



Epidemics and food systems: what gets framed, gets done

Stuart Gillespie¹

Received: 14 May 2020 / Accepted: 30 June 2020 / Published online: 8 July 2020
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Abstract

This brief article aims to interrogate some widely used concepts in framing the interactions between disease epidemics, food systems and nutrition, with a particular focus on the COVID-19 crisis. How should we conceptualize vulnerability in such situations – both with regard to viral exposure and to subsequent nutrition-relevant impacts of epidemics and responses (including lockdowns)? Is it possible to simultaneously pursue strategies aimed at strengthening resilience and driving transformation (‘building back better’)? What type of framing and conceptualization can help illuminate entry points and options for responding effectively to interacting crises? In addressing these questions, it’s important to re-visit lessons from past attempts to address the impacts of epidemics on food and nutrition security.

Keywords COVID-19 · Epidemic · Food system · Nutrition · Resilience · Transformation

The way we respond to a crisis is governed by the way we frame and describe the threat or shock. The COVID-19 pandemic has generated a whole new language (e.g. lockdown, physical distancing) and a dusting-down of terms and concepts from past crises. Such concepts are important as they help us construct narratives that explain how problems emerge, how they may be addressed and how future crises may be prevented.

Whether linked to health, economic, climate or conflict shocks, resilience has come to be seen as a useful organizing principle – a mobilizing metaphor that transcends disciplines and sectors. The less common notion of resistance (to the initial risk of viral exposure) may also be helpful in developing preventive responses. Third, recent discourse on food system transformation (Willett et al. 2019; McDermott and de Brauw 2020; Herrero et al. 2020) is being used to frame approaches to ‘build back better’.

Do such concepts help improve understanding, communication and the development of comprehensive responses to the interactions between COVID-19, food systems and nutrition?

Two decades ago, I co-founded the RENEWAL program at IFPRI to investigate the implications of the AIDS epidemic

for food and nutrition security in eastern and southern Africa. The first step was to convene local stakeholders to discuss how to conceptualize and approach this challenge. Building on the evidence available at that time, a conceptual map was developed, highlighting the drivers of HIV infection, and the impacts of AIDS epidemics, from macro (environmental) to micro (individual) levels. The map was then used to identify and locate potential responses (prevention, care, treatment, mitigation) as they applied to the drivers and impacts (Loevinsohn and Gillespie 2003).

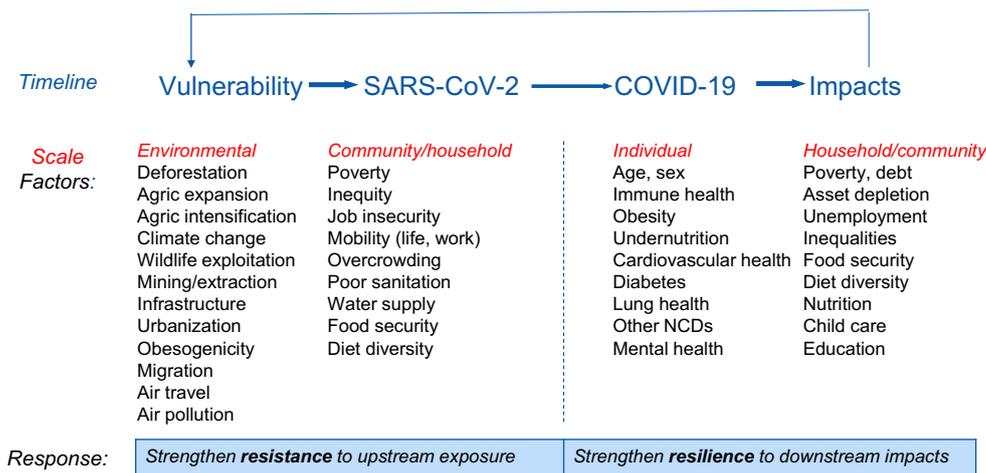
Drawing on this approach, we can begin to develop a simplified version for COVID-19, food and nutrition, as shown in Fig. 1. The non-exhaustive list of factors in the four columns derives from emerging evidence of association (on which it’s not possible to elaborate in this short article).

Reading Fig. 1 from left to right, we can see how vulnerability to certain drivers (operating from environmental to individual levels) conditioned the spread of the SARS-COV-2 virus and determined who was exposed to, and infected by it. Appropriate responses here will be preventive, aimed at strengthening *resistance* to exposure to the virus (by controlling or reducing the drivers listed in the first two columns). The front-line of resistance to any viral infection is an individual’s immune system (shown at the centre). After infection, we are in the realm of *resilience*, with key factors listed in the two right-hand columns. Important here are a set of individual-level characteristics (including obesity and under-nutrition) that we now know will determine the severity of

✉ Stuart Gillespie
s.gillespie@cgiar.org

¹ International Food Policy Research Institute, Washington DC, USA

Fig. 1 COVID-19: vulnerability, resistance and resilience



COVID-19 disease and ultimately the likelihood of dying from it. Beyond such individual factors lie a series of impacts at different scales (household, community etc) that will kick in over different time spans. Many such impacts are indirect in that they result from the immediate responses to the epidemic (especially lockdowns). Depending on the metric used (e.g. lives saved), it's quite likely that such indirect impacts will be significantly greater than the impact of the viral infection itself (Robertson et al. 2020). Finally, Fig. 1 shows the feedback loop from impacts to future vulnerabilities. Poverty and inequity, for example, can drive upstream vulnerability to viral exposure, as well as be exacerbated by the downstream effects of the epidemic – potentially setting up a vicious cycle.

Alongside resilience, we see another emerging discourse that argues for the need to jettison business-as-usual in a post-COVID world, to create a 'new normal' and to 'build back better'. This sounds very like transformation – quite different to coping.

This leads us to an important question. When applied to food systems in the midst of a pandemic, can these two goals – resilience and transformation – co-exist?

To address this, we need to dig deeper. There are many definitions of resilience (Pelletier et al. 2016; Ansah et al. 2019). Most refer to the ability – in the face of a shock or stress – to recover or bounce back to a past state. A type of buoyancy, elasticity or toughness in the face of adversity – the capacity to weather the storm, to cope. The Intergovernmental Panel on Climate Change, for example, defines resilience as the 'ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner' (IPCC 2012). In the face of COVID-19, at an individual level, resilience is ultimately the ability to survive. For households, it's the ability to withstand multiple social and economic impacts.

Some definitions have been criticized as ignoring issues of power, agency and social justice. In the context of AIDS epidemics, many similarly viewed the notion of 'coping' as a

cop-out – an escape from the challenge of confronting how people's capabilities were being stunted (Barnett and Whiteside 2002). Resilience may not even be an appropriate goal if it reinforces an inequitable *status quo*. It is quite conceivable, moreover, for a household to demonstrate resilience but at a very high cost – for example, if the maintenance of household food security derives from the hazardous/arduous work of women who become ill or undernourished themselves and/or unable to care for young children whose growth falters.

We therefore need to ask questions about equity, about the cost of resilience, and who pays. We need to consider scale (individual, household, community) and timeline (e.g. does resilience endure?). We are rapidly learning how the COVID-19 pandemic is not only exposing different forms of inequity but also amplifying them. Individuals who pay the highest price for national resilience are often front-line health and social care workers who – day after day, separated from their own families for weeks on end – put their lives at risk to keep people alive. The AIDS epidemic also spread along societal fault lines, widening them in the process (Barnett and Whiteside 2002).

An important conceptual step forward was taken by Bene et al. (2014) when they incorporated power and agency into a broader definition of resilience. Beyond the capacity to cope, they highlight the capacity to adapt, and even to transform as being encapsulated within a spectrum of resilience. The ability to absorb a shock (cope) ensures stability, which in turn provides the potential for incremental adjustments (adaptation) and even transformational change in this more inclusive framing. In practical terms, in the face of COVID-19, for example, a regular cash transfer to poor households could ensure stability, raise risk horizons and potentially open up more livelihood options and space for innovation (Gilligan 2020).

This could apply to households and communities – and it could apply it to health and food systems. Systems-thinking helps us break out of sectoral silos, but we need to retain a wide-angled lens to see the connections *between* systems. We

can, for example, see how certain food systems in which wild animals, domestic animals and humans are in close proximity in wet markets may be vulnerable to zoonotic emergence (Bett et al. 2020). The SARS-COV-2 virus first crossed species and now it has cut across entire systems. Emerging from a food system, it has gone on to overwhelm health systems, and to undermine global economic systems in a way that's not been seen for more than a century.

Just as systems interact, so can epidemics. 'Syndemics' are synergistic epidemics that overlap in time and space, interact with each other, and share common underlying drivers. The 2019 Lancet Commission report on the global syndemic of obesity, undernutrition and climate change described these interactions in depth (Swinburn et al. 2019). The COVID-19 pandemic is a new addition to the mix – a short-wave shock that overlaps and interacts with these three long-wave crises. Take obesity for example – we know that the obesity epidemic is being driven, in part, by the accessibility and affordability of ultra-processed foods and beverages – the 'obesogenic environment' (Rauber et al. 2020; Tan et al. 2020). Evidence is also mounting on how obesity confers a greater risk of poor outcomes of COVID-19 disease, including death (Docherty et al. 2020). Compounding this, lockdowns are contributing to a rise in obesity due to reduced physical activity and difficulties in sourcing a healthy diet – especially among the poorest households (Pietrobelli et al. 2020).

In sum, resilience can be a useful common goal across sectors and systems – so long as it is treated comprehensively, and so long as it includes an analysis of agency and equity. It is possible to strive for resilience and to pave the way for transformation into a more sustainable, more equitable future. These two goals are not mutually exclusive. But it will require actions that seek to progressively strengthen all three resilience capacities (absorptive, adaptive and transformative) at multiple levels (individual, household, community).

Compliance with ethical standards

Conflict of interest None.

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References

- Barnett, T., & Whiteside, A. (2002). *AIDS in the 21st century: Disease and globalization*. New York: Palgrave Macmillan.
- Bene, C., Newsham, A., Davies, M., Ulrichs, M., & Godfrey-Wood, R. (2014). Resilience, poverty and development. *Journal of International Development*, 26, 598–623.
- Bett, B., Randolph, D., & McDermott, J. (2020). Africa's growing risk of diseases that spread from animals to people. *IFPRI Blog*, (April 2020) <https://www.ifpri.org/blog/africas-growing-risk-diseases-spread-animals-people>.
- Docherty, A.B., Harrison, E.M., Green, C.A., Hardwick, H.E., Pius, R., Norman, L. et al. (2020). Features of 16,749 hospitalised UK patients with COVID-19 using the ISARIC WHO clinical characterisation protocol medRxiv 2020.04.23.20076042; doi: <https://doi.org/10.1101/2020.04.23.20076042>.
- Gilligan, D. (2020) Social safety nets are crucial to the COVID-19 response: Some lessons to boost their effectiveness. *IFPRI Blog*. June 2020. <https://www.ifpri.org/blog/social-safety-nets-are-crucial-covid-19-response-some-lessons-boost-their-effectiveness>
- Herrero, M., Thornton, P. K., Mason-D'Croz, D., Palmer, J., Benton, T. G., Bodirsky, B. L., Bogard, J. R., Hall, A., Lee, B., Nyborg, K., Pradhan, P., Bonnett, G. D., Bryan, B. A., Campbell, B. M., Christensen, S., Clark, M., Cook, M. T., de Boer, I. J. M., Downs, C., Dizyee, K., Folberth, C., Godde, C. M., Gerber, J. S., Grundy, M., Havlik, P., Jarvis, A., King, R., Loboguerrero, A. M., Lopes, M. A., McIntyre, C. L., Naylor, R., Navarro, J., Obersteiner, M., Parodi, A., Peoples, M. B., Pikaar, I., Popp, A., Rockström, J., Robertson, M. J., Smith, P., Stehfest, E., Swain, S. M., Valin, H., van Wijk, M., van Zanten, H. H. E., Vermeulen, S., Vervoort, J., & West, P. C. (2020). Innovation can accelerate the transition towards a sustainable food system. *Nat Food*, 1, 266–272. <https://doi.org/10.1038/s43016-020-0074-1>.
- IPCC (2012). Managing the risks of extreme events and disasters to advance climate change adaptation. A special report of working groups I and II of the intergovernmental panel on climate change. Cambridge University press, Cambridge, UK, and New York, NY, USA, 582 pp.
- Loevinsohn, M., & Gillespie, S. R. (2003). *HIV/AIDS, rural livelihoods and food security: Understanding and responding, FCN discussion paper 157*. Washington DC: IFPRI.
- McDermott, J., & de Brauw, A. (2020). *National Food Systems: Inclusive transformation for healthier diets. Global food policy report*. IFPRI: Washington DC.
- Pietrobelli, A., Pecoraro, L., Ferruzzi, A., Heo, M., Faith, M., Zoller, T., Antoniazzi, F., Piacentini, G., Feambach, S.N., Heymsfield, S.B. (2020). Effects of COVID-19 lockdown on lifestyle behaviors in children with obesity living in Verona, Italy: A Longitudinal Study. *Obesity*, 2020; <https://doi.org/10.1002/oby.22861>.
- Rauber, F., Steele, E. M., Louzada, M. C., Millett, C., Monteiro, C. A., & Levy, R. B. (2020). Ultra-processed food consumption and indicators of obesity in the United Kingdom population (2008–2016). *PLoS One*, 15(5), e0232676. <https://doi.org/10.1371/journal.pone.0232676>.
- Robertson, T., Carter, E. D., Chou, V. B., Stegmuller, A. R., Jackson, B. D., Tam, Y., Sawadogo-Lewis, T., & Walker, N. (2020). Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: A modelling study. *Lancet Global Health*, 8(7), E901–E908. [https://doi.org/10.1016/S2214-109X\(20\)30229-1](https://doi.org/10.1016/S2214-109X(20)30229-1).
- Swinburn, B. et al (2019). The global Syndemic of obesity, Undernutrition, and climate change: The lancet commission report. www.thelancet.com published online January 27, 2019. [https://doi.org/10.1016/S0140-6736\(18\)32822-8](https://doi.org/10.1016/S0140-6736(18)32822-8).

Tan, M., He, F. J., & MacGregor, G. A. (2020). Obesity and COVID-19: The role of the food industry. *BMJ*, 369, m2237. <https://doi.org/10.1136/bmj.m2237>.

Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., Garnett, T., Tilman, D., DeClerck, F., Wood, A., Jonell, M., Clark, M., Gordon, L. J., Fanzo, J., Hawkes, C., Zurayk, R., Rivera, J. A., de Vries, W., Majele Sibanda, L., Afshin, A., Chaudhary, A., Herrero, M., Agustina, R., Branca, F., Lartey, A., Fan, S., Crona, B., Fox, E., Bignet, V., Troell, M., Lindahl, T., Singh, S., Cornell, S. E., Srinath Reddy, K., Narain, S., Nishtar, S., & Murray, C. J. L. (2019). Food in the Anthropocene: The EAT–lancet commission on healthy diets from sustainable food systems. *Lancet*, 393, 447–492.



Stuart Gillespie has 36 years of experience in nutrition and development since taking up his first position as nutrition coordinator in a rural development project in southern India, in February 1984. After acquiring a PhD in Human Nutrition from the London School of Hygiene and Tropical Medicine in 1988, he spent four years with the UN Standing Committee on Nutrition in Geneva, two years with UNICEF in India and four years as a freelance consultant. Since joining

IFPRI in 1999, he has led several initiatives, including an ADB-funded

consortium on the double burden of malnutrition in Asia and a global initiative on agriculture and health research. In 2001, he co-founded the Regional Network on AIDS, Livelihoods and Food Security (RENEWAL) which fused locally-prioritized action research on AIDS, food and nutrition security with capacity strengthening and policy communications in a pioneering networking approach in Africa. Gillespie was director of the International Conference on HIV/AIDS, Food and Nutrition Security in South Africa in April 2005. In 2011 he led efforts to win competitive tenders for two multi-partner research program consortia on undernutrition, funded by DFID – *Transform Nutrition* and *Leveraging Agriculture for Nutrition in South Asia (LANSA)*. From 2015, he has had led the *Stories of Change* project which aims to identify the drivers of success in nutrition in different countries. He currently leads the SPEAR (Supporting Policies, Programs and Enabling Action through Research) flagship of the IFPRI-led Agriculture for Nutrition and Health (A4NH) program, as well as the *Transform Nutrition West Africa* program. He has 160 publications including 9 books, 14 monographs and 21 book chapters.