Public health

New variant famine: AIDS and food crisis in southern Africa

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Southern Africa is undergoing a food crisis of surprising scale and novelty. The familiar culprits of drought and mismanagement of national strategies are implicated. However, this crisis is distinct from conventional drought-induced food shortages with respect to those vulnerable to starvation, and the course of impoverishment and recovery. We propose that these new aspects to the food crisis can be attributed largely to the HIV/AIDS epidemic in the region. We present evidence that we are facing a new variant famine. We have used frameworks drawn from famine theory to examine the implications. HIV/AIDS has created a new category of highly vulnerable households—namely, those with ill adults or those whose adults have died. The general burden of care in both AIDS-affected and non-AIDS-affected households has reduced the viability of farming livelihoods. The sensitivity of rural communities to external shocks such as drought has increased, and their resilience has declined. The prospects for a sharp decline into severe famine are increased, and possibilities for recovery reduced.

Despite repeated warnings that AIDS could be a disaster for development, little systematic investigation has been done into the contribution of AIDS to development, and virtually no studies have been undertaken on HIV/AIDS, food security, famine, and nutrition.[1]

Demographic findings show that the secondary effect of a famine or epidemic could be at least as great as the primary effects. For example, a chain reaction of further famines and epidemics or massive out-migration might arise.[2] The food crisis developing in southern Africa could be the first major manifestation of this chain reaction.

Droughts and famines have afflicted large parts of Africa throughout history. In past decades, these food crises have had a characteristic demographic and socioeconomic profile. They have raised crude death rates by two to five fold, with mortality concentrated in very young and elderly people,[3–5] and mortality in males has been higher than in females.[6] However, farmers and pastoralists have developed sophisticated coping strategies[7] that are characterised by considerable resilience—defined as the ability to return to a former livelihood on the basis of diversity of income and food sources—and accumulated skills, including knowledge of wild foods and kinship networks.[8,9] Only when these coping strategies collapse are African societies faced with so-called entitlement failure (inability to command sufficient food to prevent starvation) and outright starvation.[10] Most typically, such extreme crises have arisen in wartime, when armed forces have actively prevented civilian populations from pursuing coping strategies.[11]

The present southern African food crisis confounds many expectations. A cycle of drought is taking place, in which regionwide rainfall failures can be expected about once every decade. The last such drought happened in 1991–92. Despite the fact that the region was economically and politically less well-prepared to withstand a food crisis than nowadays, famine was averted. The main reason for this was the effective coping mechanisms of the affected people.[12] The region is in better shape 10 years on: apartheid has been ended in South Africa, and there is peace in Mozambique and Angola. The exceptions are political and economic crisis in Zimbabwe and mismanaged economic liberalisation in Malawi, in particular the attempt to make the national strategic grain reserve commercially viable by selling off stocks.[13,14]

The present food crisis is more widespread and intractable than its predecessors, and has three distinct features. First, vulnerability is very widely spread, including areas that are not severely affected by drought. The numbers defined as in need by the United Nations are considerably higher than were anticipated after the poor 2001–02 rains. Second, household impoverishment has arisen more rapidly than in earlier droughts. Third, present estimates are that—despite the return of good rains in early 2003—a high level of vulnerability will continue.

The factor that could account for these features is HIV/AIDS. Southern Africa is the location of the world's worst AIDS epidemic, with most countries having a prevalence of HIV in adults in excess of 20%. Zambia, Zimbabwe, and Botswana have recorded very high levels for several years, and AIDS mortality rates are climbing steadily.

The new variant famine hypothesis

Our hypothesis is that the HIV/AIDS epidemic in southern Africa accounts for why many households are facing food shortage and explains the grim trajectory of limited recovery. Four factors are new: (1) household-level labour shortages are attributable to adult morbidity and mortality, as is the rise in numbers of dependants; (2) loss of assets and skills results from increased adult mortality; (3) the burden of care is large for sick adults and children orphaned by AIDS; and (4) vicious interactions exist between malnutrition and HIV.

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Country	Cereal	Year			
		1999	2000	2001	2002
Lesotho	Maize	124 500	97 100	103 000	82 000
Malawi	Maize	2 479 400	2 501 300	1 696 000	1 600 000
Mozambique	Maize	1 246 100	1 019 000	1 143 000	1 240 000
	Sorghum	326 300	252 500	263 000	364 000
Swaziland	Maize	113 000	84 500	73 000	70 000
Zambia	Maize	855 900	881 600	802 000	602 000
Zimbabwe	Maize	1 519 600	2 108 100	1 480 000	509 000
	Sorghum	85 600	103 300	60 700	37 000
	Wheat	320 000	250 000	280 000	213 000

All amounts in metric tonnes. Data from the Food and Agricultural Organization, 1999 and 2000 figures (http://www.fao.org), and SADC Food Security Bulletin and SADC Regional Assessments, 2001 and 2002 figures (http://www.sadc-fanr.org.zw).

Cereal production in selected countries in southern Africa

AIDS and decline in food production

The table shows the severe food production problem in the region. Reasons for the aggregate decline in food production across southern Africa include drought, floods in some areas, Zimbabwe's land policies, the scarcity of seeds and fertilisers, deterioration in marketing infrastructure, and HIV/AIDS.

Results of household-level studies unequivocally show a decline in agricultural production attributable to the effects of AIDS.[1,15] Households affected by AIDS morbidity and mortality lose income, assets, and skills; those with a chronically-ill member have average reductions in yearly income of 30–35%.[16] The households must change their livelihood strategies, cultivating smaller areas and abandoning more high input high output activities in favour of those that demand less labour.[17,18] One of the few studies of the effect of AIDS on rural cereal production was done in a community in Zimbabwe (before the country's rapid descent into crisis). The results showed that an adult death resulted in a 45% decline in a household's marketed maize, but in cases when the cause of death was identified as AIDS, the fall was 61%.[19] Survey data show a close correlation between household labour availability and access to food.[20] The concurrent and associated tuberculosis epidemic, which also clusters at the household level, further exacerbates the situation.

A sign of impoverishment is that high-value and highly nutritious crops—such as cereals and oilseeds—are replaced by low-value and less nutritious ones, such as cassava. Production of cassava in Malawi, Zambia, and Zimbabwe increased from 880 000 metric tonnes in 1990 to 2 036 000 metric tonnes in 1999, a reversal of previous agricultural development gains (http://www.fao.org).

To explain famine, our concern is less with the overall availability of food and more with the ability of the poorest members of society to grow or buy it. Famines have arisen when no countrywide food availability shortages have been present.[21] Thus, results of micro-level studies of afflicted households struggling to cope indicate the emergence of a new category of poor and vulnerable people, namely those affected by HIV/AIDS. Merely by increasing inequality, AIDS increases vulnerability to famine. Overall food availability figures mask the sharp decline in control over food entitlements among these poorest strata.

The effect of AIDS on livelihood coping strategies

Changing dependency patterns

HIV/AIDS has a great effect on dependency of family members. Projections of the demographic effect of the HIV epidemic in southern Africa do not predict substantial changes in the dependency ratio.[22] This counterintuitive outcome is because the fertility rate is expected to fall, and child mortality rates to rise, because of AIDS. However, this crude dependency ratio stability conceals three important distortions.

First, HIV/AIDS and its effects cluster at the level of households and (to a lesser extent) communities, because of conjugal and mother-to-child transmission. A stable dependency ratio can conceal serious adverse shifts for the affected households, which may lose viability.

Second, the age and sex distribution within the adult population is changed by AIDS; for example, fewer mature adults and more teenagers and people in their early twenties are present in the population. Because women are typically infected with HIV at an age several years younger than men, fewer adult women are present in the population. Those who make the greatest contribution to support of dependants—namely mature adults, especially women—form the smallest proportion of the population, whereas young men and teenagers, who have little role in support of dependants, are more plentiful.

Third, conventional dependency ratio calculations are based on the assumption that all adults are productive. In a generalised AIDS epidemic, a small, but important, number of people are chronically sick, and therefore properly belong in the dependants category.

We therefore introduce two ideas to refine the dependency analysis. First, the dependency separation that relates to the second point above, namely the different roles of age and sex categories in support of dependants. Second, the effective dependency ratio, which captures the effects of inclusion of sick adults in the denominator rather than the numerator of the dependency ratio. When these two adjustments are included, along with the clustering effect, we can identify a new category of AIDS-poor people, defined by an adverse effective dependency ratio and dependency separation. Findings of surveys show these factors are correlated with household food insecurity.[20]

The most graphic manifestation of changing dependency patterns is the rapid growth in number of children orphaned by AIDS. Up to 13% of all children in southern Africa are orphans (defined as having lost their mother or both parents), more than half of whom have been orphaned by AIDS.[23] We have never entered a famine with a comparable level of orphaning, and simply do not know what will be the effect of food shortages, social disruption, and famine-coping strategies on these four million or so unfortunate children (or indeed vice versa).

The scarcity of labour means that affected households face increasing difficulties in pursuing labour-intensive coping strategies, including labouring for money and gathering wild foods.

Loss of assets and skills

Many famine-coping strategies need skill, experience, and a positive outlook on the future. An important skill is knowledge of wild foods and how to prepare them, which is handed down from mother to daughter. If young women do not have this key knowledge, they may go hungry because of their ignorance. More widely, planning a year-long strategy for a family to feed itself and protect the basis of its livelihood needs much experience about income-earning opportunities. Without mature adults, these planning skills and networks may be absent. Lastly, the motivation for implementation of a difficult and complex coping strategy is the assumption

that things can return to normal. With the reduced adult life expectancy associated with HIV/AIDS and the perception of a downward spiral in standards of living, this motivation may be absent too. Indeed a successful livelihood coping strategy might only postpone the decline by a year or so rather than provide the foundation for a recovery.

The burden of care

One of the main factors impoverishing rural Africa is the burden of providing for orphans and sick adults:[1] it is a major expenditure and diversion of labour. Most affected households struggle to cope.[24] Some businesses have responded to the costs of AIDS by reducing sickness and disability benefits and shifting to use of self-employed subcontractors.[25] The unstated assumption is that wider society—mainly women in rural areas—will carry the burden. Furthermore, urban children orphaned by AIDS are usually sent to rural relatives to be cared for. The burden is thus doubled. In the past, rural households could rely on urban relatives for assistance during times of hardship. Nowadays, the flows of assistance have been reversed. The implication is that the preferred and most resilient livelihood coping strategy—of reliance on kinship networks for assistance—is increasingly inoperable.

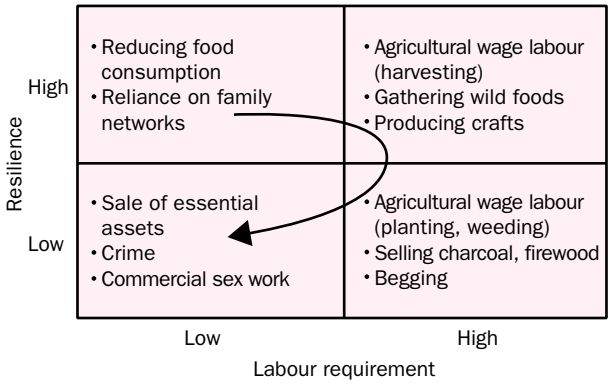
Malnutrition and HIV

In past famines, adults have reduced their consumption of food and simply gone hungry. People from rural areas time and again showed remarkable physical capacity for work despite very low consumption of food. Relief agencies assumed that famine-affected adults could still look after themselves, and concerned themselves overwhelmingly with young children and their mothers. Findings of the southern African development community survey[20] showed that skipping meals was not only typical in all rural areas but was also more usual in households with a chronically ill adult. For example, 57% of such households had gone entire days without eating in the preceding 2 months.[20]

In so-called new-variant famine, adults cannot be neglected: malnutrition has very different implications. Undernourished individuals are more susceptible to being infected with HIV than are those who are well nourished. Nutritional status is also an important determinant of risks in mother-to-child transmission of HIV.[26]

Adults living with HIV endanger their health by going hungry. Many types of nutritional deficiencies suppress the immune system, and hence make infections more virulent. This is true of HIV, which replicates most rapidly in malnourished individuals, hastening progression from HIV to AIDS.[18,27,28] HIV-positive status inhibits absorption of nutrients, and the body's needs in fighting the infection are considerable. Hence, people living with HIV have higher nutritional needs than normal: protein requirements are usually estimated at 30–50% more, and energy needs about 15% more. Malnutrition thus threatens to accelerate progression from HIV to AIDS for millions of infected individuals.

Conversely, good nutrition delays progression from HIV to AIDS, and is essential for effective antiretroviral treatment—some medication needs to be taken on a full stomach. This fact implies that plans for introduction of antiretroviral treatment on a large scale should be combined with nutritional support programmes.



Course of livelihood coping strategies

Overall implications for famine-coping strategies

The figure shows the course of coping strategies undertaken by a household afflicted by food crisis. HIV/AIDS renders many high resilience strategies impossible (labouring, relying on networks) or dangerous (reducing food consumption), and reduces the effectiveness of them all. In a traditional drought, one might expect affected households to take 2 years or so to descend through the quadrants into destitution and activities such as commercial sex work. In so-called new variant famine, this descent can be much more rapid, and the possibilities for recovery are much reduced. Results of aid-agency surveys are finding rapid rises in the numbers of young women entering commercial sex work in affected areas.[29] Widespread impoverishment and social disruption, including increased resort to transactional sex, threaten to increase HIV transmission.

Conclusion

The new-variant famine hypothesis is a plausible idea for analysis of the causes and trajectories of food insecurity in southern African societies. These are societies afflicted by a combination of shocks including a generalised AIDS epidemic, drought, and poverty. The hypothesis cannot be judged proven, but it provides a framework for policy-making, relief provision, monitoring, and research. The hypothesis is lent support by results of the growing number of household-level studies of the effect of AIDS.

The analysis does not neglect the role of factors such as drought and macro-economic disparities and mismanagement. Rather, it points to the way in which HIV/AIDS accentuates existing difficulties, compelling us to confront many simultaneous problems, all of which need resolution. The challenges are daunting. A scaled-up long-term international effort will be needed to deal with the humanitarian needs that will result in southern Africa.

We must face the prospect that this food emergency will become a structural feature of the southern African landscape for many years to come, unless innovative and generous interventions are made now.

Contributors

A de Waal and A Whiteside wrote the report.

Conflict of interest statement

AdW is programme director of the Commission on HIV/AIDS and Governance in Africa. AW is director of the Health Economics and HIV/AIDS Research Division at the University of Natal.

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