

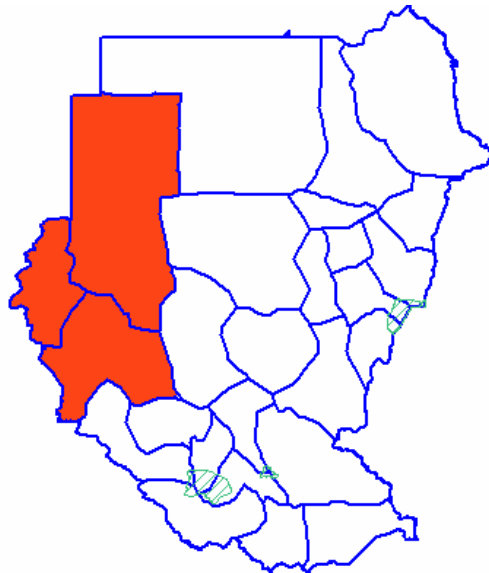


مِنَظَرِهَا الصِّحَّةَ الْعَالَمِيَّةَ
الْمَكْتَبَ الْأَقْسَمِيَّ شَرْقِ الْمَوْسَطِ



**A Retrospective Mortality Survey
among Internally Displaced Persons (IDPs)
and other affected Populations
Greater Darfur, Sudan,
April – June 2005**

Final Protocol (22 May 2005)



I. BACKGROUND

Sudan's Greater Darfur Region (comprising three states: North, West and South Darfur) is witness to one of today's most serious humanitarian crises. The Greater Darfur Region covers about 510,888 sq km, an area the size of France, representing one fifth of Sudan's surface area. The Region hosts approximately 6.77 million people of different ethnic groups (20% of the country population).

The conflict in Darfur, which began in February 2003, between the Sudan Liberation Army/Movement, the Justice and Equality Movement and the Government of Sudan (GoS) and their supporters, has affected roughly one-third of the entire population of Darfur. As a result of pervasive violence and insecurity, as of 1 March 2005, the total affected population in Darfur was estimated at 2.45 million, of which 1.86 million are internally displaced persons¹. The number of conflict-affected does not include pastoralist communities which are also affected by the conflict through lack of access to markets and the Northern winter breeding areas.

People have fled their now-empty villages and are presently gathered in 130 mostly out-of-town camps and settlements. In addition, many IDPs have fled to neighbouring villages putting pressure on already meagre household and community resources and basic services. With resources stretched to the limit, the situation of both residents and IDPs is extremely precarious¹: they have no assets to sell, minimal stocks of food and no animals, they live in tarpaulin-covered shacks, and can access only very limited amounts of drinking water.

II. RATIONALE

The humanitarian response to the Darfur crisis has escalated rapidly since the beginning of operations. As the estimated affected population has doubled from 1.1 million persons on 1 April 2004 to 2.45 million 1 March 2005, also the humanitarian programme has been boosted: there are now more than 10,000 humanitarian workers (of which more than 900 international) currently operating in the region (ibidem).

Mortality, together with malnutrition, is the most commonly used indicator for assessing the severity of a crisis and monitoring the overall humanitarian effort. Comparison of the crude mortality rate (CMR) at different time intervals provides an indirect measure of the impact of the response to the crisis: in fact, other contextual factors, which are difficult to monitor, may change and make it difficult to establish a direct causality between humanitarian interventions and mortality. Notwithstanding these limitations, mortality surveys, conducted over time, are useful for accountability and monitoring purposes. Prospective surveillance systems can also provide useful information on the morbidity and mortality trends and can trigger quick action in response to acute crises, but require time and substantial resources to ensure that coverage and quality of data are of acceptable standards and maintained.

Several retrospective mortality surveys have been carried out in Darfur since 2003 (17 in 2004 alone²). Most of the surveys show mortality rates above the emergency threshold of 1 death/10,000 per day. Even if, overall, the findings of these surveys are consistent in showing broad spatial and time trends, they cannot be directly compared or combined in a meta-analysis due to differences in the study populations or methods utilized.

This new survey has been designed in response to the request from the UN Humanitarian/Resident Coordinator/Deputy Special Representative of the Secretary General to obtain an estimate of mortality for each state of Darfur that can be compared to that resulting from the previous WHO-EPIET survey

¹ Darfur Humanitarian Profile No. 12, 1 March 2005

² Report on mortality and nutrition in Darfur, Sudan, Centre for Research and Epidemiology of Disasters, March 2005

(which was conducted in August 2004). Additionally, also resident populations, affected by the crisis and IDPs living outside of the camps will be included, in order to get a broader overview of the health status in Darfur, and better target humanitarian interventions. The need for multiple comparisons results in three separate surveys to be undertaken, each targeting a different population group (IDPs in the camps, IDPs outside of the camps and affected communities).

III. OBJECTIVES

MAIN OBJECTIVE

To estimate retrospectively the mortality among the following crisis-affected populations in each of the three states of Greater Darfur Region (North, West and South):

- the Internally Displaced Persons (IDPs) present in the camps,
- IDPs living in settlements, not organized camps, and
- Affected resident communities (*see definitions under study population*).

SPECIFIC OBJECTIVES

1. To estimate crude and under-five mortality rates during the 6 months preceding the survey;
2. To analyse changes in mortality between the present study period and June-August 2004, when a survey with compatible methods was carried out;
3. To analyse differences in mortality between the different groups included in the study;
4. To describe demographic characteristics of the study populations;
5. To identify the major causes of death,
6. To describe basic service availability for IDP populations, and
7. To provide baseline mortality estimates that can be used for calibrating and strengthening the existing surveillance system.

IV. METHODOLOGY

This protocol was submitted to a formal peer-review process, involving international epidemiologists, familiar with the methods used in mortality surveys in complex emergencies and integrates relevant feedback. The same process will be used before releasing the findings.

1. STUDY POPULATIONS

The following definitions are used for the three study populations:

- IDP: a person not living in his/her permanent residence;
- Accessible area: defined according to the current UN security criteria
- Affected communities: for the purpose of this study, include WFP beneficiaries of food aid, living in their permanent residence.

The study populations include:

1. IDPs living in accessible well-defined camps,
2. IDP living in accessible settlements, outside of camps, and
3. affected communities living in accessible areas.

In addition to security, the following exclusion criteria will be used:

- IDPs and resident communities living in State capitals.
- Nomadic populations

2. SAMPLE SIZE CALCULATION

Different hypotheses have been formulated for each population study in order to calculate the respective sample size. Given the uncertainties in the different parameters (expected mortality, design effect, mean household size, etc) it was decided to standardize the number of households to be included in each cluster. Conservatively, the smaller sample size was aligned to the larger one, in order to increase the precision of the estimates.

Since the main objective of the survey is to estimate mortality with sufficient precision for the three study groups, it has been agreed not to calculate the sample sizes in order to demonstrate statistical significance for a minimum difference in mortality between the prior survey and the present one or between groups.

Among IDPs living in camps (first study population) it is assumed that mortality has declined since last WHO-EPIET survey, due to the improved humanitarian response. Therefore the lowest CMR estimated in the previous survey (1.5/10,000/day in North Darfur) was used for the calculation of sample size³. In order to estimate in each state a CMR of 1.5 deaths/10,000 persons/day, with a precision of 0.5 (95% Confidence Interval of 1.0 to 2.0 deaths/10,000 persons/day), with a design effect of 2 and a recall period of 180 days, the required sample size is of 2,500 persons or 417 households (estimating a mean household size of 6). Thirty clusters will be selected in each state and 20⁴ households in each cluster will be studied.

For IDPs living outside of the camps (second study population), it is assumed that the CMR is higher than in the camps. Assuming a CMR of 2/10,000 per day, with a precision of 0.5 (95% Confidence Interval of 1.5 to 2.5 deaths/10,000 persons/day), with a design effect of 2 and a recall period of 180 days, the required sample size is of 3,285 persons or 548 households (estimating a mean household size of 6). Thirty clusters will be selected in each state and 20⁵ households in each cluster will be studied.

For the affected communities (third study population), we formulate the hypothesis that the mortality is the same as that estimated in the CDC/WFP survey of September 2004⁶. In order to estimate a CMR of 0.7/10,000 day with a precision of 0.3 (95% confidence interval of 0.4 to 1.0 deaths/10,000/day), with a design effect of 2 and a recall period of 180 days, the required sample size is of 3,270 persons or 545 households (estimating a mean household size of 6). Thirty clusters will be selected in each state, with 20⁷ households included in each cluster.

3. SAMPLING METHOD

Two-stage cluster sampling⁸ will be used, with household as the basic sampling unit and clusters randomly selected with probability proportional to size (PPS), and will be applied to each of the three study populations in each state.

For the sampling frame, lists of all IDP camps, settlements of IDPs not living in camps and affected resident communities in each state will be obtained from OCHA. Locations declared non accessible by UNDSS will be excluded. Should a cluster become not accessible survey, an alternative cluster will be

³ Using Epiinfo Statcalc

⁴ 5 more households have been added in each cluster to obtain the same number of household and simplify training (see text)

⁵ 2 more households have been added in each cluster to obtain the same number of household and simplify training (see text)

⁶ Emergency nutrition assessment of crisis affected populations, Darfur Region, Sudan; CDC and WFP, 2004

⁷ 2 more households have been added in each cluster to obtain the same number of household and simplify training (see text)

⁸ the same methodology used in the first WHO-EPIET survey and standard for this type of survey

selected in the next location listed on the sampling frame after the one containing the inaccessible cluster⁹.

For the second sampling stage, households will be randomly selected according to the standard immunization coverage cluster survey methodology¹⁰.

A household is defined as a group of people living together (sharing the same meals and or sleeping under the same roof). If no one is at home at a selected house, a neighbour will be consulted concerning the whereabouts of members of the household. If the members have departed permanently or are not expected to return before the survey team has to leave the village, the household will be skipped and be replaced by the nearest one. If household members are expected to return, the survey team will revisit the house at least twice more before declaring the household missing and replacing it.

4. STUDY PERIOD

The study period will be between November 15, 2004 and the date of conducting the survey (approximately 180 days). Events (deaths and, births) will be recorded for the above period using a local calendar. Only people living in the household at the beginning of the study will be included as well as new-borns and relatives who died or disappeared within the study period.

5. DATA COLLECTION

A questionnaire has been prepared after consultation with national and international organizations providing health services in the Greater Darfur Region (Annex 1). The entire form was translated from English into Arabic and then back-translated into English by a second translator. The survey questionnaires will be pre-tested in 1 IDP camp in Darfur and revisions will be made based on this experience.

Indicatively, data will be collected by 6 teams of 3-4 persons in every State. Each team will include 1-2 Arabic speaking supervisors, and 2 locally recruited interviewers (male and female if possible). All survey workers will receive 2 days of training and 1 day of field practice training under close supervision of the International experts. Training will include 1) extensive discussion of specific job duties for each category of survey team worker, 2) detailed instructions for the second sampling stage, 3) definition of study period and study population and 4) common questions and answers. One international senior expert will be the overall coordinator of the field work in each of the 3 States.

At each household, interviewers will ask questions¹¹ about displacement, water sources, latrines, distribution of food and non-food items, and health services. In addition, a household census will be taken **as of November 15 (date of Eid El Fater)** and at the day preceding the interview date . Births and deaths occurring in each household will be recorded. A specific local calendar of events for each state will be used to determine ages of household members and dates of death. The cause of each death will be classified into 1 of 10 categories (all types of injury, measles, neonatal tetanus, bloody diarrhoea, other diarrhoea, meningitis, ARI, malnutrition, malaria, and other).

According to the standard methodology and the request of the United Nations Humanitarian Coordinator interviews will be **anonymous**. Respondents will be informed about the objectives of the study and that the data collection is not part of registration or food or other aid distribution. Oral,

⁹ According to the Immunization coverage cluster survey reference manual, WHO December 2004

¹⁰ *ibidem*

¹¹ For the identification of the respondent, refer to the questionnaire guidelines

informed consent will be obtained from all respondents before the start of the interview. NGOs active in camps will be requested to carry out a sensitization campaign on the objectives of the survey.

6. DATA VALIDATION, DATA ENTRY AND ANALYSIS

To ensure data quality, daily meetings will be held among field workers and supervisors to review the data collection process, to check data completeness and to resolve any logistical or methodological issues.

Team members will enter data on a daily basis. EPI-INFO 6.04d will be used to create a data entry screen which will include quality check file to minimize data entry errors. Data validation (as for their completeness and quality) will be performed before the analysis, checking a random sample of 5% of questionnaires.

Analysis will be carried out using EPI-INFO 6.04d The main outcomes by state and by population group will be:

- Crude mortality rate, expressed as deaths/10,000 per day, with 95% confidence interval,
- Under 5 years age mortality rate, expressed as deaths/10,000 per day, with 95% confidence interval,
- Proportional mortality for the main causes of death,
- Age and sex structure of study populations,
- Distribution of variables related to service availability, and
- Cluster design effect.

As reference, the following international benchmarks for crisis will be utilized: CMR of 1/10,000 per day and a U5 MR of 2/10,000 per day.

An external International statistical expert will be hired to conduct re-analysis of the data and validate the results before final dissemination.

V. LIMITATIONS:

The chosen methods and tools are standard for retrospective mortality surveys in complex emergencies. However, it must be stressed that the method and their sound implementation (training of interviewers, supervision, quality control, etc) can only limit, but not completely eliminate biases

Deaths occurring around the beginning of the period may be subject to misclassification as inaccuracies in the recall of dates can lead to the incorrect inclusion or exclusion of a death in the study period. To limit this possible bias, a calendar of events for each of the camps will be created to assist recall of the precise date of death.

Information bias due to the provision of inaccurate death data and/ or current household size can be limited by ensuring that the interviewees are aware that all the information they provide is anonymous and that the study is not part of a registration process for the distribution of aid. This information forms part of the introduction to the study provided to each interviewee.

The locations excluded for security reasons may host the most vulnerable populations and this could result in the under estimation of mortality. Also households in which all members have died cannot be included (survivor bias). Also this bias would result in an underestimation of the mortality.

VI. ETHICAL APPROVAL

WHO guidelines do not require ethical review for retrospective surveys during humanitarian emergencies. The FMOH approved the protocol and signed a MOU (Annex 2).

VII. PUBLICATION

The WHO Representative will deliver the final study report to the UN Humanitarian coordinator and FMOH Representative, who will decide on the dissemination of the findings, including their publication.

VIII. STUDY PROCEDURES, GUIDELINES AND SURVEY TOOLS:

Specific instructions, guidelines, questionnaire, etc are provided in the survey manual.