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Developing a Health Education Component  
for the  
UNICEF Water and Sanitation Programme  
in Sudan

Consultancy Report  
May 17 - June 1  
1980

Norman Scotney  
(AMREF, Nairobi)

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Consultancy Report - Norman Scotney

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## RECOMMENDATIONS

### For UNICEF Assistance to Ministry of Health, Khartoum

- I) Consultant services of a specialist in health education development to review the current programmes and activities of the Health Education Department and to make recommendations for the development of the Department possibly with UNICEF assistance. (Ref. 8.2)
- II) Consultant services to advise on development of the Diploma Course in Health Education through the provision of teaching materials and possible incorporation of a final year period of supervised field work, etc. (Refs 8.1 and 8.4)
- III) Assistance to enable journals and international periodical publications to be purchased for reference by senior staff of the Ministry (Ref: 8.1)
- IV) Assistance to strengthen the Ministry's Teacher Training Programme for Tutors of C.H.Ws and VM/Ws and, in particular, the health education component. (Ref: 8.1)

### For UNICEF Assistance to Ministry of Health, S. Kordofan Province

- V) Assistance to the Provincial Ministry of Health to conduct a short course on water, hygiene, sanitation and health for Rural Water Corporation/UNICEF staff engaged in the Domestic Water Supply Programme. (Ref: 9, page 21).
- VI) Continued assistance to the Community Health Workers Training School Kadugli to enrich the training programme through provision of teaching materials and, if possible, translation and adaptation of teaching materials at present available in English into Arabic. (Ref: 7.2)
- VII) Assistance to the CHWs Training School with its transport needs so that after training CHWs may be regularly visited in their villages. (Ref: 7.2).
- VIII) Assistance to the CHW Training School and Health Education Officers (Diploma in H.E. graduates) to provide refresher courses in health education for CHWs in 1981 and subsequently. (Refs. 7.2 and 7.4)

- IX) Assistance to the Health Education Department from the Provincial Ministry of Health for HED staff to visit S. Kordofan for the supervision of the work of the H.E. Officers. (Ref: 7.4).
  - X) Assistance to the Village Midwives Training School by Arabic speaking Nurse Consultant to initiate the preparation of VM/Ws for health education of mothers, especially in home hygiene and child care. (Ref. 7.3).
  - XI) Assistance to the VM/Ws Training School by the same consultant to assist with the organisation of short courses for selected Traditional Birth Attendants. Also assistance with transport and other costs for such courses. (Ref: 7.3)
  - XII) Assistance to the Provincial Ministry of Health to permit participation in the national latrine improvement programme. (Ref: 8.1)
  - XIII) Assistance to the three Health Education Officers as they are posted to S. Kordofan through provision of suitable teaching materials, audio-visual aids and reference books. (Ref: 7.4)
  - XIV) Assistance to the H.E.Os, in 1981 and subsequently, to conduct short-health education workshops for village leaders meeting together at central villages; leprosy to be one of the diseases discussed. (Ref: 7.4)
  - XV) Assistance to the Provincial Ministry of Health and H.E.Os to conduct short health education courses for Primary School Heads, possibly at Dilling Teacher Training College. (Ref: 7.1.)
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## 1. The Consultancy

By 1983 UNICEF hopes to reach half a million people with potable water by means of, firstly, borehole drilling followed by the installation of hand pumps and, secondly, the renovation and desilting of the large village water reservoirs ('hafirs'). The programme has from 1977 made gratifying progress in both Bahr-el-Ghazal and subsequently South Kordofan Provinces but not all the hoped for health benefits have been forthcoming. Accordingly, at the end of 1979 an anthropologist was asked to "collect sociocultural data on conditions, practices and attitudes relating to water supply, health, hygiene and sanitation at the rural community level in South Kordofan Province".<sup>1</sup> The report of this anthropologist/consultant was made available to the present consultant - a specialist in health behaviour studies and health education programming - and the present report should be read in conjunction, with that of Dr Margot Badran.

The present consultant arrived in Khartoum on May 17, worked in S. Kordofan May 20 to May 30 leaving Khartoum for Nairobi on June 1.

## 2. Terms of Reference

These were stated - May 6, 1980 - as follows :

- "1) To review the UNICEF/TAG report regarding personal and domestic hygiene practices (including water use practices) and beliefs in South Kordofan Province.
- 2) On the basis of the above report, to collect additional necessary information regarding :
  - a. communication channels in South Kordofan Province;
  - b. existing health education services in that province in terms of staffing, administrative structure, financing, and actual activities;
  - c. formal and informal community structures which either now or could in future act as communication channels for health education activities, and as mechanisms for promoting community participation in all activities of the RWC/UNICEF water supply programme and future UNICEF sanitation and health education activities.

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1 UNDP Global Project GLO/78/006 - "Low Cost Water Supply and Sanitation. Report on Mission, February 1 - March 7, 1980. Margot Badran

- 3) To further develop, if necessary, that report's recommended strategy for water-project related community and health education activities.
- 4) To recommend a plan of action for the implementation of that strategy including :
  - a. description of administrative responsibility for implementation;
  - b. outline of inputs to be required;
  - c. statement of expected outputs and project impact in the form of quantifiable objectives;
  - d. outline of monitoring and evaluation activities that will be used to assess project performance;
  - e. to recommend any additional information needed for a plan of action.
- 5) To submit a written report to UNICEF/SCO containing all the above information not more than 30 days after leaving Sudan."

### 3. Priorities for the Consultant

Discussion of the Terms of Reference led to the formulation of three questions as of over-riding importance :

- 1) Do people value the supply of water delivered by the hand pumps and what has been the response they have made?
- 2) What distinguishable health benefits - if any - have, so far, accrued in consequence of the installation of the pumps?
- 3) What are the health education inputs that should now be introduced to increase the health benefits to be derived from the installation of pumps?

### 4. Method Utilised and Acknowledgments

The standard methods were utilised - review of available documents (Annex 1), briefing and interviews with informed individuals (Annex 2), with periods spent in villages by a self-sustaining LandRover unit consisting of Consultant, UNICEF adviser, Interpreter and Driver. An effort was made to arrive at villages at hours appropriate for discussion. Also to locate the unit at central points encouraging at any hour interchanges with Imams, Sheiks, Teachers, Health Workers, Head of Families, and other individuals. Visits were also made specifically to observe behaviour at pumps, souks, schools, etc. Annex 3 - Itinerary Consultant.

Similar questions were asked - and conversations initiated - with various individuals and with diverse groups both to compare viewpoints and to confirm data collected.

#### 4.2 Acknowledgments

For a consultant to succeed in a new assignment within a two week period massive help, including logistic support, is essential. At UNICEF Khartoum Uffe Konig, Ben Mboya (Programme Officer Zonal Development), Wayne Hooks (Programme Officer Water), John Etridge (Deputizing for Henry Kaziga - Programme Officer Health), V. Mutaswami and Steve Allen (Administration), showed an enthusiastic commitment that went far to ensuring the success of the mission.

At Kadugli, Jack Sell (Project Manager) aided by Charlene, smoothed away endless difficulties as well as pointing to useful and, as it emerged, propitious directions for the field work. Tom McKinight was enlisted from his key position in the Project to be my guide, assistant and colleague throughout the field work. Suleiman Saga was recruited from the Store to be our interpreter, learning rapidly this difficult skill. We were only able to reach inaccessible villages - especially in W. Region - and survive the hazards of torrential downpours because Mohammed expertly and cheerfully piloted our heavily laden LandRover.

Any success the mission may have attained must be due in large part to the exceptional commitment made and support given to the consultant without exception by UNICEF Staff in Sudan.

#### 5. Findings : The Three Priority Questions

- 5 Question 1: "Do people value the supply of water delivered by the hand pumps and what has been the response they have made?"

Unquestionably people are pleased with the constant supply of good water made readily available to them. In village after village we were told "The water is good", "It makes good tea" or "It helps us. We know it will not dry up". (Our visit coincided with the very end of the dry season and the coming of the first rains). When we probed further we were told that the water people previously got from the hill streams was also good, but the pump was easier to reach.

We asked whether in the wet season, if there was water in pools and streams nearer to their houses, people would use these pools and streams. Teachers and sheikhs who had learned something of "water quality", were firm and sure they would still have their wives and daughters go to the pump. Others were uncertain or said they would then use streams.

We were told that the pumps had accentuated the movement of people down from the lower slopes of the jebels to build on the plains areas. By tradition people cultivated benched hillside terraces and built their houses, probably for defensive purposes, on ridges and bosses of rock. In recent years there has been a movement down towards the plains. In Sadaa (W. Region), where the pump was sited away from the hills and near the new school, we found new houses had been built nearby. We could not determine the extent to which the pumps have contributed to this trend. The most common physical action used in pumping was not that envisaged by the designers. In practice women, and especially girls, do not use the long up and down stroke for which the pump is designed. They use a shorter and more rapid stroke moving the pump handle only through the middle of its range. This staccato rhythm is preferred by the girls who often dance and sing whilst pumping. The water flows continuously and the yield seems to be as great as with long strokes. Pump engineers, however, told us that continuous use of only a section of the barrel traversed by the piston would, in time, give rise to mechanical problems.

In Ras el Filh (W. Region) we found the pump had accentuated a community conflict. The village is in two portions, one known locally as Lao. The pump site selected was near the school and adjacent to one section of the village but far from Lao. The primary school headmaster claimed that the pump was for the school but had agreed to let the people living nearby of Sheikh Sadaa, use it. The people of Sheikh Abdullah Bakie of Lao and their animals were not allowed to use the pump and were compelled to continue to go to their stream which in the dry season did not give sufficient or good water. They felt very strongly that they should have a separate pump for Lao.

The volume yielded by the Ras el Fihl pump was, when we saw it, not very great and some restriction on its use almost certainly justified. The policy of siting pumps, though, needs review. We were told that where water could be obtained from suitable granite fissures preference in siting was given to schools and "hospitals". No village we visited had a hospital though two had a two-room dispensary each needing, though, limited quantities of water only.



No school that we visited outside the towns had specific washing facilities. The school day is short. Schools do not function in the five wet months. By contrast the needs of families - usually around 20 litres per person per day - are far greater than schools. Schools should be encouraged to have washing facilities. Nevertheless, a number of factors including community preferences and easy accessibility for the majority of families - should be taken into consideration in the siting of pumps. (Further consideration is given to this in a later section).

In Sadaa the Sheikh, advised by the R.W.C. geologist, had tried to control the immediate area around the pump by surrounding it with a thorn fence. His first intention was to stop the women from washing clothes there and so contaminating the pump area, and, secondly, to restrict the watering of village animals - mainly goats - to a small pool which was outside the fence and filled by the outflow of the pump gutter. This laudable effort had largely failed. There were substantial gaps in the fence. There was no gate. We saw women surreptitiously washing clothes inside the fence. At night the Sheikh made the pump non-functional. But we were told that at night goats were penned. We did not find anywhere that control of the immediate area around the pump was effective. When activities were dispersed and when the soil was porous there was less mud. In the rain season mud would certainly accumulate and even these pump areas become polluted.

Contamination of deep sources of water by surface flows is not automatic. Over a long period it cannot however be ruled out. Effective control of pump surround areas, to prevent transmission of parasites and mosquito breeding, is highly desirable.

5. Question 2 : "What distinguishable health benefits - if any - have, so far, accrued in consequence of the installation of the pumps?"

Many diseases and even more health problems, have a relation to water. The list is long. Up to 80 per cent of diseases found in rural areas of the developing world are related to water. The health benefits that may derive from changes in water availability can, perhaps, be assessed by discussing three kinds of diseases ; - diarrhoeas, skin diseases and eye diseases.

Our enquiries were limited by the absence of hospitals in the villages visited. Only one village had a functioning Dressing Station (Nogtat Gheiar) but there (Ras el. Fihl) the Nurse or Hakim (Mamarid) helped us in every way possible. Our enquiries made in the villages concerning disease problems produced interesting responses but these were, of course, general rather than specific. Moreover the approaching rain season could be expected to give rise to a different pattern of diseases.

Diarrhoeas, we were informed, continue at a very high level in young children though they are rarely found in adults. Skin diseases show a similar pattern to previously. Children and some aged adults have recurring rashes. Eyes diseases which respond to increased use of water, for example trachoma, are very uncommon. At one village we visited where unprotected wells were used - Abu Safifah, (S. Province) two children were suffering from diarrhoea. Inspecting the well used by the children's mother it seemed probable that the pathogens causing the sickness had been swept into the well with the surrounding mud by a heavy overnight shower of rain. In another village where there was no pump but some protection of the wells used (Timbilee - W. Province) (because it was recognised that flood water contaminated wells) the diarrhoea pattern was similar to that found in the villages with pumps.

Pumps have recently been introduced into S. Kordofan. From the limited enquiries we made and without the advantage of base-line health data we could find little improvement in health that could be attributed to the introduction of pumps. The health benefits derived so far have been largely incidental and generally limited. The changes in disease incidence that might be expected to follow have, so far, not resulted. Nowhere did we find a noticeable change in hygienic practices. No latrines have been constructed. Also no bath houses, no separated watering facilities for animals, no new facilities for clothes washing or for better storage of water. From our enquiries we concluded that approximately the same amount of water per head or per household as previously, is being gathered from the pumps and utilised in the houses. (Feachem R et al. "Water, Health and Development" 1978 Tri - Med Books London. P.100, has confirmation of this from Lesotho).

Diarrhoeas and skin diseases particularly affect children. Toddlers are not subject to control through "shame", and play in the dirt of compounds and adjacent spaces where animals and poultry foul the ground. In Tuleshi villages (W. Region of S. Kordofan) we found that, children as elsewhere, defecate in the house compounds - that is, within the hedges that enclose the animals at night - and that pigs root up the faeces and, no doubt, disperse them on their feet. Chickens and goats wander indiscriminately. Boys are not required to wash as a daily routine habit. Girls only begin to wash regularly when they accompany their sisters to the pump or well. Washing of clothes is largely confined to the clothes of older girls and adults.

Men go to the fields to defecate. Women, we were told, defecate at night. Our conclusion is, though, that women and girls on the days when they are not working in the fields probably defecate when making their daily journeys outside the compound to gather water. We failed, however, to obtain specific and reliable information on this. Generally village hygiene has many shortcomings and improved water availability has not, so far, effected any substantial change. With reduced isolation in the villages and concentration of children in schools the hazards resulting will increase rapidly.

Villages, it is worth recalling, only persist where there is a suitable existing source of water. The population density of S. Kordofan is not high, Despite the long dry season, year-round sources of water are frequent, especially near to the granite jebels. The main contribution made by the introduction of pumped supplies has been to reduce the burden of water gathering falling upon women and to ensure that even in the dry season unpolluted water in adequate quantity is readily available. Some health benefits will follow this change in daily practices. The important health improvements needed however, require substantial changes in current hygiene and sanitation practices.

5. Question 3:

"What are the health education inputs that should now be introduced to increase the health benefits to be derived from the installation of pumps?"

The introduction of pumps to improve water supplies cannot by itself ensure significant health improvement. Following a careful examination of the relation between water availability and health benefits Feachem has concluded that only a substantial increase in domestic water use - such as arises when piped supplies are brought into peoples houses so that for example, they take showers - leads in practice to such an appreciable change in water use that health improvement follows. <sup>1</sup>

The introduction of pumps into a village can, however, provide an opportunity for a programme for the improvement of hygiene and sanitation, and then health benefits will follow. The improvement in water availability and water quality must be seen, however, as only one component of a planned and sustained programme of health education.

Visiting villages that had recently had pumps installed our welcome was assured, in the few villages we were able to visit which still had no pumps we were asked to assist the leaders to obtain pumps but we found, nevertheless, eagerness also to discuss health problems and needs. Without exception village leaders - imams, sheikhs, school teachers, health workers, etc. were pleased to be able to discuss their health needs with us. They wanted to know how they could avoid disease problems. Although the request for a "hospital" was a continual response, leaders, we found, also appreciated that there is much they can usefully learn about ways of protecting and improving their health, and are keen to learn these.

Particularly interest was shown in discussions concerning the contamination of water. Animals especially cattle and goats, it was agreed, can pollute water. (Donkeys generally, it is thought, do not pollute water; we were unable to find the basis for this belief). Most significantly people, it is thought, do not pollute water - unless with soap or other introduced substances. Water is said to be polluted when it smells bad. Contamination by human wastes is not considered important. Similar beliefs have previously been reported. They have been found to characterise the thinking of small static communities. In fact unless pathogens are introduced by travellers, visitors or other "outsiders" pollution does not occur. Members of a small residential group with primitive hygiene practices will already share the same spectrum of pathogens. Circulation of these pathogens may be through water or other means but their number is limited.

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<sup>1</sup> Feachem R.G.A, McGarry and Mara (eds.) "Water, Wastes and Health in Hot Climates:" John Wiley & Sons, London. 1976.

"Outbreaks" or epidemics are only possible through new pathogens introduced by outside agents. Rodents, birds, and other biological agents, including insects, can, of course, introduce certain diseases, especially virus diseases. Transmission by human beings, though, depends upon "strangers" introducing new pathogens.

Most of the people of the villages of South Kordofan are not living in an area of high drinking water hazard.<sup>1</sup> Temperatures make it an area where water has high amenity value but traditional sources are not highly polluted. In recent months, however, there have been limited outbreaks of cholera in S. Kordofan. During our visit two outbreaks occurred in large villages near to important transport routes. The recurring gastroenteritis of young children from poor sanitation has been referred to previously and new schools increase risks. The need for health education programmes to improve hygiene becomes continually more important.

Everywhere the small, static, isolated, residential group is disappearing. People seek to participate in the life of a wider world - e.g. they want water pumps, "hospitals", and education for their children. With these developments, exposure on an increasing scale to new varieties of pathogens must follow. Health education to promote better hygiene needs to be incorporated as a component of this process of change

#### 6. Findings: The Hafirs. (Water reservoirs)

The Hafirs meet a different water need from the pumps. They serve villages of the plains areas, frequently of the "black cracking day" (or black cotton soil) areas. These areas have attracted populations to cultivate dura, cotton and other crops. Frequently the villages have no alternative sources of water, especially in the dry season. The village of Kakaraiya, we found, had been partly deserted when in February (1980) the water of the hafir which had deteriorated and needed renovation was exhausted. The school and dispensary both closed. The traditional birth attendant moved to Abu Safifah - a distance of twenty kilometres. Many families moved with her or to other villages. (For Kakaraiya see Badran Report, page 5). Of 2500 population 1,500 left. In eight days, utilizing earth moving equipment (Wabcos), 10,000 cubic metres of soil were moved by collaboration between UNICEF and the Rural Water Corporation Staff and yielded results. On the eighth day torrential storms 100 kilometres up stream led to a flood of water which, the same day, filled one hafir and filled the second the day following.

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<sup>1</sup> "Environmental Health in Developing Countries". Gilbert F. White.  
Geographia polonica 36.77 pp 225 - 237.

This water might, despite evaporation, prove sufficient for two years. Whilst we were at Kakaraiya families began to return to the village.

We had discussions with the Iman, three Sheiks, and other village leaders concerning the needs of Kakaraiya. The leaders planned by a levy on parents to repair two dilapidated school classrooms which needed corrugated iron roofs to replace the unserviceable straw thatch. They expected that this work might take two years to effect. There were few other signs of community effort or completed work. We stressed the importance of safeguarding the water of the hafir. This view point was accepted in principle and there was agreement that the wire fence was helping to keep people from misusing water and encouraging them to take their water from the well - supply chamber. When we suggested improving the fence by inter-lacing the wire with thorn bushes to keep out goats the value of this was agreed. We felt it was unlikely, however, that community action would result because though cows can pollute water, goats, it was felt do not. When we suggested a circular shallow pool for watering goats, using water from the well and outside the fence, we were told that goats were more numerous than people, and asked if UNICEF would provide such a pool! In other villages such pools have been built by traditional methods.

In February when the hafir water had become almost exhausted there was, we were told, still no increase in diarrhoeas. Pollution of water was acknowledged as a danger but not feared in practice. The community leaders had previously made prolonged efforts pressing the RWC to get the necessary work done to rehabilitate their hafirs. That these efforts were successful and that the farmers also rely upon the Nuba Mountains Agricultural Production Corporation for tractor ploughing of their fields, may have led people to believe that most of their needs can and will be met by outside intervention. Some of the farmers and traders have substantial annual cash incomes and rely upon these to fill their needs.

The village, though it stands on a stretch of sandy soil, has a serious problem of defective hygiene. The large school, serving several villages, the teachers houses and dispensary, use unhygienic bucket latrines - which are almost standard in S. Kordofan - with their inescapable complement of flies and overflowing mix of urine and faeces. The small market area has no sanitary provision. Non-government houses have no facilities for human wastes disposal or washing or control of waste water. We could not find the Community Health Worker who had left the village but our discussions suggested there are recurring health problems arising from infections and especially malaria.

Bilharzia is common because children play in the pools and seasonal streams.

Many of the hafir villages are much larger than the jebel villages thus concentrating the disease problems arising from defective hygiene and lack of sanitary provision. The health education needs are probably more serious than in the jebel villages but the appropriate strategy to secure health improvement is less obvious. The jebel villages seem to present less communication problems partly because of their greater community cohesion.

Eventually the obstacles to treating the water of the hafirs will be overcome either by chlorination, filtration, or other means. Unfortunately the provision of safe water will not by itself lead to the health and hygienic improvement that is both urgently desirable and possible. The adoption of better hygienic practices in the hafir villages is urgently necessary.

7. Findings : Health Education at present in S. Kordofan

7.1 The onset of cholera outbreaks in S. Kordofan was not needed to convince the provincial administration of S. Kordofan of the urgent need for an advance in community hygiene and health education. The Commissioner, His Excellency Idris Abdul Rahman expressed his gratitude to UNICEF for assistance given to the Province, emphasized his interest in our particular mission, and then drew attention to <sup>the</sup> unhygienic situation of Kadugli. Could UNICEF give any assistance with the problem of unsatisfactory sanitation and the obvious health education needs of the town? He was also anxious about the unprotected wells of the Province which could lead to the spread of gastroenteritis.

Dr. Mirghani Suleiman, Deputy Assistant Commissioner of Health - when he was free of urgent duties in the villages affected by cholera - expressed himself strongly on the need for health education. S. Kordofan had three nominees, now taking the Diploma in Health Education course at the University of Khartoum. (See Section 7.4) He mentioned that health education was a component of the nine months course given at Kadugli - as well as the centres in other Provinces - for training Community Health Workers ("Muawin Sihi") and he hoped that health education, as well as some instruction in child care, could be introduced into the Village Midwife School programme. Any assistance UNICEF could give to increase the health education effectiveness of Health Staff - and also of School Teachers - would be very welcome. Specifically he mentioned the need for books, for teaching materials, and also for possible assistance in the Khartoum Diploma Course.

Progress in the Province was limited by, firstly, the national need for trained personnel and, second, finance. Housing was a difficulty because no rental housing was available. S. Kordofan was called a "hardship area" and after two-years of service young medical officers were given preference in selection for post-graduate courses. Twenty-two medical assistants (certified nurse with two years additional training) had been trained for leprosy control but were now working simply as medical assistants. Two, however, were now going to Wau for further training and would be released for leprosy control duties. Leprosy was generally localised. There were four leprosaria with an average of 250 resident patients who learned cultivation and continued as workers. The policy now was out-patient treatment. Imans and other village leaders who can influence attitudes need instruction to help this new programme development.

Sickness levels in the Province were far too high. Most of the diseases were preventable. In young children the highest in incidence were, firstly, diarrhoeas and parasitic diseases; secondly, upper and lower respiratory tract infections; thirdly, malaria and fourthly, malnutrition which, of course, was frequently associated with infections. The Province now had 230 Village Midwives with 40 in training but there were 2000 villages. Selected traditional birth attendants should be given a one month training course, perhaps twenty on each course, but should be chosen from villages where they would not compete with VM/Ws, that is villages without VM/Ws.

Syphilis was widely distributed, especially amongst nomadic groups, and secondary syphilis found because shame makes people avoid early treatment and the secondary stage symptoms are often not recognised as syphilis.

The Medical Assistant (Musaid Tibee) has the key responsibility in Health Centres (Markaz Seehi) in the central villages though Community Health Workers (Muawin Sihi) would gradually take on a lot of the load. Medical Assistants have supporting staff, at least one nurse, and sometimes a Village Midwife (Daia Ghancrnia) - and could visit villages one or two days in each week. The Province had a plan to bring them in for a programme to help them to understand Primary Health Care and to facilitate cooperation with the Community Health Worker (Muhawin Sihi). An application would probably be made to UNICEF for assistance.



When the three Health Education Diplomates reported for duty in the Province next year one would be stationed in Dilling. Their work would be in training and refresher courses for CHWs and other Courses, in work on epidemics, hygiene and sanitation improvement in the villages, etc. Their job category would be about the same as that of Medical Assistants. UNICEF could assist, especially in transport and teaching material needs. The need for a practical bloc of supervised training in the villages was accepted.

A national handbook for health education in primary health care could be very valuable especially if it could be modified to allow <sup>for</sup> diverse conditions in the Provinces. The health education needs in various diseases were discussed. Guinea worm-people knew how to take the dracuncula from water and even how to extract the worm from tissues, but the pumps should reduce this condition. Bilharzia (schistosomiasis) was found in up to 90 per cent of school children, especially in rain seasons when they went into the pools and streams. Scabies seemed to increase at the end of the rains but was very common, especially in children.

Health education was included in the school curriculum but little effective teaching was done in the schools. Teachers needed to be brought into Kadugli or Dilling for courses by Health Department Staff but before this could be commenced the Health Department needed help in the preparation of suitable programmes.

Dr. Mirghani throughout the discussion stressed the urgent need for health improvement in the Province and implied that only with UNICEF assistance could much of the progress he desired be accomplished.

7.2 The Principal of the Community Health Workers School,<sup>1</sup> Kadugli said that they now were training their third intake, each group numbering 50 students. The course lasted nine months. The CHWs then returned to the villages that had nominated them. In practice all can read Arabic which is the language of instruction. The curriculum seemed very ambitious but the Principal explained that simple methods for water quality improvement through protection of wells were taught. "Prevention" is taught as well as curative medicine. The Principal agreed that some Dressing Station (Nogtat Gheiar) staff who are being withdrawn might know more clinical procedures than the C.H.W. who replaced them, but thought this was not a serious situation. Dressing Stations had not been numerous. CHWs learned many things the Dressers (Mumarid) - who were not certified - did not know, and also they could help to improve hygiene in their communities through health education because they came from the community. They could also promote better nutrition, protection from infectious diseases, and change of practices to reduce bilharzia, though they could not give treatment for this disease.

UNICEF was providing boxes which were given to the CHWs when they were trained. (We also learned that recently UNICEF had stepped in to provide essential finance for one course.) The most urgent needs now were books and teaching materials. Could Arabic translations of some of the most important books available in English be provided? Another problem was visiting CHWs at their posts after they have completed training. Transport problems severely limited this visiting. Some villages were very remote. Vehicle resources of the Ministry in relation to the vast area of S. Kordofan and the problems of a five month rain season were mentioned. Visits to CHWs in their villages after training was completed would strengthen the teaching programme tending to make it more realistic. Familiarity with the needs of villages and their expectations of C.H.Ws would especially help to make the health education course more meaningful.

The impression of the Consultant was that sincerely wishing to train CHWs for their health education responsibilities, the school staff probably felt that with their limited personal experience in health education activities, to teach effectively was not an easy matter. To expect assistance from Khartoum, for instance from the Health Education Department, with its very limited staff and budget - was, staff felt, not realistic. In consequence without outside assistance their dilemma was likely to continue.

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<sup>1</sup> Mr, Kuki Himaidan Joda

7.3 At the Village Midwives School, (Madresat al Kabbi) Kadugli the Tutor-in-charge, Nafisa Miso, explained that at present there were 39 trainees taking the one-year course and that previous groups had number 19, 24 and 24. Women of between 25 and 35 were selected by their villages which, on their return, were expected to help them by giving small sums for each delivery and, if necessary, building a house. Basically the Village Midwife was expected to live like any other woman of the village. Trainees, both literate and illiterate, were accepted, in fact it was possible with the methods used to train women from Nuba (tribal) villages who did not know Arabic.

The training programme, about which much has been written, has followed the scheme begun fifty years ago when it was introduced into Sudan. The M/W receives careful and precise instructions to maintain hygiene and antiseptic conditions, which are taught by memory learning. Finally, she is given a UNICEF box or case which holds all her equipment. UNICEF materials are repackaged in easily available and distinctive bottles. Many items for the care of the baby are sewn from white cloth by the VM/W but she is expected to attend the mother for ten days only and receives no instruction in young child care. There is one exception to this rule, and it is a recent innovation; the VM/W has sugar and salt in bottles and has been taught to do Oral Rehydration Therapy for diarrhoea. We found that the UNICEF O.R.T. packets have been dispersed very widely and usefully, reaching village Dispensaries and Primary Health Care Units. We expected the VM/W to have these but, perhaps because the packets have written instructions, bottles with salt and with sugar are used instead. Mixing charcoal and water, or rice or corn, with removal from the breast, is still taught for diarrhoeas of new born infants.

Dr. Mirghani had mentioned a need for simple training in child care for VM/Ws and also the importance of the health education role of the Village Midwives. The present approach to training seems restricted but what wider roles in village health improvement the VM/Ws can play<sup>we</sup> could not determine. The more senior and esteemed VM/Ws should be considered for a possible trial programme.

The Kakaraiya "traditional birth attendant" (Dia Habi) who has an established reputation in several villages of the area, Fatma, was seen at her temporary home at Abu Safifah. She showed the locally made knife she used and explained satisfactorily how she tried carefully to ensure antiseptic conditions at deliveries.

She avoided answering or gave misleading answers - perhaps because we could not interview her in reasonable privacy - to several questions, but asked if it would be possible for her to receive some training and be given a "black bag". Nafisa Miso said the VM/Ws School would be prepared to give short courses in the intervals between their regular courses and could see only the problem of finding the "t.b.as" and persuading them to attend. Nafisa, however, admitted that in the village there was competition and in some areas the older and more experienced - in number of deliveries - t.b.a. was still delivering more babies. She also said that VM/Ws were trained to surgically open the vulvas of women who had undergone infibulation and commonly had to re sew the vulvas after delivery. She said "a lot of women" were maintaining this custom. (One motive in the original establishment of VM/W training was to encourage its reduction). Asked if the custom, with its complications at delivery, was decreasing she said it was not.

A close relation - "sister" - of Fatma, named Um Agip Abdul Salaam who had been trained as a VM/W was seen at a village near to Kadugli. Although she had a close connection with Kakariya she was not - we were told - able to practice in that village. The village people - we found - did not accept her though she tried to practice there. She said her father had land in the village where she was now practising but our questions revealed that though she seemed efficient, clean, herself running a good home (but she had no children) she was not yet well accepted locally. She was very sure that she knew a lot that would improve the practical efficiency of Fatma who was not always successful at deliveries. Um Agip felt Fatma needed two months of training but should be given this. She - like Nafisa - felt it might be difficult to find and persuade t.b.as to come for a period of training. She confirmed much of the information given by Nafisa and said that Nafisa came to visit her and that at the VM/W school she could replenish the items in her box. <sup>each</sup> At/delivery she was given £5 and some soap as a present.

UNICEF, Nafisa said, could assist a trial training programme for t.b.as. in particular by helping with the transport both for finding and persuading t.b.as. to attend and for conveying them to and from Kadugli. She also said that she thought the VM/Ws kit should include a torch with batteries and an insect killing spray gun.

The present trained Village Midwives <sup>who</sup> practice in S. Kordofan each meet the needs of several villages. The programme is making headway. It could have a wider influence by including more emphasis on community education, especially in child care.

7.4 The students taking the University of Khartoum Diploma Course in Health Education were on vacation at the time of the consultancy. Dr. Mirghani arranged for us to meet with two of the three students who originated from S. Kordofan. The third lived far from Kadugli. El Haj el Tom Ali and Mustapha Babo Nawai were pleased to be able to talk with us before the consultant returned to Khartoum.

The three year Diploma Course has been grafted into the Extra-Mural Department of Social Work but the University authorities want to see more involvement of the Medical School. The Course at present has many of the elements of a conventional course in Social Work insufficient emphasis being given to Community Study and work with Communities. More classes also appear to be needed on Interviewing Methods, and Communication. No text books are utilised, instead notes are taken. The two students have completed two academic years of study. The third year will include a Health Education component in the School of Medicine. Though no curriculum for the third year has been presented to the students the curriculum, both in the thinking of the consultant and the experience of the two students, seems to need more integration to make the courses given mutually reinforcing. This can be achieved if the central experience of the final year is a supervised field practice programme. It is possible that such a programme will be introduced though the students have not, so far, heard this possibility discussed.

The two Diploma students recognise the obvious and wide ranging need for progress in the health education of the people of the Province. They are, at present, unsure of the part they can play. A field work experience arranged with the Department of Health but supervised by the University - cholera would be an excellent starting point - could be valuable. It could influence their performance throughout their careers. Interest was expressed in health education programmes to reduce malaria, bilharzia and wound infections and to improve child care and nutrition. The students felt they would need pictures, posters, teaching charts and other teaching material, also films or slides. Books for reference, that is, for the Department of Health, could greatly assist all Senior and Training Staff in the Province. A similar need had been expressed earlier by Dr. Mirghani. Workshops and Seminars would, they hoped, be one way by which they could reach key leaders in the villages. Dr. Mirghani has an outline plan for the build-up of health education in the Province to be implemented when the three health education diplomates join the Provincial Health Staff. No person is, at present, directly responsible for health education.

8. Findings : Ministry of Health, Khartoum

8.1 Dr Ali I. Biely, Deputy Director General, Rural Health (and Primary Health Care) Programme was seen in the absence of the Director, Dr. Abdul Rahman Kabbashi. He emphasized the value to the country of help given - often to meet an urgent deficiency - by UNICEF Oral rehydration packets was one example, and aid to the October 1979 Khartoum Workshop on "Strengthening Maternal and Child Health and Family Planning" another.

Dr. Biely usefully reviewed many of the conclusions reached by the consultant. He agreed that Traditional Birth Attendants (Dayi Habl) should be involved in M. and C.H. on a pilot basis. In Blue Nile Province an obstetrician had examined the situation but reached the conclusion that the t.b.as. were too old. If, however, selected t.b.as. were invited to a trial programme much could be learnt. The competition between t.b.as. and trained Village Midwives was a continuing problem. Recruitment of sisters or daughters of t.b.as. as VM/Ws could help. The VM/W programme also needed to include health education and child care teaching of the mothers. UNICEF might be able to assist with the costs of courses for t.b.as. in the VM/W Schools vacations.

The R.H. Programme was involved in a Teacher Training Programme for Tutors of CHWs, and for Health Visitors, i.e. teachers of VM/Ws. They would welcome discussions with UNICEF because UNICEF could make a valuable contribution to this important programme.

A national programme was being introduced in four nearby Provinces for the improvement of latrines, including the introduction in towns and schools of water privies and pit latrines. Loan funds were available for Councils. Literature was available on how to implement the programme. UNICEF could assist the extension of the programme to S. Kordofan. The drilling machinery and know-how of the UNICEF Project Director could be very helpful indeed. The R.H. Programme was also interested to encourage people to use traditional and readily available materials for improvement of their styles of life. Dr Biely mentioned as examples the use of sand mixed with gum arabic to produce hard floors, mixing of dung and clay to make house walls more water resistant. In Eastern Sudan at Gadoref, near Kasala there were well lit and well built houses built with traditional materials. Could UNICEF assist in this so that pit latrines, bath or wash houses, and soak-away pits were part of a programme of village house improvement?

Dr. Biely referred specifically to the problem faced by the Departments and the Training Institutions in securing journals originating overseas. If UNICEF could find a way to enable key personnel to keep in contact with world developments in maternal and child health through providing journals for the libraries this could be very valuable. In Khartoum useful new books were - so far as they became aware of them - being obtained. In the Provinces books like "Primary Child Care" by Maurice King and "See How they Grow" by David Morley could greatly encourage the senior staff.

8.2 Dr. Abu Obeida, Head of the Health Education Department explained the involvement of the Department in the National Health Programme specifically mentioning the Expanded Programme on Immunisation, the preparation of weekly programmes for radio and television transmission, the progressive establishment of health education units in the provinces. The staff for these units were being prepared by the three-year Diploma Course of the University of Khartoum. Students were selected by the provincial administrations. Significant progress in the effective utilisation of health education methods in the provinces would, it was hoped, follow.

The budget of the Department was very small in relation to its many responsibilities and, unfortunately, had recently been further reduced. One consequence was that fewer materials had been published than in previous years. UNICEF would be very welcome to review the work of the Department and to consider what help it might be possible to provide to strengthen the work especially in assistance to the Provincial Health Departments.

## 9. CONCLUSIONS

The drilling of boreholes and installation of hand pumps has improved water availability and frequently water quality in many villages of S. Kordofan. The renovation and desilting of hafirs is providing water throughout the year for village people of the plains areas and their animals. Certain health benefits can be expected to follow eventually, probably including some reduction of diarrhoeas, of certain skin conditions and of guinea worm infestation. The major disease conditions will not, however, be affected. To strike at <sup>these</sup> there must be more and better use of water, including improvements in home hygiene, especially personal washing and clothes washing, and also in sanitation, especially disposal of human faeces and urine.

Childhood diarrhoeas, and bilharzia (schistosomiasis), malaria, intestinal parasites, and other disease conditions can be expected to continue at very high levels unless the improvement in water availability is complemented by improved home hygiene involving better utilisation of the water. The progressive concentration of population into larger villages and more frequent movement between villages and the visiting of towns, continuously increases health hazards, and will render populations not previously exposed to endemic and epidemic infections vulnerable. Introduction of the safeguards that improved habits in hygiene and human wastes disposal can provide becomes increasingly urgent. Since behaviour change can rarely be enforced - especially in rural areas - and because people must themselves make and then use the latrines, washhouses, etc. that they need, therefore, stimulation of the appropriate changes in home hygiene, can only be accomplished through public health education.

Which is the most appropriate time to introduce public health education in order to encourage better home hygiene? When innovations are planned or actually occurring in villages peoples receptivity to suggestions for other changes is at peak levels. The introduction of hand pumps, which were widely welcomed in the villages, would have provided an excellent opportunity to encourage home improvement. We saw that in anticipation of the rains many houses had been newly thatched and new houses built using water from the new pumps to mix the clay. Had it been possible to arrange community meetings - before the pumps were installed - for full discussion of the siting of each pump and to encourage better use of the more readily available water, useful hygiene improvement might have followed.



Leaders in the villages, we found, were aware that their level of hygiene was poor and that they could benefit if they knew how to improve it. In one village (Sadaa) we were asked by the Sheikh how they could better dispose of children's faeces. We explained the use of trenches to avoid faeces being uprooted by pigs. We were then asked to advise on the siting and construction of pit latrines for the new school. When we recommended simple screened areas -with gravel—filled soak aways -for bath houses, there was general interest. Indeed some variation of this bath house with a calabash of water that can be tipped to provide a shower seems to have been a tradition in parts of S. Kordofan.

Discussing the watering of animals we met with a variety of responses. Most people want distinct facilities both for the watering of animals and for the washing of clothes. Some now provide for their goats by blocking the exit of the cement gutter of the pump thus keeping the gutter filled with water. Others have dug a pool at the exit of this gutter. In some villages without pumps we found small circular pools lined with clay were filled from nearby wells for the goats. Cattle and camels, however, require much more water. Some variation of the long cement trough used at watering yards may be required. Washing slabs with soak away pits might facilitate clothes washing. Different villages can be expected to find different ways of meeting their needs. Schools not only require special provision but can, through village elders and parents living in neighbouring villages, help to disseminate useful ideas.

The technical constraints and economics of a programme such as the provision of water pumps, may seem to conflict with the slow and not always predictable process of community involvement in hygiene improvement. Drilling rigs and pump fitting crews must move following a schedule. A lengthy prior period of community consultation and community stimulation is likely to be needed to secure satisfactory community commitment. However, if success is obtained, a sequence of community initiated development efforts - and demands! - may be expected to follow.

In S. Kordofan this thinking is probably now too heavily weighted to the theoretical end of the spectrum. Drills and drilling teams exist; pumps and pump fitting teams also, as well as heavy machinery for hafir renovation. The teams must be kept operational and active. With community consultation the teams could, however, be used more effectively. Their drills can be used to drill latrine pits for schools and souks. Earth moving equipment can help to build up access roads crossing swamp areas, and perhaps also cattle pools. But does the "machinery" and "know-how" for community consultation on healthy improvement exist? At present it only exists in a rudimentary and fragmentary form.

The development of a programme of health education should be planned in stages to include the following :

- 1) Selection of communities for the initiation of the programme .
- 2) Community contact followed by community discussions and investigations to, firstly, determine the customs and practices of the community in hygiene and sanitation and the beliefs and attitudes underlying their behaviours and, secondly, to assist selection of suitable communication channels and target groups .
- 3) Formulation of the objectives for a group of villages or an area to be the goals of the programme . These should be stated in specific behaviour change terms and so represent criteria for evaluation .
- 4) Design (and pre-testing) of materials, of schedules, and guide-lines to make a working manual for staff use in the field. The manual should include an appropriate monitoring system and list the evaluation criteria and procedures to be adopted. Recruitment or retraining of field staff for the work.
- 5) Introduction of the programme with concurrent documentation and also review of programme activities in comparison with schedules, guidelines, etc .
- 6) Evaluation of the first phase followed by programme modification, and preparation for the next and subsequent phases .

Two levels of staff are required: a small planning group initiating, organising and supervising staff, and, secondly, field staff. The former need preparation as health education programme officers and the assistance of Senior Health Staff: the field staff should be health department staff retrained for community health education .

In S. Kordofan some, but at present not many, staff of the second category exist namely Medical Assistants, Dispensary Staff and CHWs. For organising staff, assuming these cannot be seconded from other Provinces, S. Kordofan must wait until 1981 when it will have the services of the three Health Education Diploma Students. If, though, the Diploma Students in their final year, can undertake supervised field work they can commence the programme before graduating .

Though to have begun community health education both before and simultaneously with the installation of pumps or the renovation of hafirs was preferable, a programme following upon these innovations can yield results. The interest of Government in improving the life of the people has been demonstrated. To follow this with an educational programme encouraging people by their own efforts and resources to live healthier lives represents sound programming .

The keen interest of village people in the improvement of their lives was made apparent during the course of our mission. Unless, however, the current very low levels of community hygiene are raised substantially/<sup>the</sup>price to be paid in the next years will be very high indeed. Clinical services, already heavily burdened with unnecessary sickness, will be swamped. That the time has come for a move forward in public health education has been manifested by the cholera outbreaks which, though small at present in S. Kordofan, have debilitated health services in other countries.

The mission has been a valuable experience for the consultant. I hope the work in S. Kordofan will prove to have been of value.

## Annex 1

### Documents Consulted

1. "UNDP Global Prog.GLO/78/006 "Low Cost Water Supply & Sanitation"  
"Report on Mission", February 1 - March 7, 1980. Margot Badran  
(TAG/SUD/02)
2. "Report on Field Trip to S. Kordofan - February 1980".  
Benedict Mboya, Progr.Officer Zonal Development, UNICEF Khartoum.
3. "S. Kordofan Agricultural Development. A Background Paper" September 1976.  
The World Bank Regional Mission in E. Africa, Nairobi. Michael Wales.
4. "S. Kordofan Central Districts Indicative Development Plan". April 1980  
Hunting Technical Services, Ltd, England.
5. "Report on the Situation of Women in the Target Villages of the UNICEF  
Domestic Water Supply Project - Bahr El Ghazal Province" October 1979  
Annemarie Russell. UNICEF, Khartoum.
6. "Sudan Now" April 1980 and May 1980. Ministry of Culture & Information, Khartoum.
7. "The Democratic Republic of the Sudan, Primary Health Care Programme; E, N, Central  
& W. Regions" 1977-8 - 1983-4 Khartoum, 1976.

## Annex 2

### Some People Met but not Mentioned in the Text

Mr Hamid Hassan, Regional Manager, S. Kordofan, Rural Water Corporation.  
Mr Ali Noga, Chief Rural Clinical Services, S. Kordofan.  
Dr Kamal, Physician, Kadugli Civil Hospital.  
Dr John Hale, Development Sociologist, Hunting Technical Services.

## Annex 3

### Itinerary - Consultant

1980

May	17	Khartoum (from Nairobi)
	20	Khartoum - Kadugli (via El Obeid - Sudan Airways)
	22	Kadugli - Kakariya (S. Province)
	23	Kakariya - Kadugli
	25	Kadugli - Ras el filh, other Tuleshi villages and Lagawa (W.Province)
	27	Tuleshi - Kadugli
	30	Kadugli - Khartoum (UNICEF plane)
June 1		Khartoum - Nairobi.

## Annex 4

### Books Recommended for Teaching and Books for Reference by Health Staff

#### Books for Teachers of Health Education

- Benenson, Abram H. "Control of Communicable Diseases in Man".  
(12th Edition) 1975. A.P.H.A Washington.
- Bennett, F.J. et al. "Community Diagnosis and Health Action -  
A Manual for Tropical and Rural Areas", 1979. Macmillan, London.
- Scotney, Norman. "Health Education - A Manual for Rural Health Workers".  
1976 A.M.R.E.F. Nairobi.
- Werner, David "Where There is No Doctor" 1979 Macmillan, London.

#### Additional Books for Reference by Senior Health Staff

- King, Maurice. "Primary Health Care" (also Teacher's Book)  
1979, Macmillan
- Morley, David and Woodland M. "See How They Grow - Monitoring Child Growth"  
1979. Macmillan, London.
- Eshuis J. and Manschot P. "Communicable Diseases - A Manual for Rural  
Health Workers" 1978. AMREF, Nairobi.
- Feachem RGA, McGarry and Mara (Eds.) "Water, Wastes, and Health in Hot Climates"  
John Wiley & Sons, London 1976.
- White, GF, Bradley D, & White A. "Drawers of Water-Domestic Water use  
in E. Africa" 1972. University of Chicago Press, Chicago.
- Van Wijk-Sijbesma, C. "Participation and Education in Community Water Supply &  
Sanitation Programmes"  
(An Annotated Bibliography) 1979. WHO Int Ref. Centre for Community  
Water Supply. The Hague.