

Are Our Lives the Experiment? COVID-19 Lessons during a Chaotic Natural Experiment – A Commentary

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Objective: In this paper, we urge health behavior and policy experts to engage in rigorous science and evaluation of the evolving natural experiment to stop or adapt to the pandemic of COVID-19. **Methods:** We conducted scientific literature, media library, and governmental website searches with key words COVID-19, policy, health behavior, and pandemic as a rapid review. **Results:** As of March 26, 2020, approximately one-third of the world's population was under some COVID-related movement restriction. Moreover, 21 states in the United States initiated policies to stay-in-place, close businesses and schools, or create mechanisms for social distancing, with more states likely to take up these actions. **Conclusions:** As individuals and whole communities ascend Maslow's Hierarchy of Needs Scale, it is important to structure health behavior and policy evaluation and research to capture the lessons learned from this worldwide natural experiment of differing choices of support and restriction of individuals, groups, occupations, and whole countries. Whereas this may be the first pandemic of this magnitude and speed in the modern world, it likely will not be the last, making it imperative that we learn from and teach as many of these lessons as possible.

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Some 2-1/2 months after the World Health Organization (WHO) declared on January 30, 2020 that COVID-19 was a public health emergency of international concern, 185 countries/regions of the world have confirmed its presence.^{1,2} Location of cases is uneven and symptom screening or biological testing availability varies by location, potentially masking some disease trends due to lack of case detection.³⁻⁵

Researchers have published information about the virus and its symptoms with great fury. Whereas such unprecedented speed and volume of information may create a sense of security, it also may overwhelm public health and clinical systems as they adapt and attempt to implement actions stemming from this outpouring of published results.⁶ This

rush to publish is in the context of an ever-growing publishing environment – more than 3 million English-language science, technology, and medicine articles were published in academic peer-reviewed journals in 2018 alone.⁷ The day that WHO announced that COVID-19 was an emergency of international concern, *Nature* writer Emma Stoye commented that the number of English-language publications had already topped 50 in just 20 days.⁸ Chinese-language publications numbered 23 as of February 3, 2020, including the genome sequencing of the virus, estimated incubation periods and reproductive rates of the virus, clinical features of cases seen in Wuhan, China, and the burgeoning need of clinical care response. Authors posit that English-language papers help disseminate emerging

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research on the virus and its syndromes more globally; investigators in China also praise the efforts by journals such as ones in the *Lancet* family that are translated from English to languages of countries being hardest hit in the early part of the pandemic to help persons caring for COVID-19 patients and to minimize disease transmission.⁹

High impact journals in almost every major discipline working on this virus created Open Access collections of important research findings. The Open Free Access agreement by publishers was the subject of a press release from the International Association of STM Publishers, noting that by March 13, 2020, COVID-19 publications, including chapters, articles, and other resources totaled over 32,000.¹⁰ This is unprecedented scientific productivity to amass critical knowledge to thwart a global disease threat. It also can be a cautionary consideration – how does all that work get vetted and peer-reviewed in a substantive way? Moreover, once published, what information actually makes it into pandemic playbooks for future events?

Scope of the Pandemic

How bad is the pandemic? The Johns Hopkins University and Medicine Map that tracks confirmed COVID-19 cases, deaths, and number of people who have recovered, as of this writing, reports 1,754,457 cases worldwide (top contributing countries: United States [US], Spain, Italy, France, Germany), 107,520 deaths (top contributing countries: US, Italy, Spain, China, France), with 395,418 people having recovered (top contributing countries: China, Spain, Germany, Iran, Italy).² These numbers change more than daily and reflect the 185 countries/regions that have reported cases. We are still learning about which populations are most vulnerable to the virus, as well as the immense public policy targets such as school closures, stay-in-place executive orders, quarantines, closures of entire business categories (eg, restaurants, bars, universities) that often employ hourly-paid personnel who already may be financially and socially fragile.^{4,11,12} Social distancing policies and procedures reached one-third of the world population by late March 2020.¹³

Statistical modeling from the Institute for Health Metrics and Evaluation at the University of Washington aims to assist healthcare service planners

by providing predictions of COVID-19 deaths and dates of peak critical hospital needs. Prediction models are updated regularly and for the US as of April 10, 2020, estimated cumulative COVID-19 deaths were projected to be 61,545 (ranging from a low of 26,487 to 155,315) if social distancing measures remain in place through May 2020. Some states may have turned the corner on their peak of wave one deaths (eg, New York, New Jersey, Illinois) with others still anticipating greater surges of deaths. Regularly updated state-by-state predictions are provided in a visualization-enriched website. These researchers continue to expand their efforts, such as instigating a model describing the Susceptible to Exposed to Infected to Recovered (SEIR) part of the population to estimate when social distancing measures can be relaxed or removed.¹⁴ These are likely population segments that will face the brunt of future catastrophic health, natural disaster, or bioterrorism events, so we have to ask:

“Are we learning everything we can about who they are, what behavioral, psychological, and policy efforts provide the greatest relief, and how do we survive similar events better in the future?”

Behavioral Health Response to COVID-19

Behavioral health research and surveillance during the pandemic has not kept pace with its biomedical and epidemiologic peers and is desperately needed. Funding opportunities are growing, but so far, there is no parity with its physical health counterparts.¹⁵ In China, the National Health Commission produced psychological assistance guidelines for persons affected by COVID-19, whether as cases, family members, front line response workers, or community members at risk of transmission or life disruptions. However, whereas theoretical and practical research on ‘psychological crisis interventions’ has started in China, it is not complete and its applicability to other populations, community norms, and physical, mental, and public health systems is unknown.¹⁶ The *British Medical Journal* opinion blog has featured several health behavior and communications needs during the COVID-19 pandemic. Researchers point out the behavioral health support systems that have been put in place after previous emergencies or disasters, but need guidance for identifying implementation strate-

gies that work; as one example, researchers in the United Kingdom (UK) lament the lack of evidence about the responsiveness to smoking cessation messages or actual smoking behavior change during times of viral respiratory outbreaks.¹⁷ COVID-19 health communication strategies often address non-pharmaceutical interventions (like health behaviors) with mixed results in the US, the UK, and other geographic locations.¹⁸ In the UK, an opinion piece on March 24, 2020 claims: “The public’s response to ‘social distancing’ is a government communications failure.”¹⁹ To reduce COVID-19 transmission, additional efforts for introducing behavior change principles are necessary that create a new mental model for people, modify their perceptions of social norms, advance a particular type of emotional response in them, and replace a risk behavior with a more acceptable behavior to which people can adapt to their life with relative ease.¹⁸

We also will need a research agenda to maximize the generation of new behavioral health and policy knowledge and its translation into action during and after the pandemic, similar to the efforts colleagues in obstetrics and gynecology have outlined to understand COVID-19 impact on pregnant women, their fetuses, and their neonates.²⁰ Health psychologists have been studying the effects of self-reported media uptake after other pandemics, natural disasters, and terrorism events.²¹ Unfortunately, much of this research has not made it into the pandemic playbooks that eventually get implemented by government and society.

Since as early as February 4, 2020, and up to April 9, 2020 – the National Institutes of Health (NIH) has issued 21 Notices of Special Interest specific to COVID-19, stemming from 12 different NIH institutes.¹³ We are moving from the phase of the pandemic in which most populations are adjusting to provision of basic needs in new and different ways – sometimes moving from well-resourced groups to ones in-quarantine or isolation and in need of additional assistance to get basic needs met – to ill and then recovering and adjusting to a ‘new normal’ life in the post-COVID-19 era.^{22,23} Ensuring middle- to low-income countries and populations in higher-income countries do not get left behind in the research agenda, organizations such as the Alliance for Health Policy and Systems Research, an international partnership hosted by the WHO,

argue for continued rapid reviews to help move us through the remainder of the pandemic and recommend ways to speed up COVID-19 evidence synthesis activities, particularly on health behavior and policy toward those made more vulnerable (such as violence against women in times of social distancing and stay-at-home isolation) as a result of COVID-19.^{24,25} Learning from psychological and behavioral research on other more amorphous threats against the entire world population, such as climate change, may be instructional. Researchers have pointed out, among other important concepts worth considering in the COVID-19 response, different individual and community pathways of risk perception and adaptation, including one focused on cognition and one based on emotion.²⁶ Increasing funding for psychological, behavioral, health policy, and public health research to capture the effects of the numerous societal changes as we work through this pandemic will help us ensure the vulnerable who survive do not have to pay the price again.

IMPLICATIONS FOR HEALTH BEHAVIOR OR POLICY

A research agenda for behavioral health and policy to leverage lessons learned during the COVID-19 pandemic is needed to streamline efforts and increase the likelihood of utilization in future pandemic preparation, response, and recovery. Such an agenda could help guide sustainable research during and beyond the pandemic, helping to extract as many evidence-based lessons learned as possible. Collaborations across borders can examine behavioral health and policy evidence needs, promote parity in research funding, and elevate their findings so that future pandemic playbooks are built upon and implement these research findings.

Global health is one of the newly created additions to the US’s *Healthy People 2020* blueprint whose goal is: “Improve public health and strengthen US national security through global disease detection, response, prevention, and control strategies.”²⁷ The Institute of Medicine’s 2003 report *Microbial Threats to Health*²⁸ stresses that the US should enhance global capacity for responding to infectious disease threats and assume leadership in promoting comprehensive, global, real-time infectious disease surveillance. If these cross-border

collaborations advocated for 17 years ago had been optimally in place in 2020, the severe suffering and loss of life worldwide might have been reduced.

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Human Subjects Approval Statement

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Conflict of Interest Disclosure Statement

The authors declare they have no conflicts of interest.

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