

# Nutrition surveillance in the Sudan: a community-based approach

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الترصد الغذائي في السودان - طريقة تعتمد على المجتمع  
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خلاصة : في سنة 1992 ، أجري في قريتين من قرى محافظة كسلا بالسودان مشروع ارتيادي لجمع معلومات عن الحالة الاجتماعية الاقتصادية والوضع التغذوي للأطفال وأمهاتهم ، وذلك في إطار نظام الإنذار المبكر . وكان لهذا المشروع هدفان هما اختبار مدى إمكانية الإسهام المحلي في جمع البيانات الاجتماعية الاقتصادية والتغذوية ، وفي تحليلها واستعمالها ، وإدماج البيانات الاجتماعية الاقتصادية في نظام المعلومات الخاص بالأغذية والتغذية ، وبحث مدى فائدتها في الإنذار المبكر . ولقد شمل المشروع الارتياضي كذلك إدخال معالم جديدة مثل القياسات الأنثروبومترية في الكبار ، أي منسب الكتلة البدنية لأمهات الأطفال الذين تم فحصهم من أجل رصد الحالة التغذوية للأطفال ولأمهاتهم في نفس الوقت ولقد أدى ذلك إلى نتائج عظيمة الأهمية كان لها دور رئيسي في تحديد نوع التدخل المطلوب .

**ABSTRACT** In 1992, a pilot project for collecting information on the socioeconomic and nutritional status of children and their mothers as part of the early warning system was implemented in two villages in Kassala Province, Sudan. The objectives were to test the feasibility of local participation in socioeconomic and nutritional data collection, analysis and utilization; and to incorporate socioeconomic data into the food and nutrition information system, and examine its usefulness in early warning. The pilot project also included the introduction of new parameters such as adult anthropometry, i.e. body mass index of the mothers of the children seen, to monitor the nutritional status of both children and their mothers at the same time. This led to very interesting results which played a major role in determining the type of intervention needed.

## La surveillance nutritionnelle au Soudan: une approche communautaire

**RESUME** Un projet pilote a été réalisé en 1992 dans deux villages de la province de Kassala au Soudan pour recueillir des informations sur la situation socio-économique et l'état nutritionnel des enfants et de leurs mères dans le cadre d'un système de pré-alerte. Le projet avait pour objectifs de tester la faisabilité de la participation locale au recueil, à l'analyse et à l'utilisation des données socio-économiques et nutritionnelles, d'intégrer les données socio-économiques au système d'information sur l'alimentation et la nutrition, et d'examiner l'utilité de ce système pour la pré-alerte. Ce projet pilote comprenait également l'introduction de nouveaux paramètres comme l'anthropométrie à l'âge adulte, c'est-à-dire l'indice de masse corporelle des mères des enfants examinés, afin de surveiller l'état nutritionnel des enfants et de leur mère en même temps. Grâce à ce projet, des résultats très intéressants ont été obtenus, ce qui a joué un rôle majeur pour déterminer le type d'intervention nécessaire.

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## Introduction

### Objectives

A pilot project to collect information on the socioeconomic and nutritional status of children and their mothers as part of the early warning system was implemented in 1992 in two villages in Kassala Province, Sudan. The project had two immediate objectives:

- to test the feasibility of local participation in socioeconomic and nutritional data collection, analysis and utilization; and
- to incorporate socioeconomic data into the food and nutrition information system, and examine its usefulness in early warning.

There were two intermediate objectives:

- to improve the technical capacity of the provincial level to analyse and interpret nutritional and socioeconomic data and take timely action on the basis of the information; and
- to establish a standardized nutritional and socioeconomic database at the central level from which trends can be monitored, and vulnerability maps drawn up, on a continuous basis to assist in food security planning.

### Pilot project implementation area

Kassala Province, Eastern State, was selected for the implementation of the project because it comprises areas that are vulnerable to food shortages and others that are not. This allowed testing of the system in the two settings. It has been the scene of some experience with ad hoc surveys in the past and a region with high rates of under-nutrition. The province has a well established infrastructure and is within easy reach of the centre, which ensures intensive central supervision.

Two villages were selected: Tawayiet which was prone to food shortage, and Awaad which was not. Each village had a population of more than 2000 people. They were both selected by the provincial authorities. Both were rural agricultural, with a predominantly settled population, and more than 20 km away from a main road. There was a health unit in each, which was essential in order to lead and coordinate implementation.

After selection by the provincial authorities, a visit was paid to both villages to discuss the pilot project with the communities concerned. In both villages a meeting was held with the community leaders and health personnel during which the pilot project was discussed at length. After the approval and acceptance of the project by the community leaders, a baseline survey was conducted in both villages. It focused on geography, demography, economy, food sources, social structure, social services, crops, food consumption, and knowledge, attitudes and practices. It also covered sociobehavioural changes. The information obtained will form the base against which duration patterns, especially in the socioeconomic field, will be monitored to provide early warning and trigger timely action. It will also help to identify gaps and supportive structures for consideration during implementation. The baseline information was collected by the central and State level staff of the Federal Ministry of Health.

### Methodology

Since the aim is of the project to continuously monitor changes in the nutritional status of the community as a whole and not only of individuals, a longitudinal trend (panel) monitoring methodology was ap

plied. Socioeconomic and nutritional data thus will be collected over a period of one year in the selected villages surveying the same people, at three-month intervals corresponding with agricultural seasons.

Experience in the Sudan, as in some other countries, has shown that getting the correct age of an individual is difficult. So weight, height and length parameters were used. Children with lengths between 70 cm and 110 cm were selected. This group generally includes children between 1 year and 5 years of age. For all children, length measurements (lying down) were made. These were analysed by hand using the Save the Children Fund (United Kingdom) reference table, which is based on the National Centres for Health Statistics (NCHS)/WHO 1983 tables. Adult anthropometry was also included in the system.

## Sample selection

A census of all the households in the two villages was conducted. At the same time the length of the children in the households was measured and those who measured between 70 cm and 110 cm were registered. Estimated age of the children was also recorded to be used as a counter-check. Similarly, the names and ages of the same children (70–110 cm) were recorded. If in a family there were two children who fell in the length ranges above, only the older one was registered. Then 40% of the registered children were selected randomly in each of the two villages. The mothers of the randomly selected children were in their turn registered. Thus, when a child in the above category was selected in the sample, his mother was also recorded and given an identical identification number. To distinguish between child and mother, a letter was added to the ID number, e.g. No. 2/C

for the child, No. 2/A for the adult. Pregnant mothers were excluded because the body mass index values do not apply to pregnant women. Those who became pregnant at a later stage were excluded, but the child continued to be measured.

The pilot project started with a small sample size. Sudan is a vast country and it was felt important to convince others that the project was for demonstration purposes. Also, the objective of the experiment is to measure changes in the nutritional status of community members in general and not of specific individuals or households. Therefore, what was required was true representation rather than a huge sample. Resource limitations, both in terms of finance and human resources, were taken into account, as well as the homogeneity of the community members in rural setting and the experience of other countries.

## Data and indicators used

Three sets of data were required:

- a) Socioeconomic data on a few variables for monitoring patterns in:
  - food consumption (type and frequency of meals, etc.)
  - price of basic staple foods and livestock
  - market conditions: change in the type of commodities, population, etc.
  - changes in the family social norms, e.g. immigration, emigration, social disruption, etc.
- b) Anthropometric data which were collected from children and their mothers. The NCHS/WHO reference values were used to determine the nutritional status of children. The cut-off indicator for monitoring nutritional trends in this

exercise is a weight-for-length of <80% of the median of the reference population. Body mass index (BMI) calculated as weight (in kilograms) divided by height (in metres) squared was used to assess the nutritional status of non-pregnant women. The BMI provided valuable complementary information to the findings of the child anthropometric measurements. It was very useful in guiding the type of intervention required. Based on studies from developing countries, a BMI below 17 in adults was taken as the cut-off point to identify adult malnutrition.

- c) Data on morbidity from common childhood diseases like measles, diarrhoea, and fever of unknown origin. It is believed that these conditions and symptoms are easily recognizable by mothers and are directly linked with malnutrition. Since the programme is an integrated one, mothers were asked whether the children were immunized, and what was the best time for the immunization team to visit the village. Mothers were given oral rehydration salts to keep at home and were asked whether they knew how to use them. All children who came to the measurement centres, including older children, were checked for symptoms of vitamin A deficiency, and vitamin A capsules were distributed, both as treatment doses and to children free of symptoms.

### Frequency of data-collection

Data collection took place once every three months, because:

- It was operationally feasible.
- It fitted in with the local harvesting cycle and hence allowed the analysis of

"convergence of evidence" to indicate timely warning and trigger action.

- Scientifically, it was acceptable; under normal conditions in such communities one would not expect significant change over three months.

### Data collection, analysis and utilization

Market assessments were made and other socioeconomic data collected at an aggregate level. The anthropometric, food consumption and morbidity data were gathered on an individual basis.

Since the purpose of the data collection was to indicate timely action, it was analysed and utilized at provincial level, the lowest possible level, for the following reasons.

- a) It is an important link between the higher and lower levels and can influence the higher levels and instruct the lower levels to take action.
- b) Some expertise in data analysis as well as some resources are available at this level.
- c) This level enjoys decision-making power and can therefore take immediate action with available resources until further technical, material and financial support (if required) is made available.
- d) Some sort of coordination mechanism for development activities exists at this level; hence information can be discussed using this mechanism, thereby sensitizing state and provincial planners to use it for socioeconomic development planning purposes.
- e) In both villages, personnel working in the fields of health, agriculture, teaching, adult education, voluntary associa-

tions, community development and veterinary nursing, together with community leaders such as people's committees, collect both the anthropometry and socioeconomic information.

Whenever the nutritional status of mothers improved or remained the same while that of children deteriorated, and at the same time food prices fell, other factors which have adverse effects on the nutritional status of children were looked at more closely. When analysing data on diseases among children during the previous three months, it was found that the prevalence of diarrhoea had increased and so had that of fever. It became clear that the priority therefore was to control diarrhoea and malaria if the nutritional status of children was to improve.

The data collected by the village health committees were handed over to the health area team who, in turn, transmitted them to the nutrition unit at the provincial level. At the provincial level, the data were compiled and analysed and the report was written in Arabic and English. A copy of the report was sent to the state and central levels.

## Training

The training was tailored to the kind of activities to be undertaken and focused primarily on the lower level. It concentrated on improving basic skills in conducting interviews, the technique of socioeconomic data collection, taking weight and height measurements, calculating anthropometric indices and the simple compilation, interpretation and presentation of data.

The first training course, mainly a refresher course, was done for state and provincial supervisors by the central staff. These staff were then responsible for the

training of community members who had been selected by the community leaders to participate in the pilot project. This training took place in the selected village under the supervision of central supervisors. The training consisted of both theoretical and practical components with more emphasis on the practical aspect and was carried out in the villages.

Training, being an essential component for the smooth running of the activity, took place at different levels. At the state and provincial level, nutritionists were trained by the central staff. At the health area level, the health area team were trained by nutritionists from the state and provincial levels. At the village level, village health committees—including non-health members from the village—were established in all the villages covered in the sample and trained by the health area team, under the supervision of the nutritionists from the State and provincial levels.

## Constraints

A number of constraints were identified during the implementation of the pilot project.

- 1) Shortage of transport for supervision at state and provincial levels was overcome by collaboration with the nongovernmental organizations working in the areas concerned, which provided means of transport, and the involvement of the rural councils which supplied the fuel needed.
- 2) Although the cost of the project was minimal by virtue of the involvement of community volunteers, incentives were still needed. This was achieved by the financial support of the rural councils.

- 3) During the pilot project period, data collection took place four times a year. During the rainy season many villages became completely unreachable. This constraint was overcome during the project expansion by collecting data twice a year.
- 4) The continuous turnover of staff of both governmental and nongovernmental organizations at the state and provincial level entailed a lack of continuity which was tackled through continuous training.

## Evaluation

At the end of the first year of the programme implementation, evaluation was conducted by the central staff responsible for the programme. The evaluation revealed the following.

- The pilot programme had succeeded in fulfilling its objectives.
- Community-based nutrition surveillance was far less costly than nutrition monitoring surveys.
- Full involvement of the community from the planning stage ensured sustainability.
- Full involvement of the community ensured their participation in intervention measures—they felt it was their programme and had to help in solving any problems encountered.
- Community members, after being well trained and closely supervised, were able to do a good job.

The pilot project was successful and it was therefore decided that it should be expanded to other areas.

## Expansion

For the expansion of the project, the following was agreed upon.

- Expansion of the programme should take place at the health area level.
- Expansion should take place in those health areas where the health area management team (consisting of the medical officer of the rural hospital as the team leader, the nutritionist, the coordinator for immunization, the sanitary supervisor, the public health inspector and the coordinator for diarrhoeal disease control) is stationed and where workshops are conducted.
- The socioeconomic and nutritional status data should be collected twice a year, during the off-season and the planting season.
- Each time, a new sample of children and their mothers should be selected from the same villages.
- To minimize the differences between the villages and try to make them homogeneous, the seven responses should be collected from all the villages of the health area, and villages selected to form homogeneous groups.
- From each homogeneous group, a sample of 33% of the villages should be randomly selected.
- Data should be collected from these villages, but intervention measures applied to all villages of that group.

One of the intervention measures was the establishment of the nutrition centre at the health area level. This centre will continue to provide integrated nutrition services in collaboration with the bodies concerned and outside the health sector. Initial expansion covered four health areas

(Aroma, Khasm El Girba in Kassala State, Wad El Nyal in Sennar State and Shiekan in North Kordofan State). Another two health areas will be covered in 1994—Sinkat health area (Red Sea State) and El Meileg health area (Gezira State). Expansion to cover seven more health areas is envisaged in 1995.

1996 will witness the expansion of the programme to cover 36 health areas in all nine zones. The pace here will be faster since each State will be fully responsible for expansion within itself, without much central involvement.

## Future prospects

This pilot project was aimed not at introducing a new system, but at trying to improve the existing systems of nutrition information so as to make them useful in early warning and long-term food security for vulnerable areas and groups. By monitoring nutritional and socioeconomic status, trends in food security can be followed, causes detected and timely action taken. A system which will reveal trends in the nutritional status, as opposed to ad hoc surveys which show the nutritional status at a specific point in time, is obviously more desirable for food security and early warning purposes. A system is to be established which is action-oriented, sustainable and cost-effective, being community-based, with full involvement of the community from the pre-planning stage. The introduction of adult anthropometry is very useful as a complement to child anthropometry, and particularly useful in directing interventions.

The recently introduced policy of the Federal Ministry of Health establishes health areas, each consisting of a number of villages, linked together by a rural hospital. In each health area there is a health team, including government cadres, community leaders and community members. There is a well defined training programme for these teams in health programme management. The policy includes the expansion of the pilot project to cover health areas in the Eastern, Central and Kordofan States.

Community members who have participated in the pilot project will act as trainers in the new areas, not only in their state but in other states as well. This will give them more self-confidence and show others that, if well trained, any community member can become a trainer. It will also help minimize the cost of the system.

In the long run, this system is intended to replace the monitoring surveys which are taking place now.

With the expansion of the programme, data analysis by computers will be done at the state level. The data will then be sent from the different states to the central level to establish a database at national level.

Integration and collaboration with the Bamako Initiative will help in providing local funds for the smooth running of the activity at the community level through revolving funds supplying essential drugs. This will have a double effect of providing both drugs and funds for running primary health care activities for social and economic improvement of the communities. This collaboration is planned to cover eleven health areas in 1995.