HEART
HEALTH & EDUCATION ADVICE & RESOURCE TEAM

Helpdesk Report: **Rapid analysis of previous famines**

Date: **3 September 2015**

Query:
Given the risks of famine in South Sudan and even Yemen, please deliver a rapid analysis of previous famines to feed into DFID current policy work. The literature should include, but not be limited to, drawing off the Disasters Journal virtual volume on famine. It is challenging to define famine situations. This report will use the definition of famine as described by the integrated phase classification system (IPC).

Key questions include:

- What were the main famines since 1980 and what were their causes?
- What are the number of deaths from each of the declared major famines since 1980?
- Where data is available, what were the recorded food security (e.g. IPC) and malnutrition indicators (e.g. Global Acute Malnutrition (GAM) and Severe Acute Malnutrition (SAM) rates) before and during the declaration of the crisis?
- What were the perceived main causes of mortality spikes during the period of the famine declaration?

Special emphasis is sought on the detail of the 1980s famines in South Sudan (Sudan at the time).

Content

List of acronyms

CDR - Crude Death Rate
CMR - Crude Mortality Rate
DEFF - Design Effect
GAM - Global Acute Malnutrition
IPC - Integrated Food Security Phase Classification
MAM - Moderate Acute Malnutrition
SAM - Severe Acute Malnutrition

1. Introduction

This helpdesk provides a rapid analysis of famines since 1980. It is divided into three sections. The first section is focused on presenting data on previous famines, after a brief discussion on famine classification. The second section focuses on malnutrition indicators during crises. It provides data, where available, on Global Acute Malnutrition (GAM) and Severe Acute Malnutrition (SAM). This section also includes a discussion on why data is important for addressing food insecurity. The third and final section reports on the main causes of mortality during famines. An annotated bibliography is included, which provides an abstract and link for each resource used.

The resources included in this report were identified through a non-systematic desk-based search. A number of experts were consulted. The experts consulted suggested additional resources that were included. This report is a rapid response and was completed in 3 days. As such, it should be treated as a synthesis of the resources and evidence gathered in the assigned time.

2. Definition of famine and the main famines since 1980

Defining what constitutes a famine has historically proved challenging. With every new food crisis there is a debate about whether the crisis constitutes a famine or not. However, an internationally agreed definition of famine could make it easier to uphold the right to food and to enforce accountability when human rights are being violated. A contested definition of famine leaves the international humanitarian system open to political bias and manipulation of nutritional data (Young and Jaspars 2006).

The IPC 2.0 Acute Food Insecurity Phases are described in the figure below (FEWS NET 2015).

IPC Acute Food Insecurity Phase Descriptions (Area)

PHASE 1 Minimal	More than four in five households (HHs) are able to meet essential food and nonfood needs without engaging in atypical, unsustainable strategies to access food and income.
PHASE 2 Stressed	Even with any humanitarian assistance at least one in five HHs in the area have the following or worse: Minimally adequate food consumption but are unable to afford some essential non food expenditures without engaging in irreversible coping strategies.
PHASE 3 Crisis	Even with any humanitarian assistance at least one in five HHs in the area have the following or worse: · Food consumption gaps with high or above usual acute malnutrition OR · Are marginally able to meet minimum food needs only with accelerated depletion of livelihood assets that will lead to food consumption gaps.
PHASE 4 Emergency	Even with any humanitarian assistance at least one in five HHs in the area have the following or worse: · Large food consumption gaps resulting in very high acute malnutrition and excess mortality OR · Extreme loss of livelihood assets that will lead to food consumption gaps in the short term.
PHASE 5 Famine	Even with any humanitarian assistance at least one in five HHs in the area have an extreme lack of food and other basic needs where starvation, death, and destitution are evident. (Evidence for all three criteria of food consumption, wasting, and CDR is required to classify Famine.)
!	Phase classification would likely be worse without current or programmed humanitarian assistance.

The Integrated Food Security Phase Classification (IPC) aims to provide a common currency for classifying both the magnitude and severity of food insecurity through a set of standardised tools. International standards are used to compare evidence from situations across geographic locations and time. It is based on consensus-building processes to provide decision makers with a rigorous analysis of food insecurity along with objectives for response in both emergency and development contexts (IPC 2015).

IPC 2.0 was launched in September 2012, after being devised by a global partnership of governmental and nongovernmental agencies. IPC 2.0 is intended to help governments and other stakeholders understand a crisis (or potential crisis) and take appropriate action (FEWS NET 2015).

Further information on IPC 2.0 can be found on their website (IPC 2015). Along with the scale, IPC 2.0 provides a framework for technical consensus, protocols for classification, tools for communication, and methods of quality assurance. In practice, researchers use various methods of data collection and analysis, but they describe their conclusions using the same, consistent language and standards. This harmonised approach is particularly useful in comparing situations across countries and regions, and over time (FEWS NET 2015).

Relevant events that were not described as famines include when Niger suffered a mass nutrition related mortality in 2005, as did Ethiopia in 2000 and Malawi in 2002. The international community ascribed less emotive terms such as “food crisis” (the IMF on Malawi in 2002) and “very severe, but localised food security crisis” (USAID on Niger, July 2005). The World Food Programme claimed to have successfully “averted” a famine Ethiopia in 2000 (World Food Programme 2000) (Devereux 2009).

The WFP did however state that despite famine being averted, continuing concerns for the very poor state of child and maternal health in many of the pastoral areas of Ethiopia remained and that high levels of morbidity and unacceptable levels of mortality were being experienced (WFP 2000).

With regards to the 2005 Niger crisis, data indicates that there was an increase in the price of staple crops, but the rise was relatively small compared to that associated with historical famines. The price increase lasted only a few months. Excess mortality was minimal at most. In some instances, language may be used for political reasons, as has been the case with the term ‘famine’ **(**Ó Gráda 2015 A).

It is important to understand the motives for using the term ‘famine’, as this informs its contextual framing. If famine is taken to mean ‘a shortage of food or purchasing power that leads directly to excess mortality from starvation or hunger-induced diseases’, then it is doubtful whether the Niger crisis of 2005 qualified. The controversy over definition may to an extent reflect tensions between stakeholders interested in development aid and those specialising in emergency relief. The former are commonly charging the latter with mobilising disproportionate resources in a counterproductive way unable to address the deep-seated causes of primarily chronic crises **(**Ó Gráda 2015 B). Macrae et al. (1997) state that differences in the political meaning of relief and development aid need to be recognised. Further discussion is needed to establish the relationship between the two. Unless and until these issues are confronted, uncritical application of continuum thinking and promotion of developmental relief may do more harm than good.

Ó Gráda (2015 B) argues that in recent times, malnutrition remains a major global problem, but not famine. The extremely low mortality in Malawi and Niger in the first decade of the twenty-first century may suggest that the end of famine is being reached in Africa. However, conflict and global warming may reverse this trend.

The following list describes the major famines experienced since 1980.

Year	Country/region	Cause	No. of deaths	Source
1980–1981	Uganda (Karamoja)	Drought and conflict	30,000	Ó Gráda (2009), Devereux (2000)
1982 – 1985	Mozambique	Conflict and drought	100,000	Devereux (2000)
1983 – 1985	Ethiopia	Conflict and drought	590,000 – 1M	Devereux (2000)
1984 – 1985	Sudan (Darfur, Kordofan)	Drought	100,000 / 250,000	Ó Gráda (2009), Devereux (2000)
1985 – 1986	Ethiopia *(possibly a continuation of the 1983 – 1985 famine)*	War, human agency and drought	500,000	Ó Gráda (2009)
1988	Sudan (South)	Conflict	250,000	Devereux (2000)
1991–1992 / 1993	Somalia	Conflict and drought	300,000 – 500,000	Ó Gráda (2009) Devereux (2000)
1995 – 1999 / 2000	North Korea	Flood and government policy / poor harvest policy failure	600,000 – 1M / 2.8M – 3.5M	Ó Gráda (2009), Devereux (2000)
1998	Sudan (Bahr el Ghazal)	Conflict and drought	70,000	Devereux (2000), Ó Gráda (2009)
2011 – 2012	Somalia	Drought, conflict, global food prices and structural factors	244,000 - 273,000	Maxwell & Fitzpatrick (2012), Salama et al. (2012), Checchi & Robinson (2013)

Evidence suggests that there is currently food insecurity and malnutrition in several places in the world including the Sahel and Yemen. These places may experience famine in the near future, or may already be experiencing it. A time lag between the crises and when analysis is published means that scholarly resources currently are limited. From the data that does exist, it is clear there is a major crisis emerging, which is affecting a large number of people across several countries. For example:

- **Yemen:** Data from a Comprehensive Food Security Survey undertaken in Yemen in 2014 found that 41% of the population (10.6 million people) were food insecure. Five million of those are severely food insecure, being unable to buy or produce the food they need. 5.6 million people are moderately food insecure. Child malnutrition rates were found to be among the highest in the world, with GAM rates ranging from critical – denoting an emergency – in Al Hudaydah, Hajjah and Taizz, to poor or serious in almost all other governorates (WFP 2015 A).

- **The Sahel:** The Sahel region of Africa is a hot, dry band of land which starts in Senegal on the west coast and reaches as far as Chad, nearly 4,000 km to the east. It is home to 10 million people in eight countries. The Sahel was hit by severe drought in 2010. Food prices are high across the region. Grain production is below the five-year average in Mauritania, Chad, Niger and Burkina Faso. The situation has been exacerbated a fall in remittances and conflict in Mali, which has displaced over 300,000 people. Drought in the region continues to bring hunger to millions of people for the third time in seven years (WFP 2015 B).

3. Food security and malnutrition indicators during crises

UNICEF (2015) classify the various forms of acute malnutrition, as follows:

- Moderate Acute Malnutrition (MAM) is defined by WHO/UNICEF as:
  - Weight-for-Height Z-score <-2 but >-3

- Severe Acute Malnutrition (SAM) is defined by WHO/UNICEF as:
  - MUAC<11.5cm
  - Weight-for-Height Z-score <-3
  - Bilateral pitting oedema
  - Marasmic-kwashiorkor (both wasting and oedema)

- Global Acute Malnutrition (GAM) is the sum of the prevalence of SAM plus MAM at a population level.

Data from the Teso District, Uganda, recorded in 1980, reported a prevalence of 0.2% MAM based on the nutritional assessment of 415 randomly selected children ≤110 cm in height, as shown in the table below. Interviews in 200 randomly selected households revealed that the crude mortality rate and the infant mortality rate exceeded 1969 census findings by 140 percent and 72 percent respectively. The authors conclude that the nutritional status of the people of North Teso District, as shown by the condition of their children up to and including 110 cm in height, was found to be remarkably sound in the light of the earlier FAO and voluntary agency reports of suspected food deficit (Biellika and Henderson 1981).

Distribution of nutritional status of 415 children ≤110 cm. in height, by percentage median weight-for-height: North Teso District, Uganda, December, 1980

Percentage median weight-for-height[a]	≥120	110–119	100–109	90–99	80–89	70–79[b]	<70[c]	Total
Distribution (%)	1.2	6.0	30.4	48.7	13.5	0.2	—	100.0

[a] Reference standard: NCHS, 1977.
[b] Defined as moderate acute malnutrition.
[c] Defined as severe acute malnutrition.

Evidence from the famine in Mozambique in the early 1980s indicated that the prevalence of acute malnutrition was 12% in Gaza province, 28% in Inhambane province, and 19% overall. 2% of children examined had pretibial edema suggestive of kwashiorkor (Rutherford and Mahanjane 1985).

An evaluation of the various survey methods used to assess the famine in Somalia between 1991 and early 1993 reported extensive methodological differences among the 23 surveys analysed. Target populations and sampling strategies varied widely. There was inconsistent use of units of measurement and inclusion of denominators in rate calculations. In the 16 studies reporting nutritional status, a variety of measurement methods and definitions of malnutrition were used. Three studies presented information based on mid upper-arm circumference measurements, and 10 presented weight-for-height data below 70% and 80% of the reference median; only four studies presented Z scores (Boss, Toole and Yip 1994).

Data from a WFP nutritional assessment survey conducted in North Korea in 1997 measured the height and weight of a total of 3984 children <7 y of age in 40 government-selected institutions. The prevalence of acute malnutrition (wasting), based on weight-for-height Z-score < −2, was found to vary from between 0 to 32.7% among institutions. The prevalence

of chronic malnutrition (stunting), based on height-for-age < −2 Z-score varied from 0.6 to 74.1% (Katona-Apte and Mokdad 1998).

The prevalence of GAM, SAM and crude death rate (CDR) estimates for crisis-affected regions of southern Somalia are analysed in Salama et al. (2012). Evidence indicates that in 11 of 16 surveys, the prevalence of GAM exceeded the IPC threshold for Phase 5 (Famine) of 30%. In 7 surveys, the prevalence of GAM exceeded 40%, and, in 2 surveys, it was higher than 50%. The prevalence of SAM was also extremely high - in 11 of 16 surveys it exceeded 15%, and, in Bay Agro-pastoral zone, it was close to 30%. In all 16 surveys conducted in July 2011, CDR estimates exceeded 1 per 10,000 per day (the internationally accepted emergency threshold), although in 6 of these surveys CI included 1. In 4 surveys, CDR exceeded 4 per 10,000 per day (four times the emergency threshold and twice the IPC threshold for Phase 5 (Famine)).

By comparison, according to data obtained from 74 historical surveys performed between 2007 and 2010 (data not shown), 'baseline' CDR for southern Somalia (calculated as a median of CDR estimates from 74 mortality surveys conducted in southern Somalia in 2007–2010) was 0.8 per 10,000 per day. GAM and SAM in some survey areas were highly clustered: design effect (DEFF) for GAM in 7 surveys exceeded 3, and in 2 surveys exceeded 8. DEFF for CDR exceeded 2 in 4 surveys that had the highest CDR (exceeding 4/10,000/day). The prevalence of GAM and SAM were highest in agro-pastoral livelihood zones, and in areas of IDP concentration. When we compared trends in prevalence of GAM and SAM in the areas in which cross-sectional surveys had been previously performed during the same season, it was found that the prevalence of GAM was now 2.5–4 times higher than the 'baseline' prevalence observed during 2007–2009, as shown in the figure below. In 2011, the prevalence of SAM was similar to or higher than prevalence of GAM in 2007–2010 (Salama et al. 2012).

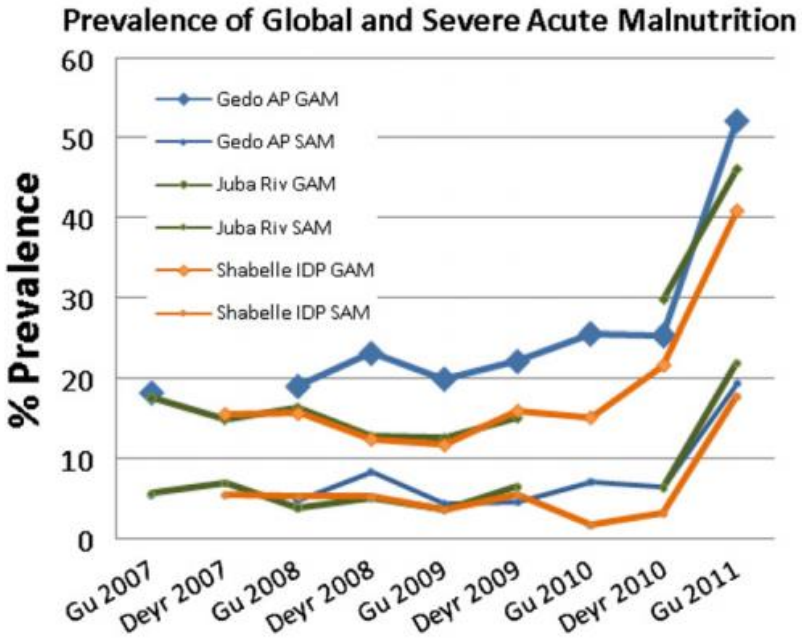
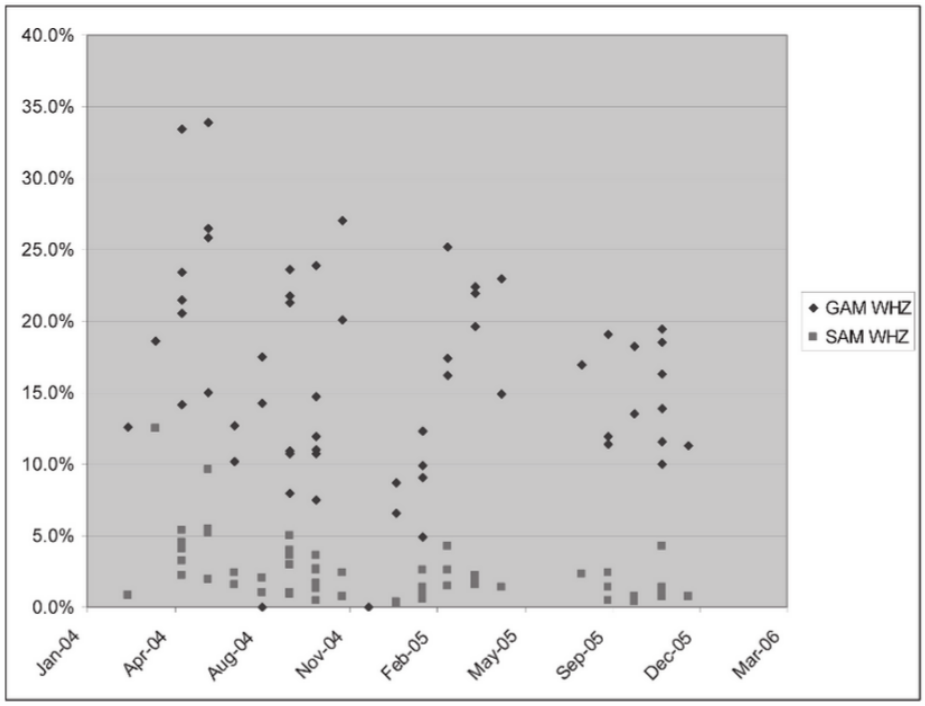


Fig. 1. Trends in prevalence of global and severe acute malnutrition in selected areas of southern Somalia, 2007–2011 (FSNAU, 2011b). Note: AP is agro-pastoral livelihood zone of Gedo region, Riv is riverine livelihood zone of Juba region, IDP settlements in Shabelle region, also known as the Afgoye IDP settlement.

Although the situation in Sudan Darfur between 2004 and 2005 is not referred to in the literature as a famine, the situation was described as precarious. Evidence indicated that malnutrition rates were found to be high during this time (21.8% GAM, 3.9% SAM) with serious rates of micronutrient deficiency. Crude Mortality Rate (CMR) findings were less striking: based on a seven-month recall (to February 2004), the overall CMR of 0.72 was close to the estimated baseline (0.5) for the period before the onset of the conflict. The female CMR was 0.4 (very low, even in a stable sub-Saharan population), and the under-5 MR was 1.03. These are surprising findings in a population that has undergone conflict-induced forced migration, and with high levels of malnutrition. Of the 81 deaths reported during the recall period, cause of death was not recorded for 39 (48.2%); 13 deaths were noted as due to violence (Leaning & Van Rooyen 2005, CDC & WFP 2004).

Young (2007) states that the conflict led to high rates of GAM and SAM among children aged six months to less than five years of age. More than 60 cross-sectional nutrition surveys have been carried out in the three Darfur states since 2003. Prevalence estimates for GAM and SAM in Darfur in 2004 to 2005 are shown in this figure:



Source: Nutrition Section, UNICEF, Khartoum

Due to geographical coverage and other issues much of the data is irregular. As the figure shows, nutritional status varies dramatically. The general trend shows a decline in acute malnutrition between 2004 and 2005. The figure also shows prevalence estimates for SAM, which is known to be associated with a greatly increased mortality risk. The evidence shows that acute malnutrition was a contributory factor to excess mortality in Darfur during this period (Young 2007).

There is a lack of data on food security, nutrition and health indicators in areas affected by crisis. Writing about Sudan, Macrae et al. (1997) explain that the lack of a clear information base means that even the most basic facts regarding the impact of policy changes are not collected. This is partly explained by a lack of coherence in the mandates and activities of international agencies, particularly in the food aid and food security sectors, combined with a

lack of adequate access, which blocks the collection and analysis of appropriate data. Without empirical evidence on food security, nutrition and health, justifying programmes in terms of appropriateness and cost effectiveness is difficult.

Data on acute malnutrition are widely used as an indicator of the severity of humanitarian crises. It is endorsed by a wide array of stakeholders. Yet there is limited guidance on how to conduct nutrition surveys, and how to understand and use their results. Malnutrition data can be used as an objective indicator of crisis. With better guidance on interpretation, acute malnutrition data can help in identifying the severity and nature of crisis, and thereby help identify appropriate responses to address malnutrition and its underlying causes. A common vision and strategy among the wide range of stakeholders with an interest in collecting, analysing and acting on nutritional information is required (Young and Jaspars 2006).

4. Main causes of mortality spikes during famines

The evidence on the main causes of mortality spikes during famines was found to be limited and not always easy to interpret. Swift (1993) focused his research on recommendations for policies to prevent famines through developing a better understanding of famine and famine mortality. He explains that some historical evidence suggests that large scale famine mortality is a direct consequence not so much of starvation but of disease, triggered by a collapse of everyday coping. However, the evidence for this in Africa is not clear. In this perspective, famine is seen to be triggered by economic and social breakdown and the collapse of organised coping, which in turn increases vulnerability to disease. Market forces, government power and population growth may result in pressure on collective coping strategies, which lead to famine.

The relation between mortality and malnutrition is complex, especially outside refugee camps. For this reason, it is challenging to use emergency decision-making frameworks based on malnutrition and mortality indicators. In some countries the national prevalence of acute malnutrition is consistently higher than the benchmark of 10% or 15% proposed for the establishing of supplementary food programmes. These programmes 'boost' general food rations for nutritionally vulnerable groups in an effort to reduce the prevalence of moderate malnutrition and associated mortality in the groups targeted. While the relative risk of mortality for an individual child with moderate malnutrition is lower than that for a severely malnourished child, more of these children will die because a higher proportion of the population is affected by moderate malnutrition. The prevalence of acute malnutrition should be interpreted in the context of mortality, coping strategies, disease, seasonality, and other factors. Efforts continue to improve analysis of underlying causes of malnutrition and consideration of a wider range of non-food aid interventions, which should help to avoid the food-first bias in programming (Young et al. 2004).

Salama et al. (2001) undertook a study to estimate mortality rates, determine the major causes of death, and estimate the prevalence of malnutrition among children and adults for the population of Gode district, Ethiopia. Their results indicated that mortalities spiked prior to April/May 2000 before major relief interventions began. Approximately 77% of deaths occurred during this time. Wasting contributed to 72.3% of all deaths among children younger than 5 years. Measles alone or in combination with wasting accounted for 35 (22.0%) of 159 deaths among children younger than 5 years and for 12 (16.7%) of 72 deaths among children aged 5 to 14 years. The authors concluded that to prevent unnecessary deaths, the humanitarian response to famine needs to be rapid, well-coordinated, and based on sound epidemiological evidence. Public health interventions, such as mass measles vaccination campaigns with coverage extended to children aged 12 to 15 years should be implemented as the first priority. The prevalence of wasting and undernutrition among children and adults, respectively, should be assessed in all prolonged, severe famines.

Contemporary famines appear confined exclusively to sub-Saharan Africa. Three African countries – Ethiopia, Malawi and Niger – have suffered mass mortality food crises since 2000. In terms of mortality, these recent African famines are of a lower scale than last century's Asian and European famines. Of an estimated 75 million famine deaths during the twentieth century, 71 million (95%) occurred outside Africa. The last catastrophic famines in Africa were the rinderpest-induced famines experienced in the late 1800s in the Horn of Africa in the late 1800s. Although the famine mortality statistics are approximate and contested, the 'Great Ethiopian famine' of 1984–1985 was reported to claim an estimated 590,000 lives. All recent African famines are characterised by a failure of markets to deliver access to food at affordable prices. Market failures are felt worst by the poorest and most vulnerable members of society. Poverty is known to contribute to malnutrition and infant mortality so high that indicators of extreme deprivation become 'normalised' in the poorest contexts (Devereux 2009).

Some data on spikes in mortality during the 2004/05 crisis in Darfur are available, although it should be noted that the crisis was not referred to in the literature as a famine. From the data it is not always clear what has caused the spike, or if multiple causes are responsible. For example, in spring 2004, USAID projected there would be 300,000 excess deaths by the end of 2005 in Darfur from disease, violence and malnutrition. This projection was based on estimates of baseline malnutrition and mortality, and gaps in food supply from January 2004 to December 2005 (Leaning & Van Rooyen 2005).

Political context

Survey data from 1999-2000 from Sudan suggests a link between regional resource allocation and mortality. Historically, the State has allocated resources in the central Nile area. This is explained by the political situation, with allocation reflecting political dominance of groups from this area. Infant mortality per thousand live births was 116 in Red Sea, 101 in Kassala, and 101 in Blue Nile, compared to 57 in Nile state where the majority of resources were allocated (Keen and Lee, 2007).

A similar situation has been observed in Ethiopia. The Ethiopian government has strong links and a power base in Tigray, which typically received more food aid than was needed. The Somali region is marginalised and was shown to receive less than required. In 2000, the relief intervention in the Somali region was late, inappropriate and counter-productive. The number of people in need of assistance quadrupled from 400,000 in 1999 to 1,500,000 a year later. Emergency food aid was delivered only after mortality had peaked, with approximately 77% of deaths occurring before major relief interventions began in April/May 2000. Essential non-food assistance was not provided. This forced people to congregate in feeding camps where they were exposed to communicable diseases including measles. A surge in mortality was experienced due to failures to provide clean water, sanitation and vaccines to immunise children (Devereux 2009).

A political economy analysis of the 1985–88 Sudanese famine found that the assets of the Dinka were forcibly transferred to beneficiary groups. It was the Dinkas' wealth, rather than their poverty, which exposed them to famine in a context where they lacked political redress against exploitation. International donors failed to take into account the political context in their response. Shortcomings in the international intervention contributed to the famine (Keen 1994). Based on experiences and evidence from Sudan, Macrae et al. (1997) argue that while a well-managed famine relief programme may contribute to reducing mortality and morbidity, it cannot resolve the war or its impact. This is a matter for political actors, including the foreign ministries of donor governments, rather than for humanitarian actors.

In their book on Sudan in the 1980s, Millard Burr and Collins (1994) explain how nature added to the miseries of war, bringing drought and famine to the already suffering victims of violence. The attempts of the international agencies and humanitarian organisations to

provide food and medical relief were being thwarted by bureaucratic infighting, corruption, greed, and ineptitude. Mortality was caused by a failure of conflict resolution, organisational mismanagement, and of a government hostile toward its own people. Macrae et al. (1997) argue that attention should be paid by donors and agencies to increasing the mechanisms for regulating humanitarian aid in order to insulate it from political abuses by warring factions.

Conflict

The main causes of the 1985–88 famine in Sudan were found to be raiding and growing insecurities. Relief grain was not delivered until after mortality had peaked. Donors did not concern themselves with the underlying processes of famine and instead reacted with nutritional interventions. It is recommended that the various functions of relief failures for particular indigenous groups should be taken into account by aid donors when designing relief operations. Power structures and underlying processes that created the famine must be taken into account. If they are not, famine interventions may reinforce these power structures and possibly even make the famine worse. Donors need to take a holistic approach to famine, particularly in the context of a civil war, where normal power inequalities are likely to be exacerbated (Keen 1991).

The impact of the Darfur humanitarian crisis in the mid-2000s in terms of the human costs has been huge. The conflict has caused violent deaths, destruction of livelihoods, population displacement, increased morbidity and malnutrition and loss of life due to other factors. The war has led directly or indirectly to the deaths of thousands of civilians. The exact level of cumulative mortality linked to the conflict remains unknown. Several reviews have presented mortality data, although many do not reflect periods of counterinsurgency. They report a range of widely divergent estimates of the total death toll. Retrospective estimates of mortality must take account of the pattern and severity of the conflict, that is, the likelihood of conflict-related deaths, during the mortality recall period. Although the cumulative death toll due to the conflict is unknown, the change in mortality since the international humanitarian response got under way in late 2004 (15 months into the conflict) is known. CMR fell from 0.72 per 10,000 per day in February to August 2004 to 0.46 per 10,000 per day. Similarly, mortality rates for the under-fives fell from 1.03 per 10,000 per day to 0.79 per 10,000 per day (Young 2007).

Research by Professor Reeves from Smith College Massachusetts estimated 200,000 people had been killed by violence in Darfur from the onset of the conflict in 2003 to when he published his findings in August 2004. Using data from the UN and NGOs, he estimated that a further 80,000–100,000 were dead from disease and malnutrition. By March 2005, Reeves estimated that 380,000 people in Darfur had died from disease and violence-related causes since the onset of the war. He estimated that the death rate from all causes could rise to 15,000 per month, as food supply and security conditions deteriorate in the absence of cohesive political action to bring the conflict to a close. In studies that focused on violent deaths, there is an incomplete discussion of the fact that many of the deaths attributed to malnutrition and disease are themselves conflict-related. Deaths from malnutrition and disease in many cases would not have occurred had the war not driven these people from their homes, villages and means of livelihood. Further research should be carefully designed to take into account the possibility that all excess non-war related deaths including those from disease, malnutrition, or trauma such as road accidents or suicide, could arguably be attributable to conflict. (Leaning & Van Rooyen 2005).

The CDC and WFP's (2004) emergency nutrition assessment of crisis affected populations in Darfur Region, Sudan stated that current mortality rates do not predict future mortality. However, as high levels of malnutrition were reported in 2004, substantial mortality is expected in subsequent months if conditions do not improve. With this type of crisis, a window of opportunity exists during which effective interventions – implemented immediately – may prevent future mortality. The results from this survey suggest that the nutritional status

in Darfur in 2004 was alarming and that coverage of nutrition and essential public health programs was poor. Mortality rates were found to be higher amongst displaced people compared with residents and higher among internally displaced peoples (IDPs) living in camps and spontaneous settlements than those living with the host community and crisis affected residents (although these differences were not statistically significant). It was recommended that, taking into account the high prevalence of acute malnutrition, selective feeding programs were implemented. This would both serve to avert the mortality associated with malnutrition, as well as to prevent vulnerable populations from becoming malnourished. Measles prevention was also recommended as a priority in emergencies given the elevated malnutrition and mortality rates associated with outbreaks. Other communicable diseases frequently reported among children 6–59 months of age, such as malaria/fever and respiratory infections, further exacerbate malnutrition. The relationship between malnutrition and infection is synergistic. Malnutrition increases a child's susceptibility to infections and infection increases the likelihood of malnutrition. Malnutrition cannot be addressed in a vacuum of food and nutritional interventions (CDC & WFP 2004).

Ó Gráda (2011) argues that it is not correct to blame all earlier famines on over-population and to not consider the role of human agency. Many famines were caused or exacerbated by wars. At least some of the famine associated excess mortality might have been avoided by more effective human action. The concept that political elites might have done more to avert or mitigate disaster is not new, with evidence of this belief or similar going back much further than the nineteenth century.

Nutrition-related mortality and disease

Data recorded during the famine in Mozambique in the early 1980s suggests the most common causes of death were diarrhoea (27%), malnutrition (35%), and trauma (9%). Highest mortality rates were among children less than one year old (146 per 1000 per year) and among males (125 per 1000 per year). The overall morbidity rate was 283 illnesses per 1000 persons per month during the preceding month with the most common diagnoses being diarrhoea (44%), malnutrition (32%), and malaria (7%) (Rutherford and Mahanjane 1985).

Data gathered in Somalia in 1992 found that although mortality rates for all displaced persons were high, people living in temporary camps were at highest risk of death. Preventable infectious diseases such as measles and diarrhoea were found to be the primary causes of death. This finding is consistent with evidence from other famine-related disasters. Community-based public health interventions would prevent and control common infectious diseases and would have reduced the exceptionally high mortality rates experienced in Somalia during the famine in the early 1990s (Moore et al 1992).

Iodine deficiency disorders (IDD) are known to be a major global cause of morbidity, mortality and impaired development. Universal salt iodisation (USI) is known to be extremely effective at reducing the prevalence of IDD. Although no data is presented on mortality linked to IDD in Sudan, evidence indicates that in 2007 the IDD problem was widespread and severe, particularly in Darfur and Blue Nile state. (Bani 2007).

Therapeutic feeding programmes have been shown to effectively reduce malnutrition-related mortality in complex emergencies. These programmes can be set up in hospitals or other health facilities or in temporary structures. Guidelines and manuals for best practice are available. Vitamin A supplementation in emergencies provided to all children can prevent vitamin A deficiency, and to reduce the risk of mortality, eye diseases, and other sequelae of measles. Exclusive breastfeeding where appropriate can also reduce morbidity and mortality in emergency situations. It can reduce the impact from a range of infectious diseases including diarrhoea, in situations where hygiene and care practices might be compromised and overcrowding is common (Young et al. 2004).

Data gathered in 1998 in Aweil West, South Sudan, found that the CMR was approximately 1.2 per 10,000 per day and the under-five mortality rate 2.4 per 10,000 per day, indicating a serious situation. The high prevalence of wasting found was unlikely to be purely a result of low food availability and inadequate calorific intake. It was more likely to be due to secondary malnutrition as a consequence of other illnesses such as gastro-intestinal disease. With less than 10% of the population having access to clean water, diarrhoeal disease is the major cause of under-five mortality and morbidity. The programmatic response required should have emphasised clean water and adequate sanitation and hygiene, as well as the nutritional rehabilitation of the malnourished (Borrel and Salama 1999).

Data from Ajiep, South Sudan, gathered in 1998 found that a substantial portion of the mortality in the later months of the famine was likely to be a result of a combination of adult and adolescent malnutrition alone and in combination with shigella dysentery. An inappropriately low amount of resources were found to be targeted towards acutely malnourished adults and adolescents. The response represented a failure to prioritise rational relief interventions in order to address the vital needs of segments of the population (Borrel and Salama 1999).

5. Annotated bibliography

Bani I. 2007. Accelerating progress on salt iodisation in Sudan: time for action. Disasters Special Issue: Food security in Sudan; 31 (s1): S139–S149
http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7717.2007.00354.x/epdf

This paper uses a public health approach to examine briefly: (a) the progress of universal salt iodisation (USI) in Sudan; (b) the roles of the main actors involved; and (c) the main issues around accelerating USI. The literature, especially that coming from the UN agencies, is analysed and experiences from the recently revitalised USI programme, and related relevant meetings, are distilled. In Sudan the prevalence of goitre is 22 per cent. It is assumed that productivity among the people affected is reduced by 5–25 per cent. Little apparent progress has been made with USI. The Government of Sudan, UN multilateral agencies, international consultative groups, bilateral agencies, global and national non-governmental organisations and, increasingly, the private sector must work together to find innovative approaches to increase awareness of the broader social, public health and nutritional contexts, and to advocate for increased national and international funding.

Biellika R and Henderson P. 1981. Mortality, nutritional status and dietary conditions in a food deficit region: North Teso District, Uganda, December, 1980. Ecology of Food and Nutrition; 11 (3)
http://www.tandfonline.com/doi/abs/10.1080/03670244.1981.9990672#.Veg0APlVhBc

Although the effects of food deficits are not currently severe, it is vital to monitor the continuing drought and civil chaos in the event the situation in Teso District deteriorates seriously during 1981. Areas adjacent to famine-stricken Karamoja District in Uganda including Teso District were identified by the UN as suffering the effects of drought and civil disruption. In December, 1980, a study of mortality, nutritional status and dietary conditions was undertaken in North Teso.

Using anthropometric data as a basis for the nutritional assessment of 415 randomly selected children ≤110 cm. in height a prevalence of 0.2 percent moderate acute malnutrition was found. Interviews in 200 randomly selected households revealed that the CMR and the infant mortality rate exceeded 1969 census findings by 140 percent and 72 percent respectively. Relief food commodities distributed by CARE were found to be eaten the previous day in only

five percent of households. Field observations confirmed respondents' complaints that food aid distribution was seriously deficient.

Borrel A and Salama P. 1999. Public Nutrition from an approach to a discipline: Conern's nutrition case-studies in complex emergencies. Disasters 23 (4): 326-342.
http://onlinelibrary.wiley.com/doi/10.1111/1467-7717.00122/abstract

The Public Nutrition approach, like that of Public Health, is context specific. It places an emphasis on populations rather than individuals and is inter-disciplinary in nature. Both approaches seek to understand the complex aetiology of a clinical outcome such as malnutrition within the widest possible framework. Public Nutrition uses the UNICEF conceptual framework and adapts and expands it. The authors of this article argue – through the examination of a number of case studies taken from the work of Concern Worldwide (hereafter referred to as Concern) in southern Sudan, Rwanda, Angola, Tanzania and DRC – that there are two critical constituents of the Public Nutrition approach. These are: a contextual analysis (including the use of surveillance information for programme design and advocacy) and community involvement at all stages of the project cycle. Some of the key obstacles to the adoption of the Public Nutrition approach are identified by illustrating two practical programme settings. For the Public Nutrition approach to be more widely used, the authors recommend a number of key strategies including the further dissemination of case studies and the clarification of the scope and boundaries of the approach. These strategies will enable Public Nutrition to evolve both as a practical programme framework as well as an academic discipline.

Boss L, Toole M and Yip R. 1994. Assessments of Mortality, Morbidity, and Nutritional Status in Somalia During the 1991-1992 Famine Recommendations for Standardization of Methods. Journal of the American Medical Association; 272 (5)
http://jama.jamanetwork.com/article.aspx?articleid=377218

The objective of this paper was to evaluate the various survey methods used in Somalia between 1991 and early 1993 while assessing documentation of mortality and malnutrition rates and common causes of morbidity and mortality. Twenty-three population surveys were identified from the Center for Public Health Surveillance for Somalia, the United Nations Children's Fund, and other humanitarian organisations. Only surveys with defined populations and apparently systematic methodology that focused on mortality, morbidity, and/or nutritional status were included.

Extensive methodological differences were found among the 23 surveys. Target populations and sampling strategies varied widely. Twelve studies were considered not reproducible. Of the 16 studies assessing mortality, only eight assessed cause of death. Use of units of measurement and inclusion of denominators in rate calculations were inconsistent. None of the studies provided confidence intervals around the point estimates of the rates. Of the 11 studies providing information on morbidity, none provided case definitions. And in the 16 studies reporting nutritional status, a variety of measurement methods and definitions of malnutrition were used. Three studies presented information based on mid upper-arm circumference measurements, and 10 presented weight-for-height data below 70% and 80% of the reference median; only four studies presented Z scores.

While the results of some studies may have influenced policy and program management decisions, their effects may have been limited by failure to adequately document results and by differences among studies in objectives, design, parameters measured, methods of measurement, definitions, and analysis methods. We recommend that agencies conducting population studies in emergency situations define clear study objectives, use standard sampling and data collection methods, and ensure precise written documentation of study objectives, methods, and results

CDC (Centers for Disease Control and Prevention) and WFP (World Food Programme). 2004. Emergency Nutrition Assessment of Crisis Affected Populations: Darfur Region, Sudan. August to September 2004, UN WFP and International Emergency and Refugee Health Branch, National Center for Environmental Health, CDC
http://reliefweb.int/sites/reliefweb.int/files/resources/62DF98FF8A3F723F49256F3A0005323B-wfp-sdn-26ocr.pdf

This report provides an emergency nutrition assessment of crisis affected populations of the Darfur Region, Sudan. The overall goal of this survey was to assess the health and nutritional status of children 6 to 59 months of age and their mothers among resident and IDPs identified in the UN humanitarian profile of crisis affected populations. This assessment will be used to establish baseline data and to provide recommendations to WFP and national and international organisations providing health and nutrition services. The situation in Darfur was found to be critical and insecurity continues to hamper humanitarian interventions. Improving and providing a full general ration should be a priority to address malnutrition and micronutrient deficiencies. This alone, however, is not sufficient to reduce the prevalence of malnutrition. It is essential that measles coverage be increased, especially where crowded conditions exist. A basic minimum package of public health interventions must accompany food and nutrition activities. Health and nutrition activities cannot exist in isolation; they need to be integrated in order to best serve the population in need. It is important to recognise that there are limitations in the ability to cover and reach all areas of Darfur. However, in those areas, which are being reached, especially camps and spontaneous settlements where conditions are extremely crowded, programs must be improved to meet minimum standards. Crude and under-5 mortality rates averaged across the entire 1.6 million crisis-affected population did not surpass emergency thresholds for the 7 months before the survey. However, data suggest that mortality is highly clustered and mortality rates may be substantially higher among sub-groups. With high levels of malnutrition, substantial mortality is to be expected in the coming months if conditions continue to deteriorate. The time to act in order to prevent excess mortality is now.

Checchi F and Robinson W. 2013. Mortality among populations of southern and central Somalia affected by severe food insecurity and famine during 2010-2012. FAO/FSNAU and FEWS NET
http://www.fsnau.org/downloads/Somalia_Mortality_Estimates_Final_Report_8May2013_upload.pdf

Between late 2010 and early 2012, southern and central Somalia experienced severe food insecurity and malnutrition precipitated by a prolonged period of drought resulting in the poorest harvests since the 1992-1993 famine. The effects of the drought were compounded by various factors including decreased humanitarian assistance and increasing food prices. Furthermore, this emergency occurred against a backdrop of heightened insecurity and persistent high levels of acute malnutrition, and affected populations whose resilience mechanisms had already been weakened over the past few years by a protracted crisis featuring a combination of armed conflict, natural disasters and adverse economic conditions. The evolving humanitarian emergency situation was detected in a timely way by existing early warning systems run by the United Nations Food and Agriculture Organisation's Food Security and Nutrition Analysis Unit for Somalia (FAO/FSNAU) and the USAID-funded Famine Early Warning Systems Network (FEWS NET). By July 2011, based on criteria established by the multi-partner Integrated Food Security Phase Classification (IPC, an analysis template used globally for determining relative severity of food insecurity), the United Nations declared famine in several regions of Somalia. Based on further data and information collected on food security and nutritional status, disease and mortality, additional regions were designated as famine-affected over the subsequent two months. As a result of this emergency, during 2011 large numbers of people were internally displaced within Somalia or migrated to already overcrowded refugee camp complexes in Dollo Ado (Ethiopia) and Dadaab (Kenya). Measles, cholera and other epidemics, which typically accompany

situations of greatly deteriorated nutritional status of the population, were also reported from nearly all affected regions. This study was commissioned by FAO/FSNAU, and FEWS NET, in order to produce an estimate of the number of deaths during the 2011 Somalia famine, and among refugees displaced to camps in Ethiopia (Dollo Ado) and Kenya (Dadaab).

Devereux S. 2009. Why does famine persist in Africa? Food Security; 1 (1): 25-35 http://link.springer.com/article/10.1007/s12571-008-0005-8

Famines were apparently eradicated from Asia and Europe during the twentieth century, but not from Africa, where three countries—Ethiopia, Malawi and Niger—have suffered mass mortality food crises since 2000. This paper locates the persistence of famine in Africa in simultaneous or sequential failures of food supply, demand for food, and humanitarian responses. Each of the three recent crises was triggered by a moderate decline in crop and/or livestock production, exacerbated by 'exchange entitlement failures'—food price spikes and asset price collapses. The critical analytical question, however, is not why these famines happened, but why they were not prevented. Information failure is rejected as an explanatory factor in favour of ineffective and inappropriate interventions, adverse relations between governments and donor agencies at critical moments, and unaccountability for famine prevention in low-income countries with weak democracies and interventionist development partners.

Devereux S. 2000. Famine in the Twentieth Century. IDS Working Paper 105. Institute of Development Studies, Brighton UK.
http://www.ids.ac.uk/download.cfm?objectid=DE300EAE-5056-8171-7BF6CA86553CE559

More than 70 million people died in famines in the twentieth century. This working paper compiles data from over 30 major famines and has assessed the success of some parts of the world, notably China, the Soviet Union, India and Bangladesh in apparently eradicating mass mortality food crises. The author contrasts this with the experience of sub-Saharan Africa, where famines triggered by the relationship between drought and civil war have become endemic since the late 1960s. Devereux argues that if famine is to be eradicated during the twenty-first century, it requires not only technical capacity in terms of food production and distribution, but also substantially more political will, at national and international levels, than has been seen to date.

FEWS NET 2015. The Famine Early Warning Systems Network. Website:
http://www.fews.net/about-us

The Famine Early Warning Systems Network (FEWS NET) is a leading provider of early warning and analysis on acute food insecurity. Created in 1985 by the US Agency for International Development (USAID) after devastating famines in East and West Africa, FEWS NET provides objective, evidence-based analysis to help government decision-makers and relief agencies plan for and respond to humanitarian crises.

IPC. 2015. Integrated Food Security Phase Classification. Website:
http://www.ipcinfo.org/home/en/

The Integrated Food Security Phase Classification (IPC) is an innovative tool for improving food security analysis and decision-making. It is a standardised scale that integrates food security, nutrition and livelihood information into a clear statement about the nature and severity of food insecurity and implications for strategic response. The IPC was originally developed for use in Somalia by FAO's Food Security and Nutrition Analysis Unit (FSNAU). Since then, several national governments and international agencies have introduced it in different food security contexts and is now being used in over 25 countries in Latin America, Africa, and Asia.

Katona-Apte J and Mokdad A. 1998. Malnutrition of Children in the Democratic People's Republic of North Korea. Journal of Nutrition; 128 (8)
http://jn.nutrition.org/content/128/8/1315.full.pdf+html

Natural disasters have caused extensive damage to crops and to infrastructure in the Democratic People's Republic of North Korea (DPRK). The international community has responded by providing emergency food aid. To improve understanding of the magnitude of food deficiency in the DPRK. The World Food Programme (WFP) conducted a nutritional assessment survey in August 1997. The survey measured the height and weight of a total of 3984 children <7 y of age in 40 government-selected institutions. Additional information was obtained on institutional access to food and on the care, treatment and parental support of a subsample of severely malnourished and nonmalnourished children. The prevalence of acute malnutrition (wasting), based on weight-for-height Z-score < −2, varied from 0 to 32.7% among institutions, and the prevalence of chronic malnutrition (stunting), based on height-for-age < −2 Z-score varied from 0.6 to 74.1%. The findings from this survey indicate the presence of areas with severe acute or chronic malnutrition in the DPRK.

Keen D. 1991. A disaster for whom?: Local interests and international donors during famine among the Dinka of Sudan. Disasters; 15: 58 - 73.
http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7717.1991.tb00444.x/epdf

The 1985–88 famine amongst the Dinka is described and shown to have been rooted in the long term exploitation of the south by northern Sudanese and international interests. This process of exploitation served, and continues to serve, important functions for particular groups. Some of the ways in which the 1985–88 famine was functional – for the central government, the army and merchants – are outlined and the implications for relief operations considered. It is argued that international donors had considerable “room for manoeuvre” which they could have used to adopt more effective policies. They only did so after the worst of the mortality was over.

Keen D. 1994. The Benefits of Famine. Princeton University Press, Princeton USA.
http://press.princeton.edu/titles/5465.html

This book argues that famines, such as that which devastated the Dinka of Sudan in the 1980s, often have powerful beneficiaries within the affected nation, including political elites and traders. Meanwhile, shortcomings in the manner of international intervention, while contributing to famine, may offer significant political and bureaucratic benefits for international donors. Famine is not necessarily an apocalyptic natural disaster: it may have functions as well as causes. Drawing on a range of historical information and the accounts of famine sufferers, aid providers, and government officials, the author explains the causes of the Sudanese famine, extracting vital lessons about the future of effective famine relief. Identifying those Sudanese interests that actively promoted famine and obstructed relief, the author shows how the assets of the politically powerless Dinka were forcibly transferred to beneficiary groups. In a sense, and contrary to the emphasis of Amartya Sen, it was the Dinkas' wealth, rather than their poverty, which exposed them to famine in a context where they lacked political redress against exploitation. For the most part, international donors failed to counteract the processes leading to famine or to speak up on behalf of those who lacked political influence in their own society. At a time when the effectiveness of the U.N. and the international community in such crises is increasingly being questioned, this provocative work provides compelling evidence of flaws in current thinking about humanitarian intervention and in its practice.

Keen D & Lee V. 2007. Conflict, trade and the medium-term future of food security in Sudan. Disasters Special Issue: Food security in Sudan; 31 (s1): S9–S24
http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7717.2007.00346.x/abstract

Recent economic growth and the Comprehensive Peace Agreement (CPA) have both been seen as grounds for optimism about the future of food security in Sudan. However, solving the North- South conflict (if indeed it is solved) does not resolve conflicts within either the North or the South and may even encourage a variety of conflicts. The classic neoliberal prescription of peace, growth and foreign investment may deepen (and obscure) the needs and grievances of those who have historically been left behind in a dysfunctional development process. Historically, some of those marginalised by patterns of development in Sudan have chosen to rebel, while others have had their grievances diverted against those even more marginal than themselves. Dysfunctional and violent processes of development must be reversed. They cannot be adequately compensated for-but may be legitimised-by attempts to use food aid as a 'safety net'. Meanwhile, those who benefited from war may have incentives to derail the peace.

Leaning J & Van Rooyen M. 2005. An assessment of mortality studies in Darfur, 2004–2005. Humanitarian Exchange; 30: 23–26
http://www.alnap.org/pool/files/humanitarianexchange030.pdf

War epidemiology has emerged as a powerful tool for expanding our understanding of the impact of war on civilians, and for influencing policy aimed at protecting civilians from systematic harm. Mortality statistics generated from rigorous field studies can raise awareness of increased risk among vulnerable populations, and can serve as evidence that military groups and civilian combatants have violated wartime codes of conduct. Recent mortality studies illustrate the widespread (and often controversial) attention that statistical evidence of civilian casualties can generate. The results of these careful mortality assessments are not easily ignored, and have sparked serious debate among policy-makers and humanitarian organisations.

Macrae J, Bradbury M, Jaspars S, Johnson D and Duffield M. 1997. Conflict, the Continuum and Chronic Emergencies: A Critical Analysis of the Scope for Linking Relief, Rehabilitation and Development Planning in Sudan. Disasters; 21 (3): 223 - 43
http://onlinelibrary.wiley.com/doi/10.1111/1467-7717.00058/epdf

The concept of the 'relief-to-development continuum' has been the subject of renewed interest in recent years. Concerned by the rise in relief budgets over the past decade and the absolute fall in development aid resources, support has been growing for the concept of developmental relief. In the context of complex political emergencies, it has been argued further that as effective development aid can reduce vulnerability to the impact of natural hazards, so it might also be used to contribute to a process of conflict prevention. In this way, the concept of the relief-development continuum has become entwined with broader discussions about the contribution of official development assistance to conflict management.

Drawing on a Review of Operation Lifeline Sudan (OLS), this paper cautions against uncritical application of the concept of the continuum in complex political emergencies, and of rehabilitation in particular, in the current Sudanese context. It argues that in order to move legitimately from relief aid programming to development aid programming, three fundamental conditions must be in place: first, a minimum level of security, respect for human rights and humanitarian access. Second, empirical evidence from the field needs to demonstrate that the emergency is over. Finally, moving from relief to development aid programming is contingent on donor governments accepting the legitimacy of national governmental structures and of the rebel movements. In other words, for donor governments, moving along the continuum is in significant part determined by foreign policy considerations, not only technical ones. Consideration needs to be given to the actual and perceived legitimation of the different movements that a move to rehabilitation might be seen to imply.

The paper argues that none of these conditions had been satisfied in Sudan by mid-1997. Instead of a process of normalisation paving the way to long-term development, the current situation in Sudan is better described as a chronic political emergency. In such a context, uncritical pursuit of developmental strategies may negatively affect the welfare of conflict-affected populations.

Maxwell D & Fitzpatrick M. 2012. The 2011 Somalia famine: Context, causes, and complications. Global Food Security; 1 (1): 5–12
http://www.sciencedirect.com/science/article/pii/S221191241200003X

On July 20, 2011, the UN declared a famine in southern Somalia, affecting some 3.1 million people. Although largely described by the media as being caused by drought, the Somalia famine of 2011 was caused by multiple factors—including drought, but also conflict, rapidly-rising global food prices, and other long-standing, structural factors. The response to the famine was substantially complicated by several more factors, which combined to make the crisis worse. These include constrained humanitarian access, and the absence of the World Food Programme. This article analyses these factors, and poses a set of questions, many of which are addressed by other articles in this issue.

Millard Burr J and Collins R. 1994. Requiem for the Sudan - War, Drought, and Disaster Relief on the Nile. Westview press, Colorado.
https://westviewpress.com/books/requiem-for-the-sudan/

After a decade of uneasy peace, the historic conflict between the Northern Sudanese, who identify with their Middle Eastern neighbours, and the Southern Sudanese, who are of African heritage, erupted into violent conflict in 1983. This ferocious civil war, with its Arab militias and widespread use of automatic weapons, has devastated the populace. Nature has added to the miseries of war, bringing drought and famine to the already battered victims of violence. Although this regional calamity remains largely unknown to the outside world, the death toll among the Southern Sudanese far exceeds that in both Somalia or Bosnia. Over a million people have either perished or been displaced.

This chilling account of the ravages of drought and civil war is based on a wealth of documents — never made public — from Sudanese government sources, private and foreign governmental aid agencies, research groups, international media, and other organisations involved in famine relief efforts. The authors graphically recount how the attempts of the international agencies and humanitarian organisations to provide food and medical relief have been thwarted by bureaucratic infighting, corruption, greed, and ineptitude.

This rich narrative illustrates with great clarity the convoluted relationship that relief agencies had with the Sudanese government as they tried to negotiate the means of survival for the area's desperate population. It is a sad tale of the tragic human consequences of the failure of conflict resolution, of organisational mismanagement, and of a government hostile toward its own people.

Moore P, Marfin A, Quenemoen L, Gessner B, Miller D, Toole M, Ayub Y and Sullivan K. 1993. Mortality rates in displaced and resident populations of central Somalia during 1992 famine. The Lancet; 341 (8850): 935–938
http://www.sciencedirect.com/science/article/pii/0140673693912239

Famine and civil war have resulted in high mortality rates and large population displacements in Somalia. To assess mortality rates and risk factors for mortality, we carried out surveys in the central Somali towns of Afgoi and Baidoa in November and December, 1992. In Baidoa the authors surveyed displaced persons living in camps; the average daily CMR was 16.8 (95% CI 14.6-19.1) per 10 000 population during the 232 days before the survey. An estimated 74% of children under 5 years living in displaced persons camps died during this

period. In Afgoi, where both displaced and resident populations were surveyed, the CMR was 4.7 (3.9-5.5) deaths per 10 000 per day. Although mortality rates for all displaced persons were high, people living in temporary camps were at highest risk of death. As in other famine-related disasters, preventable infectious diseases such as measles and diarrhoea were the primary causes of death in both towns. These mortality rates are among the highest documented for a civilian population over a long period. Community-based public health interventions to prevent and control common infectious diseases are needed to reduce these exceptionally high mortality rates in Somalia.

Ó Gráda. 2009. Famine: A Short History. Princeton University Press, Princeton USA. http://press.princeton.edu/titles/8857.html

Famine remains one of the worst calamities that can befall a society. Mass starvation - whether it is inflicted by drought or engineered by misguided or genocidal economic policies - devastates families, weakens the social fabric, and undermines political stability. This book traces the complete history of famine from the earliest records to today. Combining storytelling with the latest evidence from economics and history, this book explores the causes and profound consequences of famine over the past five millennia, from ancient Egypt to the killing fields of 1970s Cambodia, from the Great Famine of fourteenth-century Europe to the famine in Niger in 2005. He enriches our understanding of the most crucial and far-reaching aspects of famine, including the roles that population pressure, public policy, and human agency play in causing famine; how food markets can mitigate famine or make it worse; famine's long-term demographic consequences; and the successes and failures of globalised disaster relief. The central role famine has played in the economic and political histories of places is examined.

Ó Gráda C. 2011. Famines past, famine's future. Development and Change; 42 (1): 49 – 69
http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7660.2010.01677.x/epdf

Famine, like poverty, has always been with us. No region and no century has been immune. Its scars — economic, psychological and political — can long outlast its immediate impact on mortality and health. Famines are a hallmark of economic backwardness, and were thus more likely to occur in the pre-industrialised past. Yet the twentieth century suffered some of the most devastating ever recorded. That century also saw shifts in both the causes and symptoms of famine. This new century's famines have been 'small' by historical standards, and the threat of major ones seemingly confined to ever-smaller pockets of the globe. Are these shifts a sign of hope for the future?

Ó Gráda C. 2015. A. Famine and the changing role of NGOs: an Irish perspective. European Review of History.
http://www.tandfonline.com/doi/full/10.1080/13507486.2015.1048192#.VebxvZe8SZA

The paper discusses how the recent history of famine has influenced the mission of relief-oriented non-governmental organisations (NGOs). It notes that international NGOs have two main reasons for highlighting the risks of excess mortality during food crises. Firstly, their warnings lead to action on part of international agencies. Secondly, they prompt a response from private donors.

Ó Gráda C. 2015. B. Famine is the not the problem: a historical perspective. Historical Research; 88 (239)
http://onlinelibrary.wiley.com/doi/10.1111/1468-2281.12080/epdf

Thanks to the globalisation of relief and increasing global food output, the famines of the twenty-first century (so far), Somalia (civil war) and North Korea (autarky) apart, have been small. Today malnutrition is a much more intractable and pressing problem than famine, even

though the proportion of the world's poor that is malnourished has been declining. Moreover, although the prospects for avoiding famines in peacetime in the short run are good, global warming looms in the medium term. These contrasting signals are not lost on international non-governmental organisations.

Rutherford G and Mahanjane A. 1985. Morbidity and Mortality in the Mozambican Famine of 1983: Prevalence of Malnutrition and Causes and Rates of Death and Illness among Dislocated Persons in Gaza and Inhambane Provinces. Journal of Tropical Pediatrics; 31 (3): 143 – 149
http://tropej.oxfordjournals.org/content/31/3/143.short

To assess the medical needs of persons dislocated by drought and insurgency in Gaza and Inhambane Provinces, Mozambique, two studies were conducted. In the first, heights and weights of a random sample of 656 children from six villages and camps were measured. The prevalence of acute malnutrition (defined as weight for height less than 80 per cent of the median) was 12 per cent in Gaza, 28 per cent in Inhambane, and 19 per cent overall. Two per cent of children in this survey had pretibial edema suggestive of kwashiorkor. In the second study, causes and rates of morbidity and mortality were surveyed in 207 families (comprising 987 persons) in four villages and camps. Mortality rates were 70 deaths per 1000 persons per year during the preceding year in Gaza, 139 per 1000 per year in Inhambane, and 96 per 1000 per year overall with the most common causes being diarrhea (27 per cent), malnutrition (35 per cent), and trauma (9 per cent). Highest mortality rates were among children less than one year old (146 per 1000 per year) and among males (125 per 1000 per year). The overall morbidity rate was 283 illnesses per 1000 persons per month during the preceding month with the most common diagnoses being diarrhea (44 per cent), malnutrition (32 per cent), and malaria (7 per cent). On the bases of the exceptionally high prevalence of acute malnutrition and the high morbidity and mortality rates among dislocated persons in these two provinces, a relief program emphasising food and food distribution was recommended.

Salama P, Assefa F, Talley L, Spiegel P, van der Veen A & Gotway C. 2001. Malnutrition, measles, mortality, and the humanitarian response during a famine in Ethiopia. JAMA; 286 (5): 563–571
http://ftp.columbia.edu/itc/hs/pubhealth/p8473/misc/salama_lec5.pdf

The World Food Programme estimated that 10 million people were at risk of starvation in Ethiopia in 2000 but later reported that a famine had been averted. However, no population-based data on mortality or nutrition existed for Gode district, at the epicenter of the famine in the Somali region of Ethiopia. The objectives of this study were to estimate mortality rates, determine the major causes of death, and estimate the prevalence of malnutrition among children and adults for the population of Gode district. A two-stage cluster survey conducted from July 27 through August, 2000, which included anthropometric measures and 8-month retrospective mortality data collection. A total of 595 households comprising 4032 people living in Gode district of Ethiopia. The main outcome measures were CMR and mortality rates for children younger than 5 years, causes of death, weight for height of less than −2 Z scores among children aged 6 months to 5 years, and body mass index of less than 18.5 kg/m2 among adults and older persons.

The results indicated that of the 595 households, 346 (58.2%) were displaced from their usual places of residence. From December 1999 through July 2000, a total of 293 deaths occurred in the sample population; 159 (54.3%) deaths were among children younger than 5 years and 72 (24.6%) were among children aged 5 to 14 years. The CMR was 3.2/10000 per day (95% confidence interval [CI], 2.4-3.8/10000 per day), which is 3 times the cut-off used to define an emergency. The mortality rate for children younger than 5 years was 6.8/10000 per day (95% CI, 5.4-8.2/10000 per day). Approximately 77% of deaths occurred before major relief interventions began in April/May 2000. Wasting contributed to 72.3% of all deaths

among children younger than 5 years. Measles alone or in combination with wasting accounted for 35 (22.0%) of 159 deaths among children younger than 5 years and for 12 (16.7%) of 72 deaths among children aged 5 to 14 years. The prevalence rate for wasting (weight for height of −2 Z score) among children aged 6 months to 5 years was 29.1% (95% CI, 24.7%-33.4%). Using a method to adjust body mass index for body shape, the prevalence of undernutrition (body mass index,18.5 kg/m2) among adults aged 18 to 59 years was 22.7% (95% CI, 17.9%-27.5%). The authors conclude that to prevent unnecessary deaths, the humanitarian response to famine needs to be rapid, well-coordinated, and based on sound epidemiological evidence. Public health interventions, such as mass measles vaccination campaigns with coverage extended to children aged 12 to 15 years should be implemented as the first priority. The prevalence of wasting and undernutrition among children and adults, respectively, should be assessed in all prolonged, severe famines.

Salama P, Moloney G, Bilukha O, Talley L, Maxwell D, Hailey P, Hillbruner C, Masese-Mwirigi L, Odundo E, Golden M. 2012. Famine in Somalia: Evidence for a declaration. Global Food Security; 1 (1): 13 – 19
http://www.sciencedirect.com/science/article/pii/S2211912412000119

On 20 July 2011, for the first time since 1991–1992, the United Nations declared famine in parts of Somalia. This paper reports the methods, data and analysis that underpinned this declaration along with the review of trends in mortality and malnutrition. During July 2011, 16 population-based nutrition and mortality surveys were conducted in southern Somalia. Data on food access, collected through seasonal assessments and monthly monitoring, were analysed using Household Economy methods. In 11 of 16 survey locations, the prevalence of GAM exceeded the Integrated Food Security Phase Classification threshold for Phase 5 (Famine) of 30%. In five areas, Crude Death Rates exceeded the Integrated Food Security Phase Classification Phase 5 (Famine) threshold of 2/10,000/day. In agro-pastoral zones of the south, where access was most limited, more than 20% of households faced extreme food shortages. Survey findings and analysis confirm that a famine occurred in parts of southern Somalia during 2011 and raise the question of why strong early warning analysis did not trigger an earlier, better funded and more effective, response.

Swift J. 1993. Understanding and Preventing Famine and Famine Mortality, IDS Bulletin; 24 (4).
https://www.ids.ac.uk/files/dmfile/swift24.4.pdf

Famine prevention is possible but requires, among other things, a better theoretical basis, building on comparative, interdisciplinary and historical research. Key aspects of that task concern, first, the relationship between starvation, disease and death. The historical record suggests that large scale famine mortality if often a direct consequence not so much of starvation as of disease, triggered by a collapse of everyday coping. (The evidence for this in Africa is not clear however.) A second theme is the complexity of famine causes and responses. Entitlement erosion is a key process, but so are production declines and asset management. Reduced consumption, rather than disposing of assets vital for recovery, is a well-documented and important reaction. Local collective coping, especially through redistribution of food, is a third theme. Such customary safety nets provided a minimum of food security to vulnerable households. In this perspective, the central famine process should be seen as economic and social breakdown and the collapse of organised coping, becoming in turn the trigger to increased vulnerability to disease. As a result mainly of the extension of the market and of state power, and the growth of population, collective coping strategies have become increasingly unviable. In the 'Indian' model, they have been successfully replaced in part by government-sponsored anti-famine policies and safety nets. In the 'African' model this has not happened: customary collective coping, often severely undermined, remains in places an important resort of vulnerable households and groups, and government has been unable to provide a viable alternative. Some implications of this for anti-famine policies are briefly discussed.

UNICEF. 2015. Acute Malnutrition Classification. Website:
http://www.unicef.org/nutrition/training/2.3/13.html

Technical definition of acute malnutrition.

World Food Programme. 2000. Findings and recommendations of the mission to Kenya and Ethiopia between 17–23 September 2000. World Food Programme, Rome
http://reliefweb.int/report/djibouti/un-special-envoy-horn-africa-findings-and-recommendations-mission-kenya-and-ethiopia

As part of the UN Secretary-General's initiative to address the drought crisis and promote longer-term food security in the Horn of Africa region, the Secretary-General appointed in March 2000 Ms. Catherine Bertini, Executive Director of the World Food Programme, as the UN Special Envoy of the Secretary-General for the drought in the Horn of Africa. The Special Envoy undertook her first mission to the region between 11-19 April. A second, follow-up mission took place between 17-23 September. This report details the findings. The main conclusion was that famine in the Horn of Africa had been averted.

World Food Programme. 2015. A. Yemen - Current issues and what the World Food Programme is doing. Website:
http://www.wfp.org/countries/yemen

This page details The World Food Programme's (WFP) Yemen response. It details how the WFP is helping people affected by the conflict, by delivering emergency food assistance and organising logistics.

World Food Programme. 2015. B. Sahel Crisis. Website:
http://www.wfp.org/crisis/sahel

This page details the World Food Programme's (WFP) response to the Sahel Crisis. It details how the WFP is currently reaching around 6 million people with food assistance across the region.

Young H. 2007. Looking beyond food aid to livelihoods, protection and partnerships: strategies for WFP in the Darfur states. Disasters Special Issue: Food security in Sudan; 31 (s1): S40–S56
http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7717.2007.00348.x/abstract

The humanitarian crisis in Darfur remains extremely serious. The optimism that followed the signing of the Abuja Peace Accord was followed by a rapid deterioration in security on the ground in part associated with increasing factionalism in various rebel movements. This paper briefly reviews the evolution of the crisis, its impact on lives and livelihoods and the response by the World Food Programme (WFP) to June 2006. The major challenges and issues facing the food aid programme in the previous 18 months included: dealing with insecurity while maintaining or even extending programme outreach; the need to link protection with assistance more explicitly; and determining the wider impact of food aid programming on the processes and institutions linked with the conflict. The paper discusses the main strategic issues facing WFP in the future such as: integrating security and protection with needs assessments and operational decisions, broadening response strategies beyond food aid and bringing livelihoods to the fore, the need to review cost-efficiency, promoting partnerships and strengthening national and regional capacities.

Young H and Jaspars S. 2006. Meaning and measurement of acute malnutrition, A Primer for Decision-Makers. Network Paper No 56, Humanitarian Practice Network, Overseas Development Institute.

http://www.odihpn.org/report.asp?id=2849

The prevalence of acute malnutrition is one of the most widely used indicators of the severity of humanitarian crises, and is endorsed by a wide array of UN organisations, donors, national governments and international agencies. Yet there is very little simple and straightforward guidance on how to conduct nutrition surveys, and how to understand and use their results. This Paper aims to fill this gap by helping decision-makers obtain and apply nutritional information and analysis. In non-technical language, it describes some of the basic concepts used in nutrition, sets out the purposes to which nutrition information is typically put, and explains how nutrition surveys are constructed and interpreted. The paper shows that malnutrition data can be used as an objective indicator of crisis. With better guidance on interpretation, acute malnutrition data can help in identifying the severity and nature of crisis, and thereby help identify appropriate responses to address malnutrition and its underlying causes.

Young H, Borrel A, Holland D and Salama P. 2004. Public nutrition in complex emergencies. The Lancet 364 (9448): 1899-1909.
http://www.sciencedirect.com/science/article/pii/S0140673604174473

Public nutrition is a broad-based, problem-solving approach to addressing malnutrition in complex emergencies that combines analysis of nutritional risk and vulnerability with action-oriented strategies, including policies, programmes, and capacity development. This paper focuses on six broad areas: nutritional assessment, distribution of a general food ration, prevention and treatment of moderate malnutrition, treatment of severe malnutrition in children and adults, prevention and treatment of micronutrient deficiency diseases, and nutritional support for at-risk groups, including infants, pregnant and lactating women, elderly people, and people living with HIV. Learning and documenting good practice from previous emergencies, the promotion of good practice in current emergencies, and adherence to international standards and guidelines have contributed to establishing the field of public nutrition. However, many practical challenges reduce the effectiveness of nutritional interventions in complex emergencies, and important research and programmatic questions remain.

6. Additional information

Author
This query response was prepared by **Dr Stephen Thompson (s.thompson@ids.ac.uk),** Institute of Development Studies

Contributors
Prof. Keith West, Department of International Health, Johns Hopkins
Prof. Cormac Ó Gráda, School of Economics, University College Dublin
Prof. David Keen, Department of International Development, London School of Economics
Prof. Helen Young, Friedman School of Nutrition Science and Policy, Tufts University
Kat Pittore – Health and Nutrition Cluster, Institute of Development Studies

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