
  - b) do not break blisters
  - c) dress lightly
  - d) go to H.C. if redness, pus

Goal: To know what to do for burns and wounds and which burns or wounds are serious enough to go to the H.C.

## Appendix 6

### Suggestions for Teaching Health Care

#### DIARRHEA AND REHYDRATION

##### Objectives

1. Know some of the causes of diarrhea.
2. Be able to tell people how to prevent diarrhea.
3. Recognize when a child or adult with diarrhea should be referred to the health center.
4. Know how to mix the rehydration mix and how much to give to an adult and a child.

What is diarrhea? Three or more watery stools per day.

A person or child gets diarrhea in many ways.

1. Eating with dirty hands.
2. Eating dirty food; food that has been left in a warm place for a time, food that has been unprotected from flies or animals, or food that has been badly washed.
3. Drinking unclean water from a pond, river or well. This is especially true for children.
4. Children get diarrhea when they are malnourished.
5. Small children sometimes have diarrhea when they are sick with other diseases such as malaria, measles, pneumonia, ear infections.

There are many things one can do to prevent diarrhea.

1. Wash your hands after going to the toilet and before eating or preparing food.
2. Keep food under a cover, away from flies. Wash foods such as vegetables.
3. Drink clean water from the donkey or boil water from the river. This is especially important for babies and small children. They cannot tolerate dirty water as well as older children and adults.
4. Feed your children well so they will not be malnourished.

When a child has diarrhea, look for these things:

1. Does the child have fever? He may have malaria and must be treated with chloroquin.
2. Does the child have cough or rash or signs of any disease? He could have pneumonia or measles or ear infection. If you think the child has any of these diseases, send him to the health center.
3. If he has bloody diarrhea, send him to the health center.
4. If the child is very ill and has
  - sunken eyes
  - sunken soft spot
  - dry mouth and tongue
  - skin that stands up in a fold when you pinch it
  - does not urinate very muchhe is very ill and needs intravenous fluids in the health center.

5. If the child is not too sick and has had diarrhea for less than two days you can give him the diarrhea medicine packets.

Remember: One packet is for two beer bottles of clean water.

The water must come from the donkey or be boiled before it is made up.

A baby or child under one year will need one bottle of fluid a day.

A child over one year will need the whole two bottles in one day.

Tell the mother to give the child a glass full of the drink after every time he has diarrhea.

She should also offer the drink to the child at intervals during the day.

Give the mother enough medicine for two days. Tell her to bring the child back to you after that.

If the child is improved, give her enough for one more day. If the child is worse, send him to the health center.

**IMPORTANT:** Breast feeding never causes diarrhea. Continue to breast feed your children even when they have diarrhea.

Children with diarrhea should be given food to eat as soon as they are hungry. Do not starve a child with diarrhea. Remember malnutrition can cause diarrhea. Feed the child soup, porridge, eggs.

Children with chronic diarrhea are nearly always malnourished. Their diarrhea will not stop until they are well fed. Feed them all foods -- vegetables, meat, eggs, asseda, milk. Feed them four times a day.

When an adult has diarrhea give him the packets. He should drink two glasses of the drink after every loose stool. If he has bloody diarrhea, he should go to the health center.

**Supplies:** Packets of rehydration mix

**N.B.** In this lesson, I did not emphasize rehydration but referred to the mix as a medicine which seems to be more acceptable at this stage.

## WOUNDS

### Objectives

1. Know how to clean a wound with water and Dettol.
2. Dress a wound.
3. Know when to send a person to the Health Center with an infected wound.
4. Know how to stop bleeding by applying pressure.
5. Know to send a person with a heavily bleeding wound to the Health Center.

### Rules for treating wounds

1. Wash hands before and after. Use soap and water.
2. Stop bleeding by using a clean cloth to cover the wound. Press directly on the wound. Tie the cloth in place and send person to the health center.
3. Clean a wound with Dettol (one quarter capful in a basin) and water using a clean cloth. Get out all the foreign material, dirt, grass, glass, sticks.
4. Cover the wound with a clean bandage.
5. Check the wound in two days. Clean it with water and Dettol and put on a new bandage.
6. If the wound is swollen, red and has a thick discharge or foul odor, send the person to the Health Center.

## BURNS

### Objectives

1. Tell whether a burn covers a large or small area.
2. Know when to refer a person to the Health Center.
3. Know how to clean and dress a burn.
4. Tell people how to prevent burns.

### Rules for treating burns

1. Wash your hands before and after with soap and water.
2. Put burned area in cold water immediately.
3. Do not put sugar on burns.
4. If the area of the burn is the size of a small child's hand, the burn is small. If it is bigger than a child's hand, send the person to the Health Center.
5. If the skin is red or if it is red with some blisters, the burn is not serious. If the skin is burned off, the burn is serious, and the person should go to the Health Center.
6. Wash a small burn (size of a child's hand, skin red or blistered) with soap or Dettol and water.
7. Do not break the blisters.
8. Cover the burn loosely with a clean cloth or gauze.
9. Check the burn in two days. If there is pus or a foul odor, send the person to the Health Center. If the burn is healing, dress it again with a clean gauze.
10. Children are frequently burned by cooking fires. Watch your small children to keep them away. Put a guard (circle of stones) around your cooking fire.

WOUNDS AND BURNS

**Pictures:** Sequence for dressing wounds

**Supplies:** Gauze  
Dettol

## EYE DISEASE

### Objectives

1. Be able to tell people how to protect themselves against eye diseases.
2. Be able to give treatment to a child or adult whose eyes are runny.
3. Know when to send people to the health center for eye problems.

### Points to make

1. Everyone should wash their hands and faces twice a day and
  - a) after touching an infected eye;
  - b) after touching a runny nose.
2. Flies help to spread eye disease; try to keep flies out of children's eyes.
3. Green leaves are a food that helps to protect against eye disease.
4. When a person has something in his eye, brush it out with a clean cloth. If it does not come out easily, send the person to the Health Center.
5. A person with runny eyes needs to wash them at least twice a day with clean water and a clean cloth or clean cotton. Boric acid solution may also be used (some is given to each woman). The correct way to clean a child's eyes is demonstrated.
6. Tetracycline eye ointment should be put in the eyes after they have been washed. It should be used when the person has a thick discharge and when washing with water or boric acid has not helped.  
The method of putting ointment in eyes is demonstrated.
7. If the person's eyes have not improved after three - four days, he should be sent to the health center.
8. A newborn with pus in his eyes should be sent to the Health Center.

Pictures: Cleaning an infant's eyes  
Instillation of eye ointment

Supplies: Cotton  
Tetracycline eye ointment  
Boric acid solution

## SCABIES (Guanya)

### Objectives

1. Recognize the disease.
2. Know how to treat the disease in children and adults.
3. Be able to advise people how to prevent the disease.

### Points

1. Always wash your hands before and after touching a patient with a skin disease.
2. A person with scabies:
  - a) will complain of itching over large areas of his body;
  - b) has no fever;
  - c) will have a rash between his fingers, on his elbows, on his armpits, on his buttocks.
3. To treat a person with scabies:
  - a) tell him to take off his clothes and wash all over with soap and water;
  - b) after washing he must put benzyl benzoate all over his body, using a clean cloth;
  - c) then he must put on clean clothes;
  - d) he must not wash again until the next day when he repeats a, b, and c;
  - e) he must wash and apply the medicine for three days in a row.
4. A child will need about 60 cc of medicine (half of the little plastic cup) for all three days. An adult will need about 120 cc (a whole cup).
5. Treat all of the people in the family who are itching.
6. In order to keep from getting the disease again, wash all the clothes of everyone in the family and wash all the bedding. Put mattresses in the sun for awhile.

Supplies: benzyl benzoate (dilute the liquid in the jug 1:3 with water)  
plastic measuring cup

Picture: mother applying solution, taped on bottle of benzyl benzoate

## MALARIA

### Objectives

1. To recognize signs and symptoms of malaria in adults and children.
2. To know how to treat malaria.
3. To know what causes malaria and ways to prevent it.

### Points

1. Malaria is caused when a person is bitten by a certain kind of mosquito. This mosquito bites a person with malaria and then carries the malaria germs to the next people it bites.
2. Mosquitoes breed in still water like ditches and holes full of water.
3. People with malaria always have fever. They usually have headache, weakness, back ache, pains in joints, and shivering. Children may have vomiting and diarrhea.
4. To treat malaria:  
Children under 1 year -  $\frac{1}{2}$  tablet on day 1;  $\frac{1}{4}$  tablet day 2;  
 $\frac{1}{4}$  tablet day 3.  
Children 1-4 - 1 tablet day 1;  $\frac{1}{2}$  tablet day 2;  $\frac{1}{2}$  tablet day 3.  
Children 5-10 - 2 tablets day 1; 1 tab day 2; 1 tab day 3.  
Children over 10 and adults - 4 tablets all at once.
5. For small children, crush the tablet and mix it with sugar water.
6. If there is unconsciousness, fits or collapse, send the person to the Health Center.
7. To prevent malaria:
  - a) Sleep under a mosquito net.
  - b) Wear light colored clothes that cover the arms and legs.
  - c) Try to reduce the number of mosquitoes; pour oil on still water; fill in the holes left when a new house is built.
8. Malaria is especially dangerous for pregnant women and small children.

Pictures: Doses of chloroquin

Supplies: Chloroquin

## NUTRITION

### Goals

1. Know three reasons why young children need good food.
2. Know three kinds of food young children and everyone needs to eat.
3. Know the local foods that young children and everyone needs to eat.

A new born baby weighs about 3 kg.

At six months the baby should be two times as big as when he was born. He should weigh about 7 kg.

At one year the baby is three times as big as when he was born. He should weigh about 9 or 10 kg.

In order for children to grow this much and then to grow into adults they must have lots of different kinds of food.

Children also need food for their brains so they will be smart. Children who get plenty of different kinds of food, will do well in school.

Children who eat plenty of different kinds of food stay healthier. If they do get sick, they get well faster.

CHILDREN NEED PLENTY OF DIFFERENT KINDS OF FOOD FOR THREE REASONS:

1. To grow big and strong
2. To be smart
3. To be healthy.

There are three kinds of foods:

1. Body Building food: These foods are needed to make people grow big. Small children need them to grow bigger. Pregnant women need them because they are making a new baby inside them. Body building foods are:
  - eggs
  - chicken
  - meat from cows, goats, sheep
  - fish
  - milk
  - peanuts
  - fool, lentils, beans.
2. Energy foods: These foods are like fuel for a tractor; they give people energy to be active. Energy foods are:
  - oil
  - sugar
  - rice
  - bread
  - dura
  - corn.
3. Protective foods: These foods help to protect a person from diseases. Protective foods are:
  - tomatoes
  - okra
  - onions
  - lemons
  - cucumbers, squash, watermelons
  - green leaves.

NUTRITION (cont.)

Emphasize that children need plenty of different kinds of foods. Children are small and have small stomachs and cannot eat very much at one time, so they need to eat four times a day instead of two.

Supplies: None

Pictures: for demonstration - children from birth to two years; body building, energy and protective food groups; well nourished vs. poorly nourished child; child with four bowls of food.





