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Health and Mortality of Internally Displaced Persons: Reviewing the Data and Defining Directions for Research

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Introduction

On April 3 1990, Centers for Disease Control (CDC) scientist Dr Michael Toole gave testimony before a U.S. Senate Subcommittee hearing on ‘Examining the effects of war and dislocation upon children.’ Commenting on the ‘poorly documented’ phenomenon of internal displacement and its effects on health and mortality, Toole stated:

[A]ccess by relief workers to internally displaced populations has been severely restricted by the political and security situation in areas where the displaced are situated. Those data that have been collected indicate that the plight of the internally displaced is very serious. For example, during 1988, several million people were displaced by the war in southern Sudan and located in various camps in the South Darfur and South Kordofan provinces of Sudan. CDC epidemiologists determined that death rates recorded in some of these camps were among the highest ever reported for civilian camp populations [...] death rates among the displaced were up to 60 times greater than those of non-displaced Sudanese. It is most likely, therefore, that more than 150,000 children died in southern Sudan during 1988 as a result of their displacement by war.²

Toole went on to cite malnutrition as the underlying cause of death in most cases, but also highlighted the communicable diseases common among displaced people that often

¹ The author would like to acknowledge helpful comments from Dr Khalid Koser and Dr Courtland Robinson

² Dr. Michael Toole, testimony before the U.S. Senate Subcommittee on Children, Family, Drugs and Alcoholism, Hearing on ‘Examining the Effects of War and Dislocation upon Children,’ April 3 1990, 20-21

constitute the primary cause of death, including measles, diarrhea, pneumonia, meningitis, and hepatitis. He noted in addition that severe crowding, inadequate food, shelter, water and sanitation in camps for displaced people, typically during the emergency phase, were critical factors behind the high death rates of these populations. Closing his remarks, Toole asserted, 'An institutional memory is lacking in refugee health. Standardizing lessons learned and effective approaches would be useful.'³

Over a decade and a half later, internally displaced persons (IDPs) have been more firmly placed on the agenda of international organizations, and institutional arrangements to meet the unique challenges of internal displacement have grown significantly. Research and monitoring of IDP situations throughout the world now provide us with essential information on their numbers and location. However, a 2002 report on 'Armed Conflict and Public Health' by the Centre for Research on the Epidemiology of Disasters (CRED) reviewed existing research and found that roughly 50 percent of studies reviewed were for refugee populations, 35 percent had residents as subjects, and only 15 percent were on IDPs.⁴ This distribution illustrates a substantial dearth of reliable information on internal displacement and health. There is a growing consensus among observers and practitioners that mortality, morbidity and malnutrition rates among IDPs remain high, relative to 'normal' national or regional rates of non-displaced people and refugees. Without a proper base of evidence, however, these accounts remain anecdotal and merit more thorough investigation using epidemiological methods for assessing population health. This paper reviews existing data on mortality and health indicators for IDP situations, identifies some of their limitations, and identifies an agenda for future research.

Rationale

Displacement impacts upon health in fundamental ways, often exposing populations to higher risks of disease and malnutrition. Although forcibly displaced people move to escape direct violence and the high mortality that it produces, they face new threats from overcrowding, poor sanitation, inadequate provision for basic needs, ongoing insecurity and an unfamiliar environment. These threats are often compounded by the status and location characteristic of internally displaced persons, who, remaining within their home state and sometimes within the conflict zone itself, are frequently inaccessible to international humanitarian agencies and lack the legal protections of refugee status.

IDPs may also be targets for violence or pawns in military conflict, and face armed attack, killings, abductions, injuries, and sexual and gender-based violence (SGBV). Psychological health may also be severely affected by displacement, conflict and disaster, and impact negatively upon other facets of health and security while being largely neglected as a priority in humanitarian responses. The loss of material assets and entitlements, and the disruption of important social and family networks all place IDPs in a position of greater vulnerability to disease and death. There are clear conceptual links

³ Ibid, p.22

⁴ CRED (Debaratie Guha-Sapir and Willem van Panhuis), 'Armed Conflict and Public Health: A Report on Knowledge and Knowledge Gaps,' Brussels, 2002: 13

between internal displacement, health and mortality, but what empirical evidence exists to substantiate them? The first objective of this paper is to review existing data with the aim of identifying gaps in knowledge of the health and mortality of IDPs.

A second rationale for this study is to inquire as to the fulfillment of the Guiding Principles on Internal Displacement generally, and their provisions relating to health specifically. A key innovation since the testimony with which this paper began was given, the Guiding Principles compile and restate existing international human rights and humanitarian law as they relate to IDPs.⁵ They therefore offer a crucial benchmark for assessing the status of IDPs and provide an indication of what knowledge is needed to further operationalize the Principles at national and international levels. The following sections relate directly to health:

Principle 18

1. All internally displaced persons have the right to an adequate standard of living.
2. At the minimum, regardless of the circumstances, and without discrimination, competent authorities shall provide internally displaced persons with and ensure safe access to:
 - (a) Essential food and potable water;
 - (b) Basic shelter and housing;
 - (c) Appropriate clothing; and
 - (d) Essential medical services and sanitation.
3. Special efforts should be made to ensure the full participation of women in the planning and distribution of these basic supplies.

Principle 19

1. All wounded and sick internally displaced persons as well as those with disabilities shall receive to the fullest extent practicable and with the least possible delay, the medical care and attention they require, without distinction on any grounds other than medical ones. When necessary, internally displaced persons shall have access to psychological and social services.
2. Special attention should be paid to the health needs of women, including access to female health care providers and services, such as reproductive health care, as well as appropriate counselling for victims of sexual and other abuses.
3. Special attention should also be given to the prevention of contagious and infectious diseases, including AIDS, among internally displaced persons.

The above principles suggest a need for IDP-specific data on access to adequate food, water, sanitation, shelter and basic health care services, and the prevalence and incidence of infectious diseases, including HIV/AIDS. Other areas of concern include reproductive health for women, and psycho-social health including services to victims of trauma. Data on mortality and major causes of death would offer an overall indicator of the fulfillment not only of the above provisions relating to health, but of the Guiding Principles more broadly and in particular provisions relating to protection from violence.

⁵ UN doc. E/CN.4/1998/53/Add.2 (1998) <http://www.unhcr.ch/html/menu2/7/b/principles.htm>

A third rationale for this study is to illuminate ongoing debates about the relationship between displacement and vulnerability, the types of vulnerability that arise and the best methods for measuring and responding to vulnerability in the context of internal displacement. Quantitative and qualitative data generated through sound and consistent epidemiological inquiry can shed important light on these debates. This means thinking further about how we can measure the impact of internal displacement dynamics on vulnerability to ill health and mortality, which is considered in a final section on directions for future research.

Assessing Population Health and Mortality in Complex Humanitarian Emergencies

IDP situations frequently present a very dynamic and volatile set of conditions that impact upon population health, making knowledge acquisition and effective intervention difficult. Planning and design are inevitably compromised to some extent by security conditions, political interference, unpredictable population movements and other developments affecting the methodological environment. A number of methods are used for assessing population health in emergencies, including focus groups, key informant interviews and community mapping. Perhaps the most common is the retrospective, household-based cluster survey. It is a form of probability sampling and is most useful when a population is geographically dispersed or when a sampling frame is not available. Crude mortality rate (CMR) is widely accepted as one of the most useful indicators for evaluating population health, particularly in the emergency phase of a humanitarian crisis.⁶ The mortality rate for children under age 5 (U5MR) is also considered a key indicator of vulnerability.

Humanitarian relief agencies have established threshold levels for each measure that constitute an ‘emergency’ situation (Table 1), indicating a need for timely and concerted action to reduce suffering.

Table 1 UNHCR Emergency Thresholds⁷

Crude Mortality Rate (CMR)	1.0 deaths / 10 000 population / day
Under 5 Mortality Rate (URMR)	2.0 deaths / 10 000 population / day

Toole and Waldman suggest, for a more context-specific indicator of severity, that a doubling of the baseline mortality rate should be considered a health emergency.⁸ The Sphere Project offers regional baseline mortality rates (in deaths/10,000/day), displayed in Table 2.

Table 2 Sphere Project’s Context-Specific Baseline and Emergency Indicators⁹

⁶ Paul Spiegel *et al.*, ‘The Accuracy of Mortality Reporting in Displaced Persons Camps During the Post-Emergency Phase,’ *Disasters* 25, no. 2 (2001): 172-180

⁷ United Nations High Commissioner for Refugees, *Handbook for Emergencies*, Geneva: UNHCR, 1999.

⁸ Michael J. Toole and R.J. Waldman, ‘Prevention of Excess Mortality in Refugee and Displaced Populations in Developing Countries,’ *Journal of the American Medical Association* 263, no. 24 (1990): 3296-3302

⁹ Sphere Project, *Sphere Handbook*, revised ed. 2004, available at www.sphereproject.org

Indicator Region	Baseline CMR	Emergency CMR	Baseline U5MR	Emergency U5MR
Sub-Saharan Africa	0.44	0.9	1.14	2.3
Latin America	0.16	0.3	0.19	0.4
South Asia	0.25	0.5	0.59	1.2
Eastern Europe/former USSR	0.30	0.6	0.20	0.4

The ethics of regionally-specific criteria versus global benchmarks for declaring an emergency situation are contested, with some arguing that humanitarianism should assign absolute and not relative values to life, although clearly there are practical considerations as well. Researchers should consider how to contextualize data generated by a study in order to facilitate appropriate comparisons.

Several important sources of bias are commonly reported in complex emergency settings, including the surveys reviewed here. Household selection bias refers to how representative households included in the survey are for the total study population. It occurs when the sample is not randomly dispersed over the study region, usually because some households are not accessible due to security or other reasons. A second source of household selection bias occurs when some households are left out after being selected, usually unattended households that are not subsequently revisited. Where mortality is high, entire households may disappear and thus their experiences are not reflected in sampled data, theoretically leading to an underestimation of mortality rates, or survival bias.

The length of recall periods also affects data collection. Recall bias may occur in either direction: when retrospective periods are long, less recent deaths may be under-reported; conversely, households may remember traumatic events as occurring more recently than they actually did, and may therefore contribute to an overestimation of mortality rates. Seasonal bias refers to fluctuations in measured indicators over the course of the year, and commonly arises in relation to higher rates of communicable diseases such as malaria during the rainy season, which may also affect the security situation and availability of resources and aid.

Another source of bias involves respondents providing inaccurate information, for instance on the size of household or availability of aid, at times with the aim of securing greater resources. It usually works to under-report mortality. Both under and over-reporting of mortality and other health information may occur among surveyors, and sometimes respondents. Sound research takes steps to mitigate these sources of bias through research design and analysis, and reports on possible sources of bias in the presentation of results.

Most of the studies reviewed here faced security considerations in selecting sites for assessment, owing to the threat of violence in conflict-affected regions where IDPs often reside. Problems of ongoing violence and insecurity affect both the provision of health services and the collection of data in conflict-affected regions, and thus a bias in

statistical information on mortality and health indicators is often cited. Studies frequently speculate that the state of health and mortality among displaced populations residing in areas inaccessible due to insecurity would be significantly worse, as they usually do not benefit from essential needs provision or by the international community. Geographical accessibility may also be a factor, where IDPs reside in regions with inadequate infrastructure or difficult physical terrain (for example, the mountainous and heavily forested areas of eastern Burma).

Review of Existing Data on Health and Mortality among IDPs

Sudan

Medecins sans Frontières (MSF) surveyed four IDP sites in West Darfur from April to June 2004, using a two-stage household-based cluster survey to represent a population of 215,400 (Table 3). Recall periods for three of the four sites covered both ‘pre-displacement’ and ‘post-displacement’ phases, and the survey gathered data on mortality prior to and during flight as well as during residence in camps, which were separately analyzed. Statistics on cause of death were classified as either violent or non-violent, allowing researchers to draw conclusions on the probable reasons for displacement and rates of mortality.

Table 3 MSF survey of West Darfur, 2004

Location	Zalingei	Murnei	Niertiti	El Geneina
CMR (displacement)	5.9	9.5	7.3	-
CMR (camp)	1.3	1.2	1.3	5.6

CMRs for the flight period were very high, and most were attributed to violence particularly for adult men (aged 15 and up). All four sites demonstrated a marked loss of males aged 15-49, though women and children were also targets of violence. Mortality rates for the ‘camp’ period were significantly lower, but still above emergency thresholds. MSF did not investigate the circumstances of violent deaths in the survey, but reported a high incidence of shootings, beatings and rapes against the displaced even once they had settled in camps. The El Geneina site in particular demonstrated an exceedingly high rate of mortality of 5.6 in the post-displacement ‘camp’ phase of the recall period, likely due to a lack of humanitarian aid prior to June 2004, aside from sporadic food distributions.

Table 4 MSF survey of South Darfur, 2004

Location	# households/ persons	CMR	U5MR	Acute Malnutrition (%)
Kass	900 / 5776	3.2	5.9	14.1
Kalma	893 / 5050	2.0	3.5	23.6
Muhajiria	900 / 5256	2.3	1.0	10.7

In August and September 2004, MSF conducted assessments of mortality and malnutrition for three sites in South Darfur, representing a population of 137,000 IDPs

(Table 4).¹⁰ Non-displaced local populations were also included in data for two of the survey sites, as aid agencies deemed them to be of equal vulnerability to IDPs. CMRs reported were 3.2 in Kass, 2.0 in Kalma and 2.3 in Muhajiria. For Kass and Kalma, U5MRs exceeded emergency thresholds, and deaths from medical causes accounted for 80 percent and 90 percent of deaths respectively, with diarrhea as the single largest cause of death. Violence caused 72 percent of deaths in Muhajiria, almost all of which were of adult men.

The World Health Organization (WHO) conducted a mortality survey in Greater Darfur for the recall period of 15 June to 15 August 2004, using a two-stage cluster sample method (Table 5).

Table 5 WHO survey of Greater Darfur, 2004

Location	# households / persons	CMR	U5MR
North Darfur	1,290 / 9,274	1.5	2.5
West Darfur	1,292 / 7,995	2.9	3.1
South Darfur (Kalma)	558 / 3,506	3.8	11.7

Diarrhea constituted the main cause of death for all three locations, at 24 percent in the North, 37 percent in the West, and 42 percent in Kalma camp, South Darfur. The report noted that these high rates of death related to diarrhea reflect poor environmental sanitation, and indicated that roughly one third of survey respondents lacked access to safe water and sanitation. The survey did not allow for reporting or examination of severe malnutrition as a possible cause of death, which is often a critical factor behind high mortality rates among displaced and conflict-affected populations. The population structures established by the survey indicated deficits of children under 5 years of age, and particularly children under age 2, suggesting that these children have died within the past two years.

A second major assessment of IDPs in Darfur by WHO examined the period from November 2004 to May 2005, enabling analysis of changes in mortality from the previous survey (Table 6).¹¹ While direct comparison was not possible due to methodological differences and different recall periods, the survey demonstrated a significant decrease in mortality to below emergency thresholds. The exception was a U5MR of 2.6 in South Darfur, where only in-camp IDPs were surveyed. Security concerns again prevented the completion of the survey in South Darfur. For North and West Darfur sites, data were collected in order to separately analyze IDPs living in accessible camps, IDPs living outside of camps, and affected communities in accessible areas. WHO concluded that the data from the two surveys, although not directly comparable, indicated a significant positive impact of the humanitarian response in Darfur. Nonetheless, it also called for improvements in the quality and coverage of

¹⁰ Francesco Grandesso *et al.*, 'Mortality and Malnutrition Among Populations Living in South Darfur, Sudan: Results of 3 Surveys, September 2004,' *Journal of the American Medical Association* 293, no. 12 (2005): 1490-1494

¹¹ WHO and Ministry of Health of Sudan, *Mortality survey among Internally Displaced Persons and other affected populations in Greater Darfur, Sudan*, September 2005

primary health services, water and sanitation, and a continuation of efforts to maintain international interest and funding for the situation.

Table 6 WHO survey of Greater Darfur, 2005

Location	North	West	South
Sampled population (in camp/outside)	3961/3570	3597/3120	3188/n/a
CMR (IDPs in camps)	0.8	0.8	0.8
CMR (IDPs outside camps)	0.9	0.5	n/a
U5MR (IDPs in camps)	1.5	1.0	2.6
U5MR (IDPs outside camps)	1.8	0.8	n/a

Unlike a previous MSF survey, this 2005 WHO study did not specifically identify deaths due to conflict-related violence, and collected data for recall periods following displacement that did not include any initial attacks before or during flight.

Uganda

The Government of Uganda's national policy for IDPs charges both central and local government with provision of medical care, water and sanitation to all IDPs. In collaboration with the Ugandan Ministry of Health and other partners in IDP camps, WHO conducted a health and mortality survey among IDPs residing in Gulu, Kitgum and Pader districts, for both recognized and unrecognized camps (Table 7).¹² Its objectives were primarily to estimate CMR and U5MR for January to July 2005, and also to investigate other demographic indicators (population structure, reported causes of death, excess mortality, violent deaths and abductions), measles vaccination coverage, case management of communicable diseases in children under age 5, bed net coverage, and water availability.

Table 7 WHO survey of IDPs, northern Uganda, 2005

Location	Acholi Region	Gulu District	Gulu Municipality	Kitgum District	Pader District
# households / persons	3830/24896	952/6310	960/6658	959/5920	959/6098
CMR	1.54	1.22	1.29	1.91	1.86
U5MR	3.18	2.31	2.49	4.04	4.24

This survey estimated an excess mortality of between 24,000 and 33,000 in the first half of 2005. Among causes of death reported by respondents, malaria ranked the highest at 28.5 percent overall and 67.8 percent among children under five. The incidence of malaria was shown to be on the rise, and insecticide-treated bed net coverage, a crucial means of protection against the disease, was only 28.0 percent among children under five. The second highest reported cause of death was AIDS, at 13.5 percent overall, 71.8 percent of which were among adults aged 25-50. Violence accounted for 9.4 percent of deaths over the first half of 2005, which suggested a more widespread and active phenomenon of armed conflict in Acholiland than reported by media outlets. The survey

¹² World Health Organization (WHO), *Health and mortality survey among internally displaced persons in Gulu, Kitgum and Pader districts, northern Uganda, July 2005*

estimated roughly 20 violent deaths and six ‘successful’ abductions per day for the region’s three districts.

The report labeled the situation of IDP camps in Acholiland as a very serious humanitarian emergency, based on the above data, and made a series of recommendations. Among them were to expand and improve clinical health services through better diagnosis and case management, greater availability of drug treatments, and creation of more inpatient facilities closer to the camps. The report also emphasized better prevention against malaria (through bed net coverage) and HIV/AIDS, greater availability of water and latrines, and routine immunization. With respect to underlying causes of mortality and morbidity, it advocated for continued camp decongestion, stronger protection against violent attacks, and public education campaigns to improve health knowledge and practices among IDPs. Lastly, the report called for better coordination and funding of efforts by government and the international community, and the formal recognition of camps in Gulu district to facilitate expanded provision of essential services.

Indicators of malnutrition were not included in the survey, and it did not therefore statistically assess the food security of IDPs in Acholiland. One of the report’s recommendations nevertheless is to continue general food distributions and promote better infant feeding practices.

A recent report by the International Organization for Migration (IOM) discussed internal displacement and vulnerability to HIV infection in Uganda.¹³ National rates of HIV prevalence have fallen in the country, with the notable exception of the conflict-affected north and in particular regions with high IDP populations. An IOM study among IDPs in four districts of northern Uganda, funded by UNAIDS, found that poverty, hunger, lack of income-generating opportunities and idleness increased the likelihood of IDP women to engage in transactional sex, a high risk for HIV transmission. Few HIV prevention options exist for most IDPs, and the combined stigma of displacement and AIDS prevents many from seeking health services.

Democratic Republic of Congo (DRC)

MSF conducted health assessments for IDP populations in the Ituri (2005) and Katanga (2006) regions. The Ituri study involved a two-stage household-based cluster survey of 450 families of IDPs (2476 persons) residing in the Tche camp, chosen because of its accessibility and thought to be representative of two other nearby IDP camps. The recall period of 100 days was divided into two periods, framed by significant events for the population in order to facilitate recall, as well as to reflect the implementation of the MSF emergency response at the midpoint (Table 8).

¹³ IOM, ‘Displacement and HIV: Another Vulnerability,’ *Migration* (2006, June): 23-25

Table 8 MSF survey of Tche IDP camp, Ituri, DRC, 2004-2005¹⁴

	Period 1 (70 days)	Period 2 (30 days)	Total (100 days)
CMR	4.7	2.7	4.1
U5MR	6.2	8.8	6.9

These rates are extremely high and reflect a level of mortality several times above emergency thresholds for the entire recall period. For persons aged 5 years and older, the most frequently reported cause of death was violence, which accounted for 76 percent (47/62) of fatalities in Period 1, and 67 percent (6/9) in Period 2. The high number of deaths for the first period reflects the inclusion of time in the village of origin, during attacks that prompted displacement. Respondents provided information on individual (detention, hostage-taking, sexual violence, mutilation or gunshot) and collective (looting or destruction of property) violent events, which were reported by 53.3 percent of households and 32.0 percent of the total population surveyed. For children under 5 years of age, diarrhea accounted for 91 percent of deaths in period 2.

The study concluded that a shift in reported causes of death between the two periods surveyed indicated the protective factor of locating displaced civilians near military bases. It also observed that substandard living conditions kept mortality rates persistently high after relocation, with extremely poor sanitary conditions and high population density seriously harming the health of the population. Among the survey's limitations were its small sample size and limited geographical scope, and its exclusion of information on dates of arrival from data collection.

The March 2006 MSF study examined nutrition and mortality among IDPs residing in three camps in Dubie, Katanga, consisting of a survey of 563 households (1980 persons) and semi-structured interviews with 15 households (Table 9). The study also included World Food Programme (WFP) information on food distributions throughout the surveyed time period. The survey did not examine causes of mortality, although the report stated that no major outbreaks of disease had occurred during the recall period. MSF morbidity data (not included in the study) indicated that malaria and diarrhea were the most common reasons for medical consultations in the camp.

Table 9 MSF survey of Dubie IDP camps, Katanga, DRC, 2006¹⁵

Study Population	1980	U5 Study Population	532
Total Deaths	78	U5 Deaths	62
CMR	4.3	U5MR	12.7

A serious lack of food contributed to high levels of malnutrition among the children in the camps, and respondents consistently emphasized food insecurity as their biggest ongoing concern. Opportunities to procure food in exchange for labor or goods were seriously hampered by restrictions on movement and the forcible acquisition of food by

¹⁴ L. Ahoua *et al*, 'High mortality in an internally displaced population in Ituri, Democratic Republic of Congo, 2005: Results of a rapid assessment under difficult conditions,' *Global Public Health* 1, no. 3 (2006): 195-204

¹⁵ MSF, *Food, Nutrition and Mortality Situation of IDPs in Dubie, Katanga*, 23-25 March, 2006

soldiers at checkpoints outside the camps. Many IDPs sold what few non-food items they possessed in order to obtain staple foods in the local market, which also offered few and dwindling opportunities for work. MSF's report repeatedly cited the inadequacy of food provisions from WFP, which totaled only 9.9 days of food at the WFP baseline rate of 2100 kcal per person per day over two months. Food disbursements were sporadic and severely inadequate overall.

The International Rescue Committee (IRC) conducted a nationwide mortality survey for the DRC covering a period from January 2003 to April 2004.¹⁶ It established a national CMR of 2.1 deaths per 1000 per month (0.7/10000/day), and a rate of 2.9/1000/month for the eastern region, where political instability and violent conflict were ongoing. The study estimated that the CMR for eastern DRC would be 1.7/1000/month in the absence of all violence, and its analysis found a strong correlation between insecurity and mortality from both violent and non-violent causes. 'Preventable' causes of death (that is, non-violent causes) accounted for the bulk of mortality throughout the country, including fever and malaria, diarrhea, respiratory infections and malnutrition, particularly among the under age 5 population. Thus, the article published using data from the study suggested that improving food security and increasing access to basic health services (immunizations, clean water, insecticide-treated bed nets, case management of common diseases) could significantly reduce excess mortality in DRC.

Though the nationwide survey reveals disturbingly high mortality for eastern DRC, its findings were substantially lower than the mortality rates estimated for IDP populations in the same half of the country. In addition, when compared to both the pre-war DRC CMR of 1.2/1000/month (0.4/10000/day), as well as the reported regional baseline for sub-Saharan Africa of 1.5/1000/ month (0.5/10 000/day), rates found in IDP camps of DRC are shown to be extremely high.

Burma / Myanmar

For April-June 2002 and September-November 2003, the Back Pack Health Worker's Team (BPHWT) of Burma collected data on health and mortality of conflict-affected and displaced populations in the country's eastern region.¹⁷ Owing to the ruling military government's severe restrictions on intervention by international humanitarian agencies (complementing its 'Four Cuts Policy' aimed at preventing food, funding, information and recruits from reaching ethnic minority insurgents), almost no statistical indicators of population health exist for the eastern parts of Burma. Therefore, no truly national measures of health are available, as surveys typically exclude the east for reasons of access and security. BPHWT is a mobile network of indigenous health workers attempting to provide basic health services and collect public health information conflict-affected areas.

¹⁶ B. Coghlan *et al.*, 'Mortality in the Democratic Republic of Congo: A nationwide survey,' *The Lancet* 327 (2006): 44-51

¹⁷ Back Pack Health Worker Team, *Chronic Emergency: Health and Human Rights in Eastern Burma* 2006; see also Thomas J. Lee *et al.* 'Mortality Rates in Conflict Zones in Karen, Karenni, and Mon States in Eastern Burma,' *Tropical Medicine and International Health* 11, no. 7 (2006): 1119-1127

The survey reported overall CMRs of 0.68 for 2002 and 0.58 for 2003. BPHWT concluded that households forcibly displaced in the preceding 12 months experienced an U5MR 2.5 times that of non-displaced, and were 3.1 times more likely to have malnourished children - food insecurity often caused by theft and destruction of food sources. IDP households were 4.5 times more likely to have a member injured by landmines than non-displaced, a factor tied both to transit through mined areas during flight and the need to forage for food in dangerous areas (households experiencing food insecurity were analyzed as a distinct category but probably included many IDPs). 27 percent of adult female deaths were pregnancy-related, which indicates a very high maternal mortality ratio. BPHWT attributed this to a serious lack of obstetric care services.

The report called upon UN agencies and international NGOs to collaborate with border-based community-managed organizations in developing a more effective international response to the ongoing humanitarian crisis in eastern Burma. In particular, it stressed the need for such partnerships to provide health care, implement disease control programs, and collect health information for IDPs residing in the region, as well as to address their longer-term development needs.

Guinea-Bissau

A study published in the *International Journal of Epidemiology* analyzed mortality patterns among people displaced during the 1998-1999 conflict in Guinea-Bissau.¹⁸ Data were generated by the Bandim Health Project's (BHP) longitudinal demographic surveillance system for residents of four districts in the capital city of Bissau, representing 49,731 persons. The study population was internally displaced during periods of fighting but returned to their urban residences shortly after the cessation of hostilities. Camps for displaced people were not a prominent phenomenon during the conflict in Guinea-Bissau, and IDPs moved in with relatives, friends or strangers in rural areas. BHP was responsible for humanitarian aid activities including provision of food, medical drugs, and basic health consultations to IDPs during the war, and collected data throughout the periods of conflict, displacement and return. Deaths due to acts-of-war or accidents, as reported in interviews, were censored so as to analyze the impact of conflict and displacement on non-violent mortality. Periods of fighting occurred from June of 1998 through May of 1999, although a peace agreement was signed in November 1998 and peacekeeping troops arrived in December 1998. From January 1999 the conflict shifted from open war to a peace-settling process, with the final surrender of government troops in May 1999.

Table 10 BHP Guinea-Bissau study 1998-1999

Period	Pre-war	Conflict, before peace treaty signed		Signed peace treaty and returning	
Dates	Jan/95-May/98	Jun-Aug/98	Sep-Nov/98	Dec/98-May/99	Mar-May/99
CMR	0.43	1.83	1.74	1.11	0.99
U5MR	1.02	1.78	2.37	1.40	1.20

¹⁸ Jens Nielsen *et al.*, Mortality patterns during a war in Guinea-Bissau 1998-99: changes in risk factors?, *International Journal of Epidemiology* 35 (2006): 438-446

Crude mortality of the population rose 78 percent in the first six months of conflict, and doubled for children under-five years of age, putting both of these basic health indicators above emergency thresholds. Key findings of the study were a two-fold increase in mortality from infectious diseases during initial stages of conflict and displacement, followed by a substantial decline in mortality after the conclusion of a peace treaty and the return home of large numbers of IDPs. The study concluded that disease transmission and overall mortality from disease were likely reduced after returning home owing to the conditions of overcrowding and poor hygiene during displacement. Most people returned home, it stated, feeling that living conditions would be better and more secure in their normal places of residence despite damaged infrastructure and disrupted public systems and the threat of ongoing hostilities.

A major limitation of the study was that it did not track and analyze data according to the location of IDPs, despite having followed them through periods of displacement and return. It did not differentiate between data for those who had already returned, and those who remained displaced, aside from offering general observation about large-scale returns within a particular time period.

Angola

CRED produced a data review of 88 field surveys in Angola from 1999-2005 that examined differences in health and mortality indicators by 'legal status', comparing residents, IDPs, refugees, and a mixed resident-IDP category (for surveys that did not disaggregate the two).¹⁹

The review found an overall pattern of significantly higher mortality and malnutrition rates for IDPs than residents, which it attributed to poor living conditions in transit centres and IDP camps, including overcrowding, unsafe water, inadequate sanitation, and increased risk of communicable disease transmission. Diseases such as measles, fever and diarrhea affected IDPs disproportionately, and a lack of access to primary health care, low vaccination coverage, and food insecurity were also mentioned as probable causes of higher IDP mortality. The study estimated excess mortality among the surveyed populations, defined as non-violent deaths (considered 'preventable' from a humanitarian perspective) which would not have occurred without the conflict, at roughly 82 percent over total deaths, versus estimates of 48 percent for residents. These numbers compare the estimated CMR from survey sites with the Sphere Project baseline CMR for Sub-Saharan Africa of 0.44. The CRED review did not discuss the geographical distribution of surveys it reviewed, or give information as to differences in methodology between source surveys, both of which could have an important impact on measurements.

A 2003 study by Epicentre/MSF published in the *British Medical Journal* examined mortality among 11 camps of internally displaced former UNITA members and their

¹⁹ CRED, 'Angola: The Human Impact of War: A data review of field surveys in Angola between 1999-2005,' Brussels, 2006, available at www.cred.be

families, using a household-based retrospective cluster survey.²⁰ Recall periods extended from June 2001 to August 2002, with displacement and resettlement occurring between April and August of 2002. Thus, the large majority of the recall period was prior to displacement. Analyzed in person-time, the estimated CMR went from 1.4 for the period before arrival in resettlement camps to 1.9 for the post-arrival period. Other data displaced self-reported causes of death, which were not separated into pre and post-displacement periods. Medical and nutritional assistance to the study population after their arrival in camps was deemed insufficient to restore mortality to normal levels. The former UNITA population, already impacted by several years of isolation and months of an acute food crisis, were rapidly resettled into camps located far from main roads and urban centres and often surrounded by mined territory. Water sources in these locations were inadequate and few coping strategies such as farming were available, while relief efforts were vastly under-funded.

Directions for Future Research

The following points suggest key considerations for future research on the relationship between internal displacement, health and mortality. This discussion is not exhaustive, nor would it necessarily be realistic or practical to always address all of the issues. Nonetheless, it offers some proposals for a research agenda that expands existing work and aims to address crucial gaps in knowledge and practice.

Geographical Scope

Aside from major surveys conducted by the WHO in Darfur and Northern Uganda, few data have broad geographical coverage across a region in conflict, often being collected in single or scattered locations. Many countries with a high number of IDPs have no IDP-specific health and mortality data published at all. Future research could aim to expand the scope of inquiry to contexts where no such data exists, and ensure collection of data across a broad area affected by conflict and displacement, defined either at a regional or national level.

Methodological Consistency

Existing data are not amenable to comparison due to methodological differences in research design, data collection and analysis. Future studies on IDPs could develop a standard methodology that can be applied as consistently as possible in all research sites, bearing in mind the inherent limitations of conducting research in humanitarian emergency settings. A method should be defined in relation to existing common practice for assessment of population health in conflict and displacement contexts, so that expertise and organizing already in place to promote standardized data collection and reporting can be utilized.

To this end, a network of humanitarian actors, including donors, international and UN agencies, NGOs, universities, research institutes and governments, have come together to form SMART (Standardized Monitoring and Assessment of Relief and Transitions). This

²⁰ Thomas Grein *et al.*, 'Mortality among displaced former UNITA members and their families in Angola: a retrospective cluster survey,' *British Medical Journal* 327 (2003)

initiative aims to standardize methodological approaches for data collection on mortality and nutrition status in complex emergencies. It should however be acknowledged that it only establishes suggested standardized approaches to measuring under-five malnutrition and crude mortality; and additionally that there is still substantial disagreement as to whether the SMART standards are correct and appropriate.

WHO and UNHCR have taken the lead in forming the Inter-Agency Health Evaluations in Humanitarian Crises Initiative, the goal of which is to facilitate sector-wide analysis of the overall performance of the humanitarian response in the health sector. While the initiative has acknowledged IDPs as a target group to be included in assessments, there is no clear indication of the extent to which adequate consideration of internal displacement dynamics and issues have been incorporated into assessment practices.

Defining and Profiling the Study Population

Ideally a standard definition of internally displaced person should be adopted, with a reasonably simple and operational means of applying the definition in a household-based survey setting. Surveys should assemble basic data on the gender and age composition of households, so as to create a demographic profile of the study population and facilitate the analysis of health impacts on subgroups.

Two other important variables in defining the study population are location and displacement status. Most of the studies reviewed here examined IDPs residing in well-defined camps, and there is a lack of data on self-settled IDPs and those living outside formal settlements. Future research should aim to generate data for both groups, in order to investigate the effects of location of resettlement on health and mortality. This would allow researchers to examine whether IDPs living outside camps face greater or different risks of violence, disease and deprivation than those within them.

A study on IDPs could also consider surveying non-displaced local residents in the resettlement location, for two principal reasons. IDPs living outside formal settlements are frequently interspersed with the local population, and as such are not easily excluded from surveying from a methodological standpoint. Secondly, inclusion of non-displaced in surveys would create a means for direct comparison *within* the study itself, and allow researchers to discern any different patterns of vulnerability between the two groups. For example, the 2005 WHO survey of Darfur surveyed IDPs residing both in and out of camps, as well as the local residents who had not been displaced.²¹ Statistics were separately assembled for each category and permitted an analysis of impacts on IDP-hosting communities. This approach seems both pragmatic and analytically useful.

Conducting Longitudinal Research

Time variables are another important consideration in designing methodologies for further research. Vulnerability of IDPs likely shifts through various phases of displacement: pre-displacement, flight, resettlement and return. Between and within phases, the risks to health and security and the availability of resources vary, which will be reflected in changing health and mortality indicators. The most-affected segment of

²¹ WHO-Sudan MoH, 2005

the study population is also likely to change; pre-displacement and flight data often reflect heavy losses among men aged 15-49, while the resettlement phase often suggests high mortality, morbidity of disease and malnutrition among children under-five. Existing studies focus overwhelmingly on the resettlement or 'camp' phase of displacement, in keeping with the institutional prerogatives of humanitarian agencies and their need to measure the impact of emergency relief efforts. Some studies have documented mortality levels prior to flight by defining a recall period that begins before the onset of conflict and violence. The least known phase of displacement is that of return, for which little to no data exists.

Further investigation of IDP health and mortality should aim to create longitudinal research that can develop reliable estimates of health indicators throughout the displacement experience. Given that a population rarely moves all at once, and the timing of movements often varies from household to household within an IDP population, calculating measurements in person-time would yield the most accurate results. This method takes into account the amount of time spent by each respondent at each site, and requires surveyors to establish dates of arrival and departure with respondents. Recall periods would be defined in relation to these dates, and partitioned according to phases of displacement. Multi-stage surveys among the same populations at different points in time might also be considered. Researchers should also consider surveying IDPs in protracted versus short-term displacement settings and IDPs in the post-return phase.

In addition to calculating mortality rates for a given period, estimations of cumulative excess mortality may illustrate the toll of displacement over time. For slowly evolving, chronic or intermittent emergencies, as opposed acute emergencies with large-scale conflict and sizeable, rapid population movements, CMRs may remain relatively low. However, by calculating the cumulative impact of conflict and displacement on absolute mortality, an overall trend can be distinguished and compared to a non-crisis baseline.

Establishing Appropriate Benchmarks

How should health and mortality data on IDPs be contextualized? Most of the surveys reviewed here compared data to thresholds used to define an 'emergency' situation. This designation helps to shape humanitarian responses, and remains an important criterion for assessing the severity of a crisis. For a broader investigation of the relationship between internal displacement and health, however, other benchmarks for contextualizing data are needed. Meaningful comparison could be made between IDPs and resident populations in IDP-hosting areas, particularly if both categories are included in the survey design. Data from other sources on refugees from the same country of origin or conflict-affected region would also constitute an appropriate category for comparison, excluding any significant differences in methodology.

National data on health and mortality indicators could also provide baseline rates against which to compare rates for IDPs. For some countries experiencing protracted crisis, such as DRC, truly country-wide indicators are not available; however, data gathered for IDPs

may be compared to existing data for more stable regions of the country,²² or to national data from the pre-conflict period. Regional baseline rates established by the Sphere Project (Table 2 above) may also help to contextualize data. CRED has proposed that baseline mortality rates for assessing population health in conflict situations be determined from national rates published by UNICEF.²³ While some variations in quality exist in the representativeness of surveys and accuracy of data from national registrations compiled by UN statistical offices, CRED has determined that these remain the best available source. They suggest that a baseline year be defined as two years prior to the onset of conflict in the country.

Mitigating against Bias

There are a number of possible strategies for mitigating various biases:

- Recall bias can be reduced by framing recall periods in relation to important events for the study population, rather than selecting arbitrary dates; and surveyors can also cross-check reported dates of death with place of death and time of arrival.²⁴
- Clear statements of purpose for the study and standard assurances of confidentiality of results can help reduce information bias, ensuring that participants understand that their responses are in no way tied to the disbursement of aid to households.²⁵
- Defining sufficiently long recall periods can minimize the effect of seasonal fluctuations on data.
- Political bias in data collection, reporting and analysis should be avoided by careful oversight of surveyors and cross-checking of results. To minimize this bias for the 2005 WHO survey in Darfur, for example, the agency ensured close supervision of interviewers by international, politically neutral coordinators and discussed preliminary findings with other UN agency experts to enable internal comparisons and validation of results.²⁶
- Researchers should consider accessibility bias and define protocol for security and access concerns in the research design. BPHWT's study on eastern Burma attempted to minimize bias resulting from not reaching displaced villages by trying to locate their populations in exile, for cases in which the entire village had been displaced essentially intact. Where insecurity prevented surveyors from accessing displaced villages, the nearest accessible village was selected.²⁷

Investigating Violence and Threats to Security

Collecting data on self-reported causes of death is a vital component of any future study on IDP health and mortality. Among the causes of death, a crucial distinction should be made between violent and non-violent causes, to allow for analysis of data in relation to security and protection issues. Surveys should include follow-up questions about the

²² Coghlan *et al.*, 2006

²³ CRED, 'Conflict Mortality: Comparing the Data,' CE-DAT Working Paper CD/2004/001, January 2004: 12

²⁴ Evelyn Depoortere *et al.*, 'Violence and Mortality in West Darfur, Sudan (2003-04): Epidemiological Evidence from Four Surveys,' *The Lancet* 364 (2004): 1315-20

²⁵ WHO-Sudan MoH, 2005, 30

²⁶ *Ibid*

²⁷ BPHWT, 1120

nature of violence, and interviews with key informants should solicit information about any major armed attacks against the population, or major epidemics. Information about where and when violence took place will permit analysis of serious protection gaps and relative levels of risk associated with particular periods or locations.

Information on non-fatal threats to physical security is also important, including rates of violent injury, landmine and other accidents, SGBV, abduction and disappearances. Several studies noted a dearth of males aged 15-49, speculatively indicating either the effects of violent attacks or recruitment into militias. This should be taken into account when assembling questionnaires and demographic data on the structure of households.

Examining Non-Violent Causes of Death and Morbidity Rates

Death due to diseases such as malaria, fever, cholera, diarrhea, meningitis, measles, respiratory infection, AIDS and other conditions constitute common self-reported non-violent causes of death in complex emergencies. Starvation may also be cited as the primary cause of death in some cases, although it is usually accompanied by some other condition. Malnutrition indicators (Severe Acute Malnutrition, Global Acute Malnutrition, Middle-Upper Arm Circumference) should be measured to gain into food security and potential contributing factors towards higher mortality rates for a population, particularly for children under 5 years of age. Data on the morbidity of disease is not typically generated by household-based survey models commonly employed among the studies reviewed here; instead, diseases were primarily tracked as causes of death. Information on the incidence of particular infectious disease could be obtained from clinical records, although this would not likely capture true levels of morbidity in a population.

Examining Prevention Efforts and Access to Services

Information on health interventions such as vitamin and nutrient supplements, vaccination coverage and insecticide-treated bed net coverage (a crucial means of protecting against malaria infection) will provide useful insights into reasons for higher mortality or morbidity due to disease and malnutrition. Surveys could also measure access to and consumption of protected sources of water, which is a major determinant of population health. WHO studies on IDPs have generated data on water availability through measuring mean liters per person per day and mean waiting time in hours.²⁸ Similar indicators can be employed to measure availability of latrines and proper sanitation, adequacy of food aid disbursements, and access to primary health care. Qualitative information on the availability of non-relief food sources or other means used by the population to secure basic resources and income are also helpful. In addition, any information on public education campaigns to spread knowledge and awareness of key health prevention practices should be solicited. Examination of health-seeking behavior among IDPs and information from survey respondents on the quality of care received are suggested by WHO as a critical information gap in need of investigation.²⁹

²⁸ WHO-Uganda, 2005

²⁹ WHO-MoH Sudan, 2004, 26

Addressing Special Topics of Concern

The interaction between forced displacement and HIV infection is complex and depends on a range of competing factors that influence vulnerability.³⁰ Among the critical factors shaping transmission are HIV prevalence among the affected population pre-conflict, HIV prevalence in the surrounding host community, and exposure to violence during conflict, flight and exile. Much emphasis has been placed upon factors that increase vulnerability to HIV among conflict-affected and displaced populations, including disrupted social structures, economic deprivation, SGBV, increased drug use and poor health and education services. Conversely, a competing set of variables may act to decrease transmission, many of which are associated with residence in a camp and the geographical isolation that often accompanies it. Reduced mobility in these locations may contribute to lower levels of HIV transmission, and the level of protection from violence may be higher. Health, education and social services in camps may also provide better quality of care and prevention than in the pre-displacement setting, as camps can constitute a venue for intervention by service agencies.

A review of information on eight OCHA IDP priority countries found that data on HIV prevalence among IDPs existed only for limited situations in Sudan and DRC, and though seven of these countries' National Strategic Plans (NSP) for HIV/AIDS mentioned IDPs (Colombia did not), only three listed specific interventions.³¹ In general, data were insufficient to draw conclusions about the effects of internal displacement on the incidence of HIV. A future study on IDPs should consider measuring HIV prevalence, and including survey questions on knowledge of HIV/AIDS and available options for prevention and treatment.

Sexual and gender-based violence (SGBV) is a crucial challenge for protection in IDP situations and a serious threat to both the physical and psychosocial health of IDP women. A household-based semi-public survey method may not be the appropriate means by which to collect information on SGBV, given the need for sensitivity to gender relations and confidentiality. However, it remains an under-investigated topic and consideration should be given to how data can be collected in a suitably sensitive and methodologically sound manner to identify needs and shape an appropriate response.

Similarly, the psychosocial health of IDPs is a neglected area that presents considerable methodological challenges for researchers. Victims of trauma and abuse retain the emotional and mental scars commonly associated with conflict, violence and displacement, yet very little is known about the incidence of mental conditions among IDPs or their ability to access psychological services. Again, consideration should be given to defining an appropriate means of investigation and developing methods for assessing mental health status and the availability of counseling services in internal displacement situations.

³⁰ Paul Spiegel, 'HIV/AIDS among Conflict-affected and Displaced Populations: Dispelling Myths and Taking Action', *Disasters* 28, no. 3 (2004): 322-339

³¹ Paul Spiegel and H el ene Harroff-Tavel, *HIV/AIDS and Internally Displaced Persons in 8 Priority Countries* (Geneva: UNHCR, January 2006), 18. The priority countries were identified as Burundi, Colombia, DRC, Liberia, Nepal, Somalia, Sudan, and Uganda

Conclusion

While responses to the problem of internal displacement have grown in size and scope, significant gaps remain in knowledge about the health and mortality experiences of IDP populations. The geographical extent of existing data is limited, and methodology lacks consistency in data collection, reporting and analysis. Further research is needed to develop a base of evidence on the relationship between internal displacement and population health and mortality. This review has examined existing data, identified its limitations and proposed directions for future research. Identifying the unique determinants of mortality, morbidity and malnutrition among IDPs in multiple geographical contexts will provide the essential knowledge to more effectively shape humanitarian responses.

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