Family Planning

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Family planning in the Sudan: a pilot project success story

A pilot project in the Sudan to determine the acceptability of family planning in the Islamic villages along the Nile has proved completely successful—so much so that instead of expiring as most pilot projects do, it continues as an integral part of the health service.

The world is littered with the remnants of pilot projects used to test new approaches to delivering basic health services. Having flourished during initial periods of international attention, they rapidly lost momentum when external resources were withdrawn. This article presents the history of an exception—a pilot project that continues to evolve and expand as it becomes more and more an integral part of Ministry of Health operations.

At present there are about 4500 village midwives in the Sudan, supervised by health visitors—usually government nurse-midwives who have had additional administrative training. Village midwives are paid a modest monthly stipend by their communities.

In addition to the obstetric care provided by village midwives, there is an extensive network of other paramedics, the best qualified being the medical assistants with three years of nursing training, several years of practical field experience, and an additional two years of rural health care training. Medical assistants are usually put in charge of rural dispensaries and health centres. Working under the supervision of medical assistants are nurses who have undergone three years of training.

To make up for deficiencies in manpower and training capacity, a new cadre of paramedics, the community health workers, has been developed. Like the midwives, they are selected by their communities to undergo a nine-month training course, focused in this instance on primary health care delivery. However, unlike the midwives...
and health visitors, but like the medical assistants and nurses, all these community paramedics are male.

In this setting, an effort was made in the late 1970s to develop a model to improve the knowledge and availability of maternal and child health services in the villages. Even before the Alma-Ata Declaration, the Sudanese government adopted a plan in 1977 for large-scale efforts to improve primary health care services (1). The plan did not, however, address basic maternal and child health care issues such as family planning. Moreover, since the plan was to be enacted largely through cadres of male paramedics, it was thought that the needs of maternal and child health care might not be adequately met. The Department of Community Medicine of the University of Khartoum therefore designed an operations research project to test the feasibility of involving village midwives in the delivery of maternal and child health and family planning (MCH/FP) services. This project was funded by the US Agency for International Development, Washington, DC, USA, and received technical assistance from the Center for Population and Family Health, Columbia University, New York, USA. It was initiated in 1980.

Original area of the pilot project

From 1981 to 1983 the Sudan community-based family health project was implemented by the University of Khartoum in cooperation with the Ministry of Health. The project area stretched for 100 km, encompassing a largely agrarian population of 93 000, in 90 villages north of Khartoum on the narrow strip of fertile land along the banks of the Nile. The focus in this original project area was on the training and supervision of village midwives to provide the following:

- information about contraceptives for birth spacing, distribution of oral contraceptives, and referral for other methods;
- information for mothers on oral rehydration therapy for children with diarrhoea and distribution of oral rehydration solution packets;
- nutrition education with emphasis on breast-feeding and appropriate weaning foods and practices;
- vaccination for children under five years of age (in collaboration with the Sudan Expanded Programme on Immunization).

As in pilot projects initiated in other parts of the world, mistakes in terms of the future replicability of the model were made. For example, the project was expensive, particularly with regard to incentive payments for midwives and supervisors. While the project got off to an excellent start, the withdrawal of incentive payments some two years later resulted in near total collapse. That services somehow continued was a testament both to the demand for the services that had been created and to the energy of Khartoum University staff in overcoming this initial mistake.

Another mistake at the outset was again typical of pilot projects. The study area that was chosen, while truly rural, was close to Khartoum, no doubt because researchers like to have easy access to the field sites where they work. Again, the results for replicability were nearly disastrous. Not only was the infrastructure of the rural health services considerably better than in more distant parts of the country but the close proximity encouraged University staff to be more heavily involved than they otherwise would have been. Part of the way through the project, when it became clear that, despite incentive payments and the use of
University transport, supervision through the Ministry of Health system was not adequate, the University staff effectively assumed supervisory control of field activities. It was felt to be more important to introduce this artificiality for the sake of testing the model at its basis—having midwives deliver maternal and child health and family planning services in the villages—than to let the project fail because the health infrastructure could not provide sufficient supervision. In the process, the University staff began to identify the inherent weaknesses of the health system. This enabled them to move towards a replicable service delivery model, including Ministry of Health supervision, which was to be tested in a subsequent phase of this project (2).

Despite these shortcomings, the operations research framework gave the project a certain degree of flexibility. Rather than being a static test of a particular model of service delivery, the project involved continual observation, learning, and adjustment based on field experience. This stands in marked contrast to the situation described in the three best known pilot projects in rural health care delivery, Danfa (Ghana), Lampang (Thailand), and Narangwal (India), where rapid feedback of project experiences for fine tuning of service activities was generally weak (3).

Lessons learned from the first phase of the project

Initially, there was an almost exclusive concentration on the midwives and what they could do to provide maternal and child health services in their villages. This gradually gave way to a concern for more involvement of the midwives in broader rural health delivery. On occasions an affinity was observed to exist between midwives and medical assistants, and this led to a greater emphasis on a team approach, which was more fully developed when the project was subsequently extended.

Close contact with the training of midwives led to another important realization: a phased approach to training, with the successive introduction of discrete interventions, yielded better results than a single course of training in all interventions. What is now accepted wisdom for introducing the child survival package—sequential phased training and the introduction of one intervention at a time with feedback and retraining between interventions—was first implemented in the Sudan in this project.

In a similar way, the training of midwives at a Khartoum midwifery school gave way to the idea of decentralized village-level training. As the importance of phasing and the health team approach became more obvious, it was clear that an effort would have to be made to involve the health team in the training itself and to conduct the training at the village level.

Commitment to community participation was regarded as fundamental from the outset. At first it seemed revolutionary to hold an initial series of meetings with village leaders and villagers to get their views on the aims of the project; hindsight makes these efforts seem almost perfunctory. At the time there was a fear that family
planning services would not be acceptable to the villagers and one of the main reasons for the project was, in fact, to test that these services could not only be provided but would be tolerated. Despite its proximity to Khartoum, the project area was a

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conservative Islamic one. Indeed, one of the reasons why the project was carried out by the University was that family planning was too controversial for the government to take up in its official capacity as a service provider. That villagers in these initial meetings seemed to understand why birth spacing was an important component of maternal and child health was a relief. In only one instance, as the project progressed, was there overt opposition to family planning, when the ire of an itinerant imam was invoked by the fact that contraceptives were being distributed. This had been a matter of concern to University staff from the outset, and in an effort to anticipate such difficulties a week-long seminar of religious leaders from the project area had been held. An Islamic scholar addressed the group and allayed any concerns they may have had that family planning was not in accordance with the Koran (4).

A major weakness of many pilot projects is the dependence that ultimately develops on foreign experts. The Sudan community-based family health project, however, has been staffed mainly by the Sudanese themselves.

Technical assistance was provided through periodic visits from Columbia University staff, but the day-to-day coping with the project was a Sudanese experience.

Phase 1 had demonstrated that midwives could deliver maternal and child health and family planning services in Sudanese villages, and could do so effectively. But this had been accomplished in abnormal circumstances. The first necessity now was to turn implementation over to the Ministry of Health. The University of Khartoum would provide technical assistance to adapt the model to the realities of service delivery, but University staff would no longer be the implementing agents. Given the history of heavy involvement in the original project area, this transfer of responsibility proved easier to accomplish in a new setting—an extension area located in Nile Province—than in the original one (5). Nevertheless the transfer of authority to Ministry of Health officials in the original area was also undertaken, albeit without the same efficiency and results as in the extension area.

In the light of three years of field experience, the model of how maternal and child health and family planning services could be provided in rural areas was revised. Ministry of Health district administrators in Nile Province from the outset assumed responsibility for all aspects of programme implementation from community participation to health personnel training, from supervision to evaluation based on service statistics and mini-survey data. The University played an advisory role, assisting in the training of trainers and the design of data collection instruments and taking responsibility for overall evaluation.

**Replication in the extension area**

The extension area selected was five hours' travelling time from Khartoum, in Shendi District of Nile Province. The project, launched in 60 villages of 75,000 inhabitants stretching for a distance of 120 km along
both banks of the Nile, not only had the approval of the Provincial Ministry of Health but also the full participation of district health officials in every aspect of design and implementation. Given the difficulties observed in the original project area in implementing and managing these expanded maternal and child health and family planning activities within the existing Ministry of Health structure, special attention was given to community participation, decentralization, and supervision.

Meetings were held in the villages in the extension area to discover community perceptions of needs and to discuss plans. In addition, they also served to prepare villagers for a deeper involvement in the programme as an integral part of community life. Volunteers from the community were welcomed and asked to help with immunization sessions and with the educational programmes on family planning, nutrition and management of diarrhoea.

In the original area, supplementary payments to the health workers had been provided by the project, a situation that could not be replicated in other parts of the Sudan. In the extension area, an agreement was reached through community discussions that a small fee would be charged for each package of oral contraceptives: one Sudanese pound per cycle (about US$ 0.25), half the money going to the midwives and half towards the expenses of the health team. Communities also contribute to the health team costs in kind by, for example, providing transport and supplying kerosene for cold storage of drug supplies.

Training in the extension area was carried out by Ministry of Health personnel, who subsequently continued to be involved in the implementation, management, and evaluation of activities. University staff trained the trainers, then played a behind-the-scenes technical assistance role. Courses covering the four interventions were given by district health personnel to the medical assistants. Training and supervisory techniques were included, as were methods of encouraging community participation. The medical assistants then in turn trained the health workers, including midwives, living and working in their own areas to form an integrated health team.

Instead of a three-week course in a central location covering all the interventions, the training was conducted in the villages and was phased, each component being immediately followed by the introduction of the services through group meetings and home visits. All team members were trained to provide project services, with midwives having the major responsibility for family planning education. An advantage of phased training is that it made the programme visible to the villagers from the outset.

Supervision of the village health workers, particularly of the midwives, was perhaps the most difficult problem in the original area and one that was especially fruitful in terms of lessons learned (2). As a result of experiences in the original area, changes

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were introduced into the supervisory system to make it consistent with natural relationships among the health workers in the field and to take into account the limited supervision possible from a central headquarters. Fig. 1 depicts the lines of
Family Planning

Fig. 1. Original supervisory system for health care in villages in the Sudan.

Provincial Medical Officer

Nursing and Midwifery Inspector

Senior Medical Assistant (Khartoum)

Health visitors

Medical assistants (village level)

Village midwives

Dressing station nurse

Community health worker

workers, and environmental health workers where available. Villagers who volunteer for outreach and educational activities are also team members. Each zone has a health centre or dispensary and the medical assistant in charge is the health team leader. The medical assistants in turn benefit from point-of-contact supervision. Instead of waiting for visits at infrequent intervals from the medical inspectors, they use their regular monthly visits to district headquarters (when they normally collect their salaries and medical supplies) to discuss their needs individually or jointly with colleagues from other health zones. Agendas for these monthly meetings are prepared by the district health officer and the gynaecologist at Shendi Hospital.

In spite of the persisting problem of transport over the considerable distances involved, most medical assistants manage to attend regularly the scheduled point-of-contact meetings. Both supervisors and medical assistants report a greatly changed climate for supervision—from one that was critical and directive to one that is constructive and supportive. Open exchange among the medical assistants and their superiors is a new experience and one that is conducive to creating a similar climate of openness at the zonal health team meetings. Point-of-contact supervision does not, of course, eliminate the need for some visits to the field.

In summary, direct linkages were made between training and supervision in the extension area. Those with responsibility for training were those who had supervisory responsibility also. Thus the phased, decentralized, and supportive manner in which the training was conducted was effectively transferred into the manner in which activities were supervised. As effective supervision also entails evaluation of performance, data collection and analysis,

Fig. 2. Modified supervisory system in the Sudan community-based health project.

Senior Medical Assistant

Health visitor

Medical assistant

Community health worker

Village health team

Nurse

Midwives
were included among the responsibilities of project personnel at various levels.

Revitalization of the original area

In 1986, the newly created MCH/FP Directorate of the Ministry of Health requested the assistance of the university with service delivery in the original area. This assistance was limited to consultation and overseeing a research and evaluation component. The Directorate administered a revitalization programme utilizing the insights gained from the extension area project as well as the original project.

Evaluation methods

The evaluation of the project has remained essentially the same throughout its evolution. Baseline and post-intervention surveys conducted by the University in both the original and the extension areas provide data on changes in knowledge, attitudes, and practices that can be attributed to the programme, and analysis of service statistics provides data on health worker activity and community use of the services. One important difference between the original and extension phases has been in the growth of local skills and responsibilities in the collection and use of data.

As part of extension area activities, registers of women aged 15-49 and children less than 3 years of age have been established for each health zone. They are updated every three months approximately. The registers serve several purposes: (1) as a count of the target population for project activities, (2) as a sampling frame for surveys, and (3) as a denominator for estimating the coverage achieved in oral rehydration therapy, family planning, immunization, and growth monitoring. With these registers and the use of simple techniques such as the mini-survey there has been a transfer of research skills from the University to the health teams in the villages.

The mini-survey was used in the original area as a quick, flexible, and inexpensive method of monitoring the service programme. It consists of a short questionnaire of 10-15 questions in a matrix format, with one question per column and one respondent per line (6). Each questionnaire focuses on one or two well-defined aspects of the programme.

In the original area, mini-surveys were conducted by University staff. In the extension area they are designed, carried out, and analysed by health workers and volunteers. The medical assistants are taught by University staff why mini-surveys are useful, how to select the problem from questions they have about their own programmes and communities, and how to design the questionnaire to focus on that issue. Since all households in each health zone are listed, random sampling is possible.

Subsequently the medical assistants train and supervise members of their health teams to conduct the survey and to tabulate the

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results with hand calculators. The results are discussed at team meetings, and work plans are drawn up to address weaknesses found in the programme. At the district level the findings have been used to improve supervision and to identify areas in which
the health team may need additional training, as well as areas in which successful approaches have emerged, which can be replicated. In addition to evaluating services, the mini-survey has proved to be an effective way of observing trends and encouraging local decisions on how to improve services.

Results achieved

Evaluation concentrated on measuring changes in behaviour related to the four child survival interventions—oral rehydration therapy, family planning, nutrition education, and vaccination. Only data on the first two are presented here.

Oral rehydration therapy was the first intervention to be introduced in both the original and extension areas. In 1981 it was virtually a new therapy being introduced for the first time in villages in the Sudan. In their first round of household visits, midwives explained how this new treatment could prevent the dehydration that results from diarrhoea and instructed mothers in its use. Their instructions included calibrating a common household vessel, the *kora*, to the one-litre level necessary for correctly mixing the solution. The post-intervention survey for the original area was conducted about a year later. At that time 56% of mothers with children under 5 years of age had a marked *kora* in the home, and 76% had given their child oral rehydration solution the last time the child had had diarrhoea (5). By 1984, however, a survey conducted to assess knowledge and practice after the withdrawal of University inputs showed that barely a quarter of the homes still had a marked *kora* and little more than a third of the mothers had recently given their child oral rehydration solution. The need for continuous cycles of education, motivation, and supply was not being met.

However, a post-intervention survey in 1987, a little more than a year after revitalization of health services was undertaken by the MCH/FP Directorate, showed that 87% of the mothers with children under 5 years of age had treated the most recent episode of diarrhoea with oral rehydration solution.

In the extension area, where the services are now an integral part of the rural health programme and maintenance of effort is expected, the first round of visits also showed impressive results in the management of diarrhoea. The baseline survey conducted in 1983 had indicated a higher initial level of knowledge and use of oral rehydration therapy than in the original area. Of the women responding to the baseline questionnaire, 15% said that they used oral rehydration therapy as the first treatment for diarrhoea in children. However, less than half of these women could correctly describe the preparation and administration of the solution. Three months after the mothers had been instructed by the midwives and other health team members, and the *koras* in the homes had been marked, a mini-survey was conducted in 19 of the 21 health zones to assess progress. More than 85% of the respondents knew how to mix and use the solution (more than 95% in nine of the zones). In 11 zones, over 75% had used oral rehydration therapy for the most recent episode of diarrhoea. The post-intervention
survey indicated that oral rehydration therapy was well accepted in these villages; 89% of the respondents with young children had used it at some time.

Improvements were noted also in feeding practices during diarrhoeal episodes in both the original and the extension areas. In the baseline survey, 47% of mothers reduced fluids during episodes of diarrhoea; one year after the intervention of midwives, this figure had dropped to 28%. Similarly, the baseline data in the extension area showed that 39% of mothers decreased or stopped breast-feeding during an episode of infant diarrhoea. The mini-survey conducted 3 months after the intervention indicated that in 10 zones the percentage for decreasing or stopping breast-feeding dropped to below 30%; in five zones it was below 15%. While the need for further education and reinforcement was evident, the process had been well started.

Nevertheless, the post-intervention survey in the extension area suggested that the belief that fluids should be reduced is especially resistant to change. About half of the respondents still said that breast-feeding should be decreased when a child has diarrhoea.

Family planning education and supply was the second intervention introduced in both areas. In most Sudanese rural communities the attitude to childbearing is traditional, and a woman’s status is largely determined by her role as mother. In 1980, before the start of activities in the original area, strong negative attitudes against the use of contraceptives had been expected. The World Fertility Survey conducted in the Sudan in 1979 had estimated the desired family size nationally at about six children (7), and the baseline survey in the original area showed that among women aged 40-44 years, the average number of children delivered during their lives was 7.4. The rate of contraceptive use estimated from the baseline survey did suggest, however, that modernizing influences were present, most likely resulting from proximity to Khartoum, since the rate in 1980 was 11% compared to a national rate of 6%. Indeed, if one excludes Khartoum, which had a 20% use rate in the World Fertility Survey, the rate in the rest of the country was 3%.

With the start of project activities in both the original and extension areas, midwives made house-to-house visits to explain the benefits of child spacing. Twelve months after the services were introduced in the original area, the experiences of midwives, the records of contraceptives disbursed, and the post-intervention survey all indicated that family planning services were acceptable and that the midwives had been effective in educating, motivating, and supplying women in their communities. The table shows the pre- and post-intervention use of contraceptives at four points in time. One year after the start of the project, the proportion of women aged 30-34 years who had ever used contraceptives increased from 25% to 38%, and the proportion currently using them rose from 13% to 21%. While these figures may be partly explained by influences from Khartoum, multivariate analysis indicates that the project was successful in reaching more remote and poorer districts in the project area (8). The contribution of the midwives to this
acceptance of contraception was demonstrated by the finding that respondents who had obtained family planning knowledge from the midwives were 1.7 times more likely to be currently using contraceptives than those who had not. The educational impact is also indicated by the change in the proportion of women who were not using contraceptives because they believed that it was against their religion or that it was harmful. This fell from about 21% prior to the project to 10% a year later. A similar decline was observed in the proportion of women not using contraceptives because of the negative views of their husbands.

As also shown in the table, the use of contraceptives has continued to increase, as a result of the effort to introduce family planning as a means of spacing births. The decline in the percentage of women identifying the midwife as the primary source of information about family planning coincides with the general decline in activities that accompanied the University's withdrawal in 1983, but it may also in part be accounted for by the increasing interest that other village paramedics have had in family planning in recent years. The significant point is that once services were initiated the demand continued to grow.

In the extension area, the baseline survey in 1984 showed that 9.2% of women had ever used modern contraceptives and 9% were currently using them. Before the postintervention survey was conducted in 1987, service statistics, in conjunction with the zonal registries of households, permitted some estimates of contraceptive prevalence rates. These estimates are used to guide the health team and district supervisors in planning more intensive education and follow-up interviews where indicated. For example, very low prevalence rates noted in a few zones were investigated and the conclusion, based on interviews, was that there was especially severe economic distress in those areas, causing many husbands to emigrate from their villages for long periods to seek work, leaving behind the women, children, and elderly men.

Except for the low prevalence zones, the overall pattern was of a considerable increase in contraceptive use, and this pattern was substantiated by the 1987 survey which found that 27% of the women of child-bearing age were current users. This prevalence rate is comparable to that of the

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<td><strong>Family planning</strong></td>
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<td>Proportion of women currently using a family planning method</td>
<td>10.6%</td>
<td>13.7%</td>
<td>20.0%</td>
<td>27.6%</td>
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<td>Proportion of women who had ever used a family planning method</td>
<td>22.1%</td>
<td>28.5%</td>
<td>49.8%</td>
<td>59.8%</td>
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<td>Proportion of women for whom midwife was primary source of information about family planning</td>
<td>0</td>
<td>60.1%</td>
<td>35.6%</td>
<td>47.4%</td>
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<td><strong>Oral rehydration therapy</strong></td>
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<td>Proportion of women having a container calibrated by midwife</td>
<td>0</td>
<td>56%</td>
<td>26%</td>
<td>not available</td>
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<tr>
<td>Proportion of women who used oral rehydration solution the last time a child had diarrhoea</td>
<td>76%</td>
<td>35%</td>
<td>87%</td>
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original area, yet it was achieved in less than 3 years.

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The purpose of pilot projects in health care delivery is to demonstrate what can be done. Replication is the final measure of success. Service delivery models that effectively meet needs and overcome obstacles do not emerge ready-made. Rather they evolve and develop by trial and error from the realities of field experience. Such at least has been the experience of the Sudan community-based health project. That the development of this model, originated by a University, is now increasingly being taken over by the Ministry of Health, augurs well for continuing efforts to improve village health care in the Sudan.

References


