Supplement to

American Journal of PUBLIC HEALTH

A PUBLICATION OF
AMERICAN PUBLIC HEALTH ASSOCIATION

Racial Disparities in Cancer Care | Access to Care for Transgender Veterans | Hepatitis C Among US Veterans | Battling Tobacco Use at Home | HEALTH EQUITY | How Might the Provision of Culturally Competent Services Be Enhanced for American Indian and Alaska Native Veterans? | Improving Trends in Gender Disparities | Suicidality Among Hispanic and African American Veterans Following Surgery

APHA

January 2021

EDITOR'S CHOICE

A Redesigned *AJPH* for the Times That Are "A-Changin'"

Writing/Reviewing/Publishing

Alfredo Morabia

American Journal of Public Health: 111(1), pp. 6–6

FA Full Text | PDF/EPUB

GLOBAL NEWS

AJPH Global News

American Journal of Public Health: 111(1), pp. 7–7

FA Full Text | PDF/EPUB

OPINIONS, IDEAS, & PRACTICE

From MMXX to MMXXI: The Way Forward to Renew American Health Policy

Global Health, Health Reform

Georges C. Benjamin

American Journal of Public Health: 111(1), pp. 8–9

FA Full Text | References | PDF/EPUB

Climate Change Is Already Exacerbating Current Social Inequities

Environment, Climate Change, Public Health Practice, Socioeconomic Factors

Michael T. Schmeltz

American Journal of Public Health: 111(1), pp. 10–11

FA Full Text | References | PDF/EPUB

Toward a New Framework for Equity in Epidemic Allocations: Implications of HIV-Prevention–Allocation Misalignment

HIV/AIDS, Health Financing, Prevention, Epidemiology, Lesbian/Gay/Bisexual/Transgender Persons

M. Reuel Friedman, Cristian J. Chandler, Brian J. Adams, Mary E. Hawk, David L. Givens, José A. Bauermeister and Lisa Bowleg

American Journal of Public Health: 111(1), pp. 12–14

FA Full Text | References | PDF/EPUB

The Time Is Ripe for Addressing Gender Inequalities in the Authorship of Scientific Papers

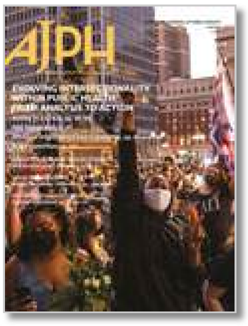
Writing/Reviewing/Publishing, Ethics, Gender

Ana-Catarina Pinho-Gomes

American Journal of Public Health: 111(1), pp. 15–16

FA Full Text | References | PDF/EPUB

Previous Issue   Next Issue



The *American Journal of Public Health* (*AJPH*) is dedicated to the publication of original work in research, research methods, and program evaluation in the field of public health. The mission of the journal is to advance public health research, policy, practice, and education.

SHARE

Recommend this Journal to your library.

Sign up for eToc Alerts

American Journal of Public He... SOUNDCLOUD
AJPH September 2020 "...
23:48

Cookie policy

PERSPECTIVES

Safe and Accessible Voting: The Role of Public Health

Government, Human Rights, Public Health Practice, Public Health Workers, Health Policy

Edward P. Ehlinger and Carmen Rita Nevarez

American Journal of Public Health: 111(1), pp. 45–46

FA Full Text | References | PDF/EPUB

LAW & ETHICS

COVID-19: The Promise and Failure of Law in an Inequitable Nation

Government, Health Law, Health Policy

Wendy E. Parmet, Scott Burris, Lance Gable, Sarah de Guia, Donna E. Levin and Nicolas P. Terry

American Journal of Public Health: 111(1), pp. 47–49

FA Full Text | References | PDF/EPUB

IMAGES OF HEALTH

Using Informational Murals and Handwashing Stations to Increase Access to Sanitation Among People Experiencing Homelessness During the COVID-19 Pandemic

Homelessness, Urban Health, Infections, Prevention, Community Health, Other Infections, Health Promotion

Yoonhee P. Ha, Nicole McDonald, Shari Hersh, Stephanie R. Fenniri, Amy Hillier and Carolyn C. Cannuscio

American Journal of Public Health: 111(1), pp. 50–53

FA Full Text | References | PDF/EPUB

NOTES FROM THE FIELD

Community Trace: Rapid Establishment of a Volunteer Contact Tracing Program for COVID-19

Public Health Practice, Public Health Workers

Linda Niccolai, Tyler Shelby, Brian Weeks, Christopher Schenck, Justin Goodwin, Rachel Hennein, Meghan Rossini, Jennifer Vazquez, Dorothyann van Rhijn, James Meek and Maritza Bond

American Journal of Public Health: 111(1), pp. 54–57

FA Abstract | Full Text | PDF/EPUB

Adapting Backpack Medicine in COVID-19 Response for People Experiencing Homelessness in Southern California

Homelessness, Prevention, Community Health, Health Service Delivery, Access to Care

Jemma Alarcón and Tipu V. Khan

American Journal of Public Health: 111(1), pp. 58–61

FA Abstract | Full Text | References | PDF/EPUB

SPECIAL SECTIONS

STUDENT PERSPECTIVES ON COVID-19

CONFLICTS OF INTEREST

American Journal of Public Health: 111(1), pp. 62–62

FA Abstract | Full Text | PDF/EPUB

Adaptability, Change, Hope: Student Perspectives During the COVID-19 Pandemic

Health Education, Public Health Practice, Public Health Workers, Health Professionals

Jaimee Watts Isley, Roger Gonzales, Jennifer Drey, Emily Q. Ritter, Wayne R. Lawrence, Brady Rowe and Paulina Sosa

American Journal of Public Health: 111(1), pp. 63–65

FA Full Text | PDF/EPUB

Essential or Expendable During the COVID-19 Pandemic? A Student-Lived Experience on Grieving the Unjust and Early Deaths of Vulnerable Populations

Other Race/Ethnicity, Immigration, Occupational Health, Socioeconomic Factors, Health Policy, Race/Ethnicity

Ariana Ávila

American Journal of Public Health: 111(1), pp. 66–68

FA Full Text | References | PDF/EPUB

Public Health Is Political: A Student's View on a Necessary Shift in Public Health Curricula

Government, Media, Health Education, Public Health Practice, Public Health Workers

Sally P. Windisch and Fitri Carrissa Wijaya

American Journal of Public Health: 111(1), pp. 69–70

FA Full Text | References | PDF/EPUB

Student Perspectives From a COVID-19 Epicenter: Bridging Educational Training and Public Health Practice

Health Education, Public Health Practice, Public Health Workers

Joanne Michelle F. Ocampo, Jessica A. Lavery, Yongmei Huang, Damemarie Paul, Alejandra Paniagua-Avila and Nahid Punjani

American Journal of Public Health: 111(1), pp. 71–73

FA Full Text | References | PDF/EPUB

Human Rights Advocacy and Us, the Next Generation of Public Health Leaders

Human Rights, Social Science, Public Health Practice

Hanna E. Huffstetler, Tamira Daniely, Meredith Dockery, Tsion Ghedamu, Lenore Hango, Ashley Huff, Victoria Matus, Hannah Rice, Sonam J. Shah, Sonam K. Shah, Niharika Soni and Caitlin R. Williams

American Journal of Public Health: 111(1), pp. 74–76

FA Full Text | References | PDF/EPUB

Reflections on the COVID-19 Pandemic From a Frontline Physician and Public Health Student

Public Health Workers, Health Professionals

Charlotte M. Roy

American Journal of Public Health: 111(1), pp. 77–78

FA Full Text | References | PDF/EPUB

The 1918 Influenza Pandemic Has Lessons for COVID-19: An Anthropology Student Perspective

History, Health Education, Social Science, Socioeconomic Factors, Epidemiology

Taylor P. van Doren

American Journal of Public Health: 111(1), pp. 79–80

FA Full Text | References | PDF/EPUB

How the COVID-19 Pandemic Has Affected Hospice Care: Perspective of a Student Volunteer

Statistics/Evaluation/Research, Public Health Workers, Mortality, Health Service Delivery

Theresa Ann Dickerson

American Journal of Public Health: 111(1), pp. 81–82

FA Full Text | PDF/EPUB

A New Normal Is Paramount for Public Health Research and Practice: A Student Perspective on COVID-19

Public Health Practice, Community Health, Race/Ethnicity, African Americans/Blacks, Health Reform

Asari Offiong

American Journal of Public Health: 111(1), pp. 83–84

FA Full Text | References | PDF/EPUB

Disability During a Pandemic: Student Reflections on Risk, Inequity, and Opportunity

Disability

Erica Twardzik, Meredith Williams and Hana Meshesha

American Journal of Public Health: 111(1), pp. 85–87

FA Full Text | References | PDF/EPUB

INTERSECTIONALITY

Evolving Intersectionality Within Public Health: From Analysis to Action

Other Race/Ethnicity, Public Health Practice, Socioeconomic Factors, Community Health, Race/Ethnicity

Lisa Bowleg

American Journal of Public Health: 111(1), pp. 88–90

SURVEILLANCE

BACKMATTER

ERRATA

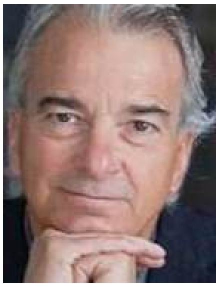
OTHER DEPARTMENTS

Content: Home | Current Issue | Past Issues | Print Books | eProducts
Information For: Authors | Reviewers | Subscribers | Institutions
Services: Subscribe | Become a Member | Create or Manage Account | e-Alerts | Podcasts | Submit a Manuscript
Resources: Public Health CareerMart | Reprints | Permissions | Annual Meeting | Submission FAQs | Contact Us
AJPH: About Us | Editorial Board | Privacy Policy | Advertising | APHA

American Journal of Public Health®
800 I Street NW, Washington, DC 20001-3710
202-777-2742

Print ISSN: 0090-0036 | Electronic ISSN: 1541-0048

A Redesigned *AJPH* for the Times That Are “A-Changin’”



In 2020, the COVID-19 pandemic shattered the universe of *AJPH,* and we decided to adapt to a new normal. The number of submissions increased, from a typical 280 per month to 480 per month, and we expect articles on the *AJPH* Web site to be read or downloaded close to seven million times in 2020 (up from five million in 2019 and 1.1 million in 2015). Our podcast listens are up from 3200 in 2016 to more than 30 000 in 2020 (https://am.ajph.link/POD_January2020).

Despite the substantially higher volume of submissions to *AJPH* in 2020, we read all of them and provided a list of alternative journals for those submissions that could have been relevant for *AJPH* but that we did not prioritize, and therefore declined to send out for external peer review. The time from submission to publication remained typically at around four months.

One third of the submissions were articles about the pandemic, many of which were opinion pieces that the single editorial format of *AJPH* was not ready to accommodate. We needed more flexibility. We also needed to clearly separate opinions, ideas, and practice from research. We have therefore implemented two major simplifications in the journal design starting with this January issue.

The Table of Contents now has two major subdivisions. The first, titled “Opinions, Ideas and Practice,” groups Editorials and Notes From the Field pieces, which are not necessarily externally peer reviewed. The second major subdivision is titled “Research and Analysis” and groups Research Articles, Analytic Essays, and Systematic Reviews, which are always externally peer reviewed. The Contents Sections remain what they were: Climate Change and Environmental Justice; History; Law and Ethics; Methods; Open-Themed Research; Perspectives From the Social Sciences; Policy; and Surveys and Surveillance. Please check the new set of Instructions for Authors here: https://am.ajph.link/IfAs.

We also took this opportunity to refresh the look of the print version. The best way to see the changes is to peruse a 2019 issue and compare it with this one. Our objectives were to simplify the layout and to make the text and tables more legible. In particular, we have opted for a single sans serif font and one color, royal blue; eliminated text backgrounds; and redesigned the table layout of the research articles. Overall, back to back, every page of the *Journal* has been refreshed.

We also have been working on the e-reader and Kindle versions of *AJPH* (https://am.ajph.link/ajph). These have been provided in full open access for the last few months, as an experiment. We hope to be able to finalize them soon.

AJPH’s role is not only providing the history and the *recent* evidence to determine the public health we need but also the forum for diverse opinions about how to best construct the public health we need. We believe we connect those who implement public health at all levels and everywhere with policy makers and researchers. Last spring we wrote about COVID-19: “The problem is not the virus. The problem is all of the policies that let the virus prey on us so easily” (https://am.ajph.link/PHWeNeed). And indeed, our authors in 2020 have stressed that the current health system is unfair and biased in its foundations; favors clinical care against prevention, which is inequitable (https://am.ajph.link/July2020); its access depends on socioeconomic standing (https://am.ajph.link/August2020); and rural areas are neglected (https://am.ajph.link/September2020). Moreover the system is unfit for preparedness against natural disasters (https://am.ajph.link/October2020), and wastes at least a trillion dollars every year (https://am.ajph.link/December2020). A foundational reinvention of our health systems is long overdue (https://am.ajph.link/November2020).

This modernized and refreshed *AJPH* reflects how the *Journal* will continue to play its part in and through this unsettling pandemic period, which can be expected to be transformational for public health—“for the times they are a-changin.’”

Alfredo Morabia
AJPH *Editor-in-Chief*
@Alfredo Morabia

DOI: https://doi.org/10.2105/AJPH.2020.306052

8 Years Ago

Intersectionality as an Important Framework for Public Health

Intersectionality is critical to public health because it “embraces rather than avoids the complexities that are essential to understanding social inequities, which in turn manifest in health inequities.” . . . [P]ublic health’s commitment, as the American Public Health Association’s mission statement affirms, [to] “working to improve the public’s health and to achieve equity in health status for all” is an ideal mesh with intersectionality’s social justice bent. Complex multidimensional issues such as entrenched health disparities and social inequality among people from multiple historically oppressed and marginalized populations beg novel and complex multidimensional approaches. Intersectionality is the critical, unifying, and long overdue theoretical framework for which public health has been waiting.

From AJPH, *July 2012, p. 1272.*

13 Years Ago

Intersectionality in Provider Advice Regarding Reproductive Health

Compared with middle class White women, low-income women of color reported greater odds of being advised to limit their childbearing. Moreover, low-income Latinas reported greater odds of being discouraged from having children during their pregnancy than did middle-class White women, as did women with more children and women who were not married. . . . Given well-documented gender, race, and class bias in health care, it is not surprising that reproductive care would vary according to intersections of ethnicity and social class. . . . Although our study does not provide direct support for this assertion [about a kind of eugenic practice], it does raise questions about the treatment of low-income patients and how attitudes towards welfare recipients influence reproductive advice.

From AJPH, *October 2007, p. 1806.*

Mental Health of People Living With HIV/AIDS

People living with HIV/AIDS in resource-limited settings have a high prevalence of mood disorders, which can affect medication adherence and risk-reduction behaviors. Between 2012 and 2013, Siril et al. studied the perceptions of the Swahili words for stress (*msongo*) and depression (*sonona*) using focus group discussions, in-depth interviews, and surveys among 86 people with HIV/AIDS in Dar es Salam. Those without mood disorders thought *msongo* meant normal thoughts that do not need medical attention, but they did not recognize the word *sonona*. Both people living with HIV/AIDS and health providers had limited understanding of the words *msongo* and *sonoma*.

Citation. Siril HN, Fawzi MCS, Todd J, et al. Patients' and providers' perceptions of the Swahili words of *msongo* (stress) and *sonona* (depression): implications for treating mood disorders among people living with HIV/AIDS, Dar es Salaam, Tanzania. *East Afr J Public Health*. 2019; 14(1):6–18.

Impact of COVID-19 on Domestic Violence

In Pakistan, where more than 90% of married women experience domestic violence, increases in domestic violence have been observed during epidemics such as cholera. COVID-19 lockdown restrictions have forced women to choose between the risk of infection and the risk of confining themselves in an abusive home. As resources in Pakistan's health system are reallocated to respond to COVID-19, support services such as domestic violence helplines have been scaled back. Baig et al. emphasize the need to increase awareness of domestic violence, support for those abused, and funding for hotlines and shelters.

Citation. Baig MAM, Ali S, Tunio NA. Domestic violence amid COVID-19 pandemic: Pakistan's perspective. *Asia Pac J Public Health.* 2020; Epub ahead of print. doi: https://doi.org/10.1177/1010539520962965

Barriers to Understanding and Using Food Labels in Mexico

In Mexico, several types of food labels exist to help consumers make healthier food choices. However, their utility and comprehension by the consumer is unclear. Nieto et al. conducted a qualitative study with 12 focus groups in four cities of Mexico to explore perceptions of use and comprehension of food labels among 78 participants with different socioeconomic statuses. The use of technical language, label format, and general mistrust were barriers to use and understand food labels. Participants with high socioeconomic status thought food label claims were marketing strategies. Those with low socioeconomic status reported difficulty in understanding food labels, highlighting the need for a better and simpler food-labeling system.

Citation. Nieto C, Castillo A, Alcalde-Rabanal J, Mena C, Carriedo A, Barquera S. Perception of the use and understanding of nutrition labels among different socioeconomic groups in Mexico: a qualitative study. *Salud Publica Mex.* 2020;62(3):288–297. https://doi.org/10.21149/10793

Predictors of Self-Medication With Tranquilizers and Sleeping Pills in Serbian Males Versus Females

According to a national Serbian survey, at least 23% of adults aged 18 years or older use tranquilizers or sleeping pills and 13% of students self-medicate with sedatives, but gender differences in the predictors of self-medication remain unknown. Tripković et al. analyzed data from the 14 623 individuals aged 15 years and older from the Serbian National Health Survey to identify predictors of self-medication with tranquilizers and sleeping pills. Females reported higher self-medication with tranquilizers and sleeping pills than did males (5.6% vs 2.2%). Chronic diseases, stress, and pain were associated with increased likelihood of self-medication for both sexes. Age (55–65 years) was the most significant predictor of self-medication among females, whereas unemployment was for males. These results could inform the creation of gender-specific interventions to reduce selfmedication with tranquilizers and sleeping pills among Serbians.

Citation. Tripković K, Milićević MŠ, Odalović M. Gender differences in predictors of self-medication with tranquillizers and sleeping pills: results of the population-based study in Serbia. *Zdr Varst.* 2019:59(1):47–56. doi: https://doi.org/10.2478/ajph-2020-0007

Prepared by Vrinda Kalia, Mati Mugore, and Luis E. Segura, Columbia University, New York, NY. Correspondence should be sent to the AJPH Global News team at les2196@cumc.columbia.edu.

DOI: https://doi.org/10.2105/AJPH.2020.306013

Mental Health of People Living With HIV/AIDS

People living with HIV/AIDS in resource-limited settings have a high prevalence of mood disorders, which can affect medication adherence and risk-reduction behaviors. Between 2012 and 2013, Siril et al. studied the perceptions of the Swahili words for stress (*msongo*) and depression (*sonona*) using focus group discussions, in-depth interviews, and surveys among 86 people with HIV/AIDS in Dar es Salaam. Those without mood disorders thought *msongo* meant normal thoughts that do not need medical attention, but they did not recognize the word *sonona*. Both people living with HIV/AIDS and health providers had limited understanding of the words *msongo* and *sonoma*.

Citation. Siril HN, Fawzi MCS, Todd J, et al. Patients' and providers' perceptions of the Swahili words of *msongo* (stress) and *sonona* (depression): implications for treating mood disorders among people living with HIV/AIDS, Dar es Salaam, Tanzania. *East Afr J Public Health*. 2019; 14(1):6–18.

Impact of COVID-19 on Domestic Violence

In Pakistan, where more than 90% of married women experience domestic violence, increases in domestic violence have been observed during epidemics such as cholera. COVID-19 lockdown restrictions have forced women to choose between the risk of infection and the risk of confining themselves in an abusive home. As resources in Pakistan's health system are reallocated to respond to COVID-19, support services such as domestic violence helplines have been scaled back. Baig et al. emphasize the need to increase awareness of domestic violence, support for those abused, and funding for hotlines and shelters.

Citation. Baig MAM, Ali S, Tunio NA. Domestic violence amid COVID-19 pandemic: Pakistan's perspective. *Asia Pac J Public Health.* 2020; Epub ahead of print. doi: https://doi.org/10.1177/1010539520962965

Barriers to Understanding and Using Food Labels in Mexico

In Mexico, several types of food labels exist to help consumers make healthier food choices. However, their utility and comprehension by the consumer is unclear. Nieto et al. conducted a qualitative study with 12 focus groups in four cities of Mexico to explore perceptions of use and comprehension of food labels among 78 participants with different socioeconomic statuses. The use of technical language, label format, and general mistrust were barriers to use and understand food labels. Participants with high socioeconomic status thought food label claims were marketing strategies. Those with low socioeconomic status reported difficulty in understanding food labels, highlighting the need for a better and simpler food-labeling system.

Citation. Nieto C, Castillo A, Alcalde-Rabanal J, Mena C, Carriedo A, Barquera S. Perception of the use and understanding of nutrition labels among different socioeconomic groups in Mexico: a qualitative study. *Salud Publica Mex.* 2020;62(3):288–297. https://doi.org/10.21149/10793

Predictors of Self-Medication With Tranquilizers and Sleeping Pills in Serbian Males Versus Females

According to a national Serbian survey, at least 23% of adults aged 18 years or older use tranquilizers or sleeping pills and 13% of students self-medicate with sedatives, but gender differences in the predictors of self-medication remain unknown. Tripković et al. analyzed data from the 14 623 individuals aged 15 years and older from the Serbian National Health Survey to identify predictors of self-medication with tranquilizers and sleeping pills. Females reported higher self-medication with tranquilizers and sleeping pills than did males (5.6% vs 2.2%). Chronic diseases, stress, and pain were associated with increased likelihood of self-medication for both sexes. Age (55–65 years) was the most significant predictor of self-medication among females, whereas unemployment was for males. These results could inform the creation of gender-specific interventions to reduce selfmedication with tranquilizers and sleeping pills among Serbians.

Citation. Tripković K, Milićević MŠ, Odalović M. Gender differences in predictors of self-medication with tranquillizers and sleeping pills: results of the population-based study in Serbia. *Zdr Varst.* 2019:59(1):47–56. doi: https://doi.org/10.2478/ajph-2020-0007

Prepared by Vrinda Kalia, Mati Mugore, and Luis E. Segura, Columbia University, New York, NY. Correspondence should be sent to the AJPH Global News team at les2196@cumc.columbia.edu.

DOI: *https://doi.org/10.2105/AJPH.2020.306013*

Mental Health of People Living With HIV/AIDS

People living with HIV/AIDS in resource-limited settings have a high prevalence of mood disorders, which can affect medication adherence and risk-reduction behaviors. Between 2012 and 2013, Siril et al. studied the perceptions of the Swahili words for stress (*msongo*) and depression (*sonona*) using focus group discussions, in-depth interviews, and surveys among 86 people with HIV/AIDS in Dar es Salam. Those without mood disorders thought *msongo* meant normal thoughts that do not need medical attention, but they did not recognize the word *sonona*. Both people living with HIV/AIDS and health providers had limited understanding of the words *msongo* and *sonoma*.

Citation. Siril HN, Fawzi MCS, Todd J, et al. Patients' and providers' perceptions of the Swahili words of *msongo* (stress) and *sonona* (depression): implications for treating mood disorders among people living with HIV/AIDS, Dar es Salaam, Tanzania. *East Afr J Public Health*. 2019; 14(1):6–18.

Impact of COVID-19 on Domestic Violence

In Pakistan, where more than 90% of married women experience domestic violence, increases in domestic violence have been observed during epidemics such as cholera. COVID-19 lockdown restrictions have forced women to choose between the risk of infection and the risk of confining themselves in an abusive home. As resources in Pakistan's health system are reallocated to respond to COVID-19, support services such as domestic violence helplines have been scaled back. Baig et al. emphasize the need to increase awareness of domestic violence, support for those abused, and funding for hotlines and shelters.

Citation. Baig MAM, Ali S, Tunio NA. Domestic violence amid COVID-19 pandemic: Pakistan's perspective. *Asia Pac J Public Health.* 2020; Epub ahead of print. doi: https://doi.org/10.1177/1010539520962965

Barriers to Understanding and Using Food Labels in Mexico

In Mexico, several types of food labels exist to help consumers make healthier food choices. However, their utility and comprehension by the consumer is unclear. Nieto et al. conducted a qualitative study with 12 focus groups in four cities of Mexico to explore perceptions of use and comprehension of food labels among 78 participants with different socioeconomic statuses. The use of technical language, label format, and general mistrust were barriers to use and understand food labels. Participants with high socioeconomic status thought food label claims were marketing strategies. Those with low socioeconomic status reported difficulty in understanding food labels, highlighting the need for a better and simpler food-labeling system.

Citation. Nieto C, Castillo A, Alcalde-Rabanal J, Mena C, Carriedo A, Barquera S. Perception of the use and understanding of nutrition labels among different socioeconomic groups in Mexico: a qualitative study. *Salud Publica Mex.* 2020;62(3):288–297. https://doi.org/10.21149/10793

Predictors of Self-Medication With Tranquilizers and Sleeping Pills in Serbian Males Versus Females

According to a national Serbian survey, at least 23% of adults aged 18 years or older use tranquilizers or sleeping pills and 13% of students self-medicate with sedatives, but gender differences in the predictors of self-medication remain unknown. Tripković et al. analyzed data from the 14 623 individuals aged 15 years and older from the Serbian National Health Survey to identify predictors of self-medication with tranquilizers and sleeping pills. Females reported higher self-medication with tranquilizers and sleeping pills than did males (5.6% vs 2.2%). Chronic diseases, stress, and pain were associated with increased likelihood of self-medication for both sexes. Age (55–65 years) was the most significant predictor of self-medication among females, whereas unemployment was for males. These results could inform the creation of gender-specific interventions to reduce selfmedication with tranquilizers and sleeping pills among Serbians.

Citation. Tripković K, Milićević MŠ, Odalović M. Gender differences in predictors of self-medication with tranquillizers and sleeping pills: results of the population-based study in Serbia. *Zdr Varst.* 2019:59(1):47–56. doi: https://doi.org/10.2478/ajph-2020-0007

Prepared by Vrinda Kalia, Mati Mugore, and Luis E. Segura, Columbia University, New York, NY. Correspondence should be sent to the AJPH Global News team at les2196@cumc.columbia.edu.

DOI: https://doi.org/10.2105/AJPH.2020.306013

Mental Health of People Living With HIV/AIDS

People living with HIV/AIDS in resource-limited settings have a high prevalence of mood disorders, which can affect medication adherence and risk-reduction behaviors. Between 2012 and 2013, Siril et al. studied the perceptions of the Swahili words for stress (*msongo*) and depression (*sonona*) using focus group discussions, in-depth interviews, and surveys among 86 people with HIV/AIDS in Dar es Salam. Those without mood disorders thought *msongo* meant normal thoughts that do not need medical attention, but they did not recognize the word *sonona*. Both people living with HIV/AIDS and health providers had limited understanding of the words *msongo* and *sonoma*.

Citation. Siril HN, Fawzi MCS, Todd J, et al. Patients' and providers' perceptions of the Swahili words of *msongo* (stress) and *sonona* (depression): implications for treating mood disorders among people living with HIV/AIDS, Dar es Salaam, Tanzania. *East Afr J Public Health*. 2019; 14(1):6–18.

Impact of COVID-19 on Domestic Violence

In Pakistan, where more than 90% of married women experience domestic violence, increases in domestic violence have been observed during epidemics such as cholera. COVID-19 lockdown restrictions have forced women to choose between the risk of infection and the risk of confining themselves in an abusive home. As resources in Pakistan's health system are reallocated to respond to COVID-19, support services such as domestic violence helplines have been scaled back. Baig et al. emphasize the need to increase awareness of domestic violence, support for those abused, and funding for hotlines and shelters.

Citation. Baig MAM, Ali S, Tunio NA. Domestic violence amid COVID-19 pandemic: Pakistan's perspective. *Asia Pac J Public Health.* 2020; Epub ahead of print. doi: https://doi.org/10.1177/1010539520962965

Barriers to Understanding and Using Food Labels in Mexico

In Mexico, several types of food labels exist to help consumers make healthier food choices. However, their utility and comprehension by the consumer is unclear. Nieto et al. conducted a qualitative study with 12 focus groups in four cities of Mexico to explore perceptions of use and comprehension of food labels among 78 participants with different socioeconomic statuses. The use of technical language, label format, and general mistrust were barriers to use and understand food labels. Participants with high socioeconomic status thought food label claims were marketing strategies. Those with low socioeconomic status reported difficulty in understanding food labels, highlighting the need for a better and simpler food-labeling system.

Citation. Nieto C, Castillo A, Alcalde-Rabanal J, Mena C, Carriedo A, Barquera S. Perception of the use and understanding of nutrition labels among different socioeconomic groups in Mexico: a qualitative study. *Salud Publica Mex*. 2020;62(3):288–297. https://doi.org/10.21149/10793

Predictors of Self-Medication With Tranquilizers and Sleeping Pills in Serbian Males Versus Females

According to a national Serbian survey, at least 23% of adults aged 18 years or older use tranquilizers or sleeping pills and 13% of students self-medicate with sedatives, but gender differences in the predictors of self-medication remain unknown. Tripković et al. analyzed data from the 14 623 individuals aged 15 years and older from the Serbian National Health Survey to identify predictors of self-medication with tranquilizers and sleeping pills. Females reported higher self-medication with tranquilizers and sleeping pills than did males (5.6% vs 2.2%). Chronic diseases, stress, and pain were associated with increased likelihood of self-medication for both sexes. Age (55–65 years) was the most significant predictor of self-medication among females, whereas unemployment was for males. These results could inform the creation of gender-specific interventions to reduce selfmedication with tranquilizers and sleeping pills among Serbians.

Citation. Tripković K, Milićević MŠ, Odalović M. Gender differences in predictors of self-medication with tranquilizers and sleeping pills: results of the population-based study in Serbia. *Zdr Varst.* 2019:59(1):47–56. doi: https://doi.org/10.2478/ajph-2020-0007

Prepared by Vrinda Kalia, Mati Mugore, and Luis E. Segura, Columbia University, New York, NY. Correspondence should be sent to the AJPH Global News team at les2196@cumc.columbia.edu.

DOI: *https://doi.org/10.2105/AJPH.2020.306013*

From MMXX to MMXXI: The Way Forward to Renew American Health Policy

Georges C. Benjamin, MD

ABOUT THE AUTHOR

Georges C. Benjamin is Executive Director of the American Public Health Association.

AJPH January 2021, Vol 111, No. 1

Calendar year 2020 was a year of tremendous turbulence for the public's health. Prolonged heat waves across the nation fueled numerous wildfires that destroyed thousands of acres of forest, hundreds of properties, and many lives. We experienced 28 named severe storms, including 12 hurricanes. Climate change contributed greatly to the severity of all of these significant weather events. Politically, the fight to mitigate climate change was undermined by regulatory rollbacks that will accelerate climate change by continuing the widespread use of fossil fuels while not reducing the toxic gases that fuel climate change and the particulate matter known to harm our health.

The COVID-19 pandemic that has infected more than 11 million Americans and caused more than 240 000 deaths[1] is a catastrophe. It is the most destructive infectious disease we have seen in more than 100 years and has been the cause of the greatest economic and social upheaval since the Great Depression. More than 2.4 million people have become unemployed across a wide range of the economic stratum, but like most detrimental economic impacts, the poorer you were, the more likely you were to lose your job. In addition, women have been more severely impacted by these job losses than men. From a health perspective, the pandemic exposed for all to see the health inequities that still plague our society. Communities of color and those working in "essential" occupations have borne the brunt of the most severe health impacts, including higher COVID-19 morbidity and mortality rates.

Trust was assaulted in the most brutal ways with the undermining of our scientific processes and the politicization of many our most trusted health agencies.

We live in a globalized world where health is dependent on planetary events beyond our borders. Both the COVID-19 pandemic and climate change are prominent examples of this fact. Yet, the United States formally left the Paris Climate Accords on November 4, 2020, becoming the only major world power to not participate. The administration also notified the United Nations Secretary General of our intention to withdraw membership in the World Health Organization (WHO). Prominent legal experts question the legality of this act without the express consent of Congress since the initial entry into WHO was by a joint resolution of Congress and withdrawal would be in violation of Congressional intent. Fortunately, actual withdrawal would not officially occur until July 2021, and President-elect Biden has stated that he will reverse this decision on the first day of his administration.

Meanwhile the nation's other epidemics of obesity, opioid addiction, and firearm violence continue unabated, and new ones have emerged like the epidemic of sexually transmitted infections.

By contrast, progress has been made in several areas of health as measured by the Healthy People 2020 indicators. Fourteen of the 26 indicators are showing improvement, with four of them meeting or exceeded their targets. These four were (1) air quality index exceeding 100 (number of billion person days), (2) children exposed to secondhand smoke, (3) adults meeting aerobic physical activity and muscle strengthening, and (4) reduced homicides.[2] The combined impact of all of these health issues has allowed a modest increase in life expectancy over the last year.

Health insurance coverage has diminished for about 1 million people[3] because of the administration's efforts to undermine the Affordable Care Act. In addition, it is estimated that 1.3% of people may have lost their health insurance coverage because of the pandemic.

THE WAY FORWARD

The 2021 health policy agenda starts by restoring trust in our health agencies by first appointing our most qualified professionals. Policymakers must lead using science and the best evidence available. We must restore our place in the world in scientific prominence by investing in research.

Aggressive efforts to control the COVID-19 pandemic means

- National leadership to ensure a well-reasoned response plan to scale up testing, contact tracing, and supply line management.
- Finalizing the scientific review and distribution plans for a new SARS-CoV-2 vaccine and competently distributing and administrating it.
- Depoliticizing the pandemic response to rebuild trust in our health agencies and enhance mask wearing and social distancing.
- Leading by example.

These are first steps to rebuilding our public health systems to respond to health threats for the 21st century.

We must roll back the many anti-environmental executive regulatory actions of the past administration and renew the regulatory processes where needed. A clean energy revolution will achieve carbon neutrality by 2050 through a just transition that creates jobs and addresses environmental justice concerns.

The Affordable Care Act is the vehicle to enhancing health insurance coverage to achieve a system where nobody is left out by strengthening its basis and adding a public option as an option for all. Reducing health costs and controlling the growth of health insurance over time is another urgent goal. Allowing Medicare to negotiate for prescription drug prices is essential.

It is urgent to address the epidemic of gun violence, the disproportionate number of women of color who die during pregnancy, and the persistent disparities in chronic disease incidence and deaths. Structural racism, criminal justice reforms that impact health, and other social determinates of health are upstream solutions requiring persistent and definitive actions. Ensuring reproductive rights and expanding access to mental health services are high on the agenda.

In 2021, we have the opportunity for a restart, but we need to act fast. Let’s jump out of the starting blocks because time is of the essence. The time is now to end the pandemic, restore our trust in science, and start building a green economy that generates jobs and realizes and builds the robust and accessible health foundations that will once and for all allow our nation to achieve the goal of the American Public Health Association to be the healthiest nation. AJPH

CORRESPONDENCE

Correspondence should be sent to Georges C. Benjamin, MD, Executive Director, American Public Health Association, 800 I Street, NW, Washington, DC 20001 (e-mail: georges.benjamin@apha.org). Reprints can be ordered at http://www.ajph.org by clicking on the “Reprints” link.

PUBLICATION INFORMATION

Full Citation: Benjamin GC. From MMXX to MMXXI: the way forward to renew American health policy. *Am J Public Health*. 2021;111(1):8–9.

Acceptance Date: November 12, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306054

CONFLICTS OF INTEREST

The author has no conflict of interest to declare.

REFERENCES

1. Johns Hopkins University. Coronavirus Resource Center—COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University. 2020. Available at: https://coronavirus.jhu.edu/map.html. Accessed November 17, 2020.
2. HealthyPeople.gov.Healthy People 2020 Leading Health Indicators: Progress Update. Office of Disease Prevention and Health Promotion. Updated October 8, 2020. Available at: https://www.healthypeople.gov/2020/leading-health-indicators/Healthy-People-2020-Leading-Health-Indicators%3A-Progress-Update. Accessed November 8, 2020.
3. Broaddus M. Health Insurance Coverage Losses Since 2016 Widespread. Center on Budget and Policy Priorities. October 22, 2020. Available at: https://www.cbpp.org/blog/health-insurance-coverage-losses-since-2016-widespread. Accessed November 8, 2020.

Climate Change Is Already Exacerbating Current Social Inequities

Michael T. Schmeltz, DrPH, MS

ABOUT THE AUTHOR

Michael T. Schmeltz is with the Department of Health Sciences, California State University, East Bay, Hayward.

See also Zacher et al., p. 127.

Although climate change is a public health emergency—a situation that requires urgent attention—it might be more aptly described as a crisis, a crucial moment when a decision needs to be made. Although climate change can be described as both an emergency and a crisis, we are at a critical point in how we will respond as a society. Many may balk at using the term "crisis" to describe how climate change is affecting the world; we still have government officials and the media posing questions and arguing on whether they "believe" in climate change (e.g., see the 2020 presidential and vice-presidential debates).

There is no doubt that climate change is real and human caused, and we are in a real crisis when it comes to our response. This year alone in the United States, there have been record-breaking heat waves in the West and Southwest, wildfires from Washington to California with hazardous levels of smoke blanketing the nation, and a very active Atlantic hurricane season bringing numerous storms to the Gulf and East coasts[1]—all while under pandemic conditions, with COVID-19 spreading rapidly across the country. During these disasters, our public health systems were tested and shown to be a "colossal failure,"[2] allowing our communities to become vulnerable and suffer health consequences related to climate disasters and COVID-19, with COVID-19 killing more than 240 000 people in the United States.

In 2019, the Lancet Countdown on health and climate change stated that a child born today would experience a warmer world, with climate-related health consequences felt from infancy to old age. Children are acutely susceptible to climate change events, particularly those that increase food and water insecurity, vector-borne diseases, and air pollutants. Additional events, such as heat waves, extreme storms, flooding, and wildfires, affect humans at all life stages, causing both acute and long-term health effects.[3] Climate events happen with or without warning and require comprehensive planning to build resilience in our communities.

The way our current health care systems are set up allows them to be compromised by damage from events such as floods and extreme storms or inundated with patients affected by heat waves or disease outbreaks. Additionally, climate events compound societal and health disparities already found throughout the United States and around the globe. Poverty, homelessness, underlying health conditions, racism, and other disparities exacerbate how climate events affect populations. Local and national planning activities are needed to improve community and individual adaptation and resiliency and to institute equitable and just reforms as we respond to climate change.

The immediate health effects of climate change are well known and documented. Physical trauma from extreme storms, diarrheal illness attributable to waterborne pathogens, and heatstroke from extreme temperatures are notable examples. Researchers and public officials have also been gathering evidence on the long-term consequences of climate change. These have focused mainly on the mental health consequences from events such as drought and sea level rise as these events change our livelihoods and landscapes. Climate change affects every part of our lives: our health, our economy and jobs, and even how we enjoy recreation. The better we understand the impacts, the better we will be able to reduce or adapt to the effects of climate change.

LASTING PHYSICAL TRAUMA

In this issue of *AJPH*, Zacher et al. (p. 127) contribute to the field by examining the long-term physical effects of climate events. The authors surveyed low-income mothers living in New Orleans, Louisiana, before and during Hurricane Katrina, with survey follow-ups over a 15-year period after the storm. They point out that although there is a large body of work assessing the mental health consequences, there are few studies on the physical health symptoms of individuals affected by climate disasters. Many physical health issues that stem from climate events, such as hurricanes, may be owing to physical trauma sustained during the event itself, but physical symptoms may also result from the psychosocial trauma or stress sustained during the event, as the authors point out.

In brief, the authors examine three physical health symptoms—headaches or migraines, back problems, and digestive problems—owing to the impact of Hurricane Katrina on the study population. They found that these physical health symptoms increased between 26% and 30% from after Hurricane Katrina to the latest survey results in 2018. The authors emphasize that those who experience more hurricane-related trauma are more likely to develop physical health issues, which may be particularly pertinent to those who experience these underlying health issues before a climate-related disaster.

This research demonstrates what was stated in the 2014 Intergovernmental Panel on Climate Change synthesis report: those who are socially, economically, or otherwise marginalized will be most vulnerable to the effects of climate change, and this vulnerability is rarely attributable to a single cause.[4] The population in the study by Zacher et al.—low-income people of color, mostly women—are potentially at a higher risk for other social and health disparities that were likely compounded by Hurricane Katrina. The authors identify the need to assess multiple pathways that may cause lasting physical symptoms related to climate disasters.

Another key feature of this research is the importance of gathering data to track the long-term health consequences of climate change. Expansive reports from the *Lancet* and the Intergovernmental Panel on Climate Change have made projections and identified theories on how climate change will exacerbate current inequities, but the authors demonstrate how this is already happening, especially when it comes to physical health. Population health surveillance along with individual health data over time are key to identifying and describing key factors related to the long-term health vulnerabilities associated with climate change.

PUBLIC HEALTH RESPONSE

Recently, the 10 essential public health services were updated, and they encapsulate perfectly how we need to respond to the climate crisis.[5] In their article, Zacher et al. demonstrate the use of longitudinal data to determine the root causes of health disparities and inequities as they relate to long-term physical health symptoms caused by Hurricane Katrina. This is part of the "assessment" category in the essential public health services, which helps to inform us of the health issues that may be related to climate change. These assessments drive policy developments to ensure that effective solutions are implemented. To succeed, the public health service that identifies building and maintaining a strong organizational infrastructure for public health is one of the most important components. This requires our leaders to support a strong national public health program and allocate needed resources to our local public health departments that are on the ground working with individuals and communities to educate, strengthen, and build resilience in our populations.

We are at a critical juncture in our response to the climate crisis. We have the tools to respond and prepare, but we lack the financial, political, and collective will to prepare for and respond to our changing climate. This failure to act has had devastating consequences during the COVID-19 pandemic and should be a wake-up call showing us what climate change is capable of inflicting on our health and our society. AJPH

CORRESPONDENCE

Correspondence should be sent to Michael T. Schmeltz, Assistant Professor, California State University, East Bay, SF502, 25800 Carlos Bee Blvd, Hayward, CA 94542 (e-mail: michael.schmeltz@csueastbay.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Schmeltz MT. Climate change is already exacerbating current social inequities. *Am J Public Health*. 2021;111(1):10–11.

Acceptance Date: October 12, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306010

CONFLICTS OF INTEREST

The author has no conflicts of interest to declare.

REFERENCES

1. Hersher R, Rott N, Sommer L. Everything is unprecedented. Welcome to your hotter earth. 2020. Available at: https://www.npr.org/2020/08/28/905622947/everything-is-unprecedented-welcome-to-your-hotter-earth. Accessed October 8, 2020.
2. Murphy B, Stein L. "It is a slaughter": public health champion asks CDC director to expose White House, orchestrate his own firing. 2020. Available at: https://www.usatoday.com/story/news/investigations/2020/10/06/expert-cdcs-redfield-should-expose-trump-covid-failures-leave-post/5899724002. Accessed October 9, 2020.
3. Watts N, Amann M, Arnell N, et al. The 2019 report of the *Lancet* Countdown on health and climate change: ensuring that the health of a child born today is not defined by a changing climate. *Lancet*. 2019;394(10211):1836–1878. https://doi.org/10.1016/S0140-6736(19)32596-6
4. Intergovernmental Panel on Climate Change. *Climate Change 2014: Synthesis Report*. Geneva, Switzerland; 2015.
5. De Beaumont Foundation. The 10 essential public health services. 2020. Available at: https://www.debeaumont.org/10-essential-services. Accessed October 7, 2020.

Toward a New Framework for Equity in Epidemic Allocations: Implications of HIV-Prevention–Allocation Misalignment

M. Reuel Friedman, PhD, MPH, Cristian J. Chandler, PhD, MPH, Brian J. Adams, MPH, Mary E. Hawk, DrPH, LSW, David L. Givens, PhD, MA, José A. Bauermeister, PhD, MPH, and Lisa Bowleg, PhD, MA

ABOUT THE AUTHORS

M. Reuel Friedman, Cristian J. Chandler, and David L. Givens are with the Department of Infectious Diseases and Microbiology, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA. Brian J. Adams is a PhD candidate in and Mary E. Hawk is with the Department of Behavioral and Community Health Sciences, Graduate School of Public Health, University of Pittsburgh. José A. Bauermeister is with the Department of Family and Community Health, School of Nursing, University of Pennsylvania, Philadelphia. Lisa Bowleg is with the Department of Psychology, George Washington University, Washington, DC.

See also Sansom et al., p. 150.

The important and timely article "Optimal Allocation of Societal HIV-Prevention Resources to Reduce HIV Incidence in the United States" by Sansom et al. (p. 150) models different federal and private HIV-prevention resource allocation strategies to prioritize HIV funding through 2027. Modeling exercises are useful starting points for decision making yet may not fully incorporate real-world complexities because of model assumptions and limited quantifiable inputs. Models provided exclude multilevel interventions, policy and structural-level initiatives, and within-group cost differentiation, all key considerations for affecting communities at highest risk for HIV infection.

Sansom et al. punctuate the misalignment between epidemic burden and resource allocation. Current allocations for HIV screening among low-risk heterosexuals constitute 25.3% of the total prevention budget and are 22 times greater than funds earmarked for high-risk men who have sex with men (MSM). MSM accounted for 69% of incident HIV diagnoses in 2018, more than seven times the number of new HIV diagnoses of heterosexual sex.[1] Within MSM, Black or Latinx MSM account for 67% and MSM younger than 35 years account for 65% of new diagnoses. New infections are concentrated in the South. The Ending the HIV Epidemic strategy is an important step forward in directing HIV-prevention resources to jurisdictions experiencing the highest HIV burdens.[2] Although the most likely (limited reach) scenario modeled by Sansom et al. begins this process of resource realignment, we advocate more intentional rectification of these misalignments by redistributing HIV-prevention resources so they reach the populations most at risk: young Black and Latinx MSM and transgender women (transwomen).

The Pareto principle applies to the current HIV epidemic in the United States: a small proportion of people—Black and Latinx MSM and transwomen younger than 35 years, accounting for less than 1% of the US population—experience a large proportion (> 30%) of new cases.[1] Populations with the highest HIV burden in the United States face intersecting social–structural stigma (intersectional stigma), including racism and homo-, bi-, and transphobia, creating a cycle in which stigma increases risk and disease burden exacerbates stigma. Structural inequities, including poverty, health insurance deficits, homelessness, unemployment, discrimination, and incarceration are implicated in worse HIV-prevention and care outcomes. Social stigma inhibits provision and uptake of HIV prevention and care; experiences and anticipation of stigma in health care settings are associated with lower rates of HIV testing, preexposure prophylaxis uptake, retention in care, and antiretroviral therapy adherence. Thus, relying solely on biomedical HIV prevention for young Black and Latinx gay and bisexual men and transwomen will not constitute a sufficient response to their needs.

Historically, allocative misalignments result in underservice on the ground. For example, a statewide review of Pennsylvania HIV-prevention monitoring data from 2007 through 2010 uncovered a critical gap in service: young Black MSM and transwomen received 0.8% of

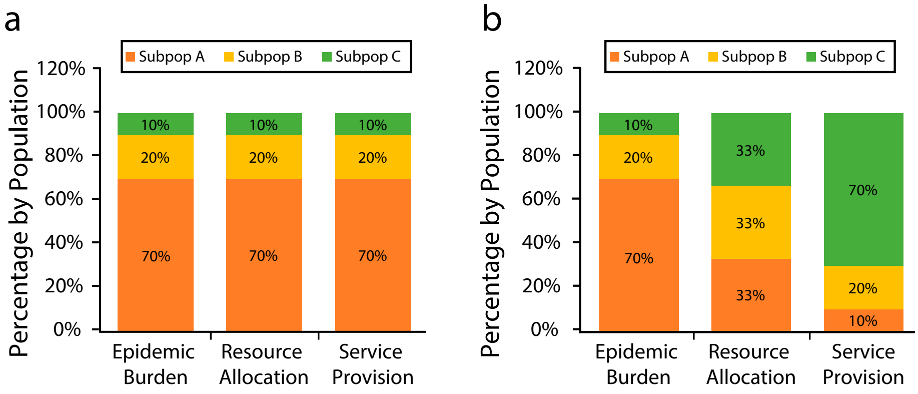


FIGURE 1— **Percentage of Hypothetical Subpopulations by (a) The Equity in Epidemic Allocations (EqEA) Framework and (b) an Example of Allocative Misalignment**

Note. The figure shows proportions of hypothetical subpopulations A, B, and C across infectious disease epidemic burden, resource allocation, and service provision domains.

state-funded HIV-prevention interventions while accounting for more than 20% of total cases during that period. In response, local researchers collaborated with local sexual and gender minority youths of color to develop, implement, and evaluate a multilevel HIV-prevention and care intervention.[3]

The Pennsylvania Department of Health and the state's HIV Planning Group, whose composition has robustly included most-at-risk populations empowered to identify priority populations and recommend resource allocations, supported and promoted the project for statewide scale-up. However, historical underservice created implementation capacity deficiencies that persisted even when allocations were realigned to reflect underserved communities' epidemic burden. Citing their lack of capacity to engage with "hard-to-reach" populations, few organizations applied for pilot funding to diffuse this model. One health services organization director wrote:

> There are several core components of the intervention that we do not meet, particularly related to asset-based youth development, agency buy-in and support, and competency in programming designed specifically for Black and Latino populations. (personal e-mail communication, June 14, 2016)

A Ryan White Coalition director wrote, "I have not been able to identify a provider who wants to consider this" (personal e-mail communication, June 17, 2016). Populations are only hard to reach if no one tries to reach them.

Coordinated, combination interventions that include biomedical components and address multiple social ecological levels continue to be essential: preexposure prophylaxis is not housing, antiretroviral therapy is not a job, and linkage to care interventions do not supplant the need for sustained social capital. Emerging research incorporating wraparound clinical harm reduction[4] and intersectional stigma reduction[5] into biomedical HIV prevention shows promise. Because of their complexity, such interventions are difficult to operationalize, field, and consolidate into cost-per-person metrics; for these reasons, multilevel, social determinants-based interventions are excluded from allocation models provided. Models disregarding larger social and structural determinants, such as economic inequality, retain biomedical concision at the cost of epidemiological myopia.

We advocate the development, refinement, and adoption of a new framework for combating infectious diseases: an Equity in Epidemic Allocations (EqEA) prototype. The EqEA prototype framework acknowledges that infectious disease epidemics (1) become rapidly concentrated in the most oppressed places and populations; (2) require allocations from private and public sources to places and populations proportional to their epidemic burden; (3) necessitate additional infrastructural development and capacity building so that service provision is aligned with both epidemic burden and allocations; and (4) compel continuous surveillance along epidemiological, allocation, service provision, and cost domains.

EqEA (Figure 1) is an allocations-level corollary to Meaningful Involvement of People Living With HIV/AIDS principles. EqEA acknowledges that infectious disease prevention must happen first, continually, and sustainably among populations experiencing the highest disease burden, especially when such populations are historically oppressed and underserved. Manifesting an EqEA response impels such supportive actions as recognizing, using, and respecting existing community-based wisdom by ensuring that indigenous experts are meaningfully included in allocation-prioritization bodies and epidemic-response planning and staffing; investing in the infrastructure of organizations with established ties to most-at-risk populations but potentially lacking fiscal stability and scientific expertise because of structural inequality; and designing larger structural innovations built to remediate underlying causes of disproportionate disease burden.

Relying solely on cost-effectiveness metrics in allocation modeling leads to overreliance on interventions that are the most efficiently deployed, thereby ignoring underserved populations who may require greater cost-per-person investments; in such cases, researchers have argued for a balance between efficiency and equity.[6] Although Sansom et al. are unable to differentiate within-group cost-per-person metrics, it is likely that effectively reaching racial/ethnic minorities requires higher upfront costs. We communicate four suggestions for inclusion into the optimal allocations models promoted: (1) nesting analyses so that race/ethnicity, age, gender, and region are used to make allocation decisions; (2) analyzing risk group intersections (e.g., bisexually behaving men, MSM who inject drugs); (3) accounting for the effects of injectable preexposure prophylaxis on HIV-prevention success; and (4) design, refinement, and adoption of an EqEA framework.

The field of HIV prevention and care has never been more advanced or poised for success, yet we cannot succeed if we are myopic to viable, multilevel solutions. Resource allocation models must account for the historic, intersectional mechanisms that maintain HIV inequities among racial/ethnic and sexual and gender minorities. The proposed EqEA framework may help achieve Ending the HIV Epidemic endpoints and offers insights for other infectious diseases, such as directing COVID-19 prevention resources to minority communities wherein SARS-CoV-2 is exacting a disproportionately lethal toll and federal aid formulas for hospitals have large-scale racial biases.[7] Adopting equitable allocation strategies will ensure that resources do not remain woefully misaligned and our systems do not exacerbate the well-defined shortcomings of decades of efforts. AJPH

CORRESPONDENCE

Correspondence should be sent to M. Reuel Friedman, PhD, PO Box 7319, Pittsburgh, PA 15213 (e-mail: mrf9@pitt.edu). Reprints can be ordered at http://www.ajph.org by clicking the “Reprints” link.

PUBLICATION INFORMATION

Full Citation: Friedman MR, Chandler CJ, Adams BJ, et al. Toward a new framework for equity in epidemic allocations: implications of HIV-prevention–allocation misalignment. *Am J Public Health*. 2021; 111(1):12–14.

Acceptance Date: October 16, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306032

CONTRIBUTORS

José A. Bauermeister and Lisa Bowleg are co-senior authors. All authors contributed to the writing of this editorial.

ACKNOWLEDGMENTS

C. J. Chandler was supported by the National Institutes of Health (grant NIH 5T32MH094174).

We acknowledge Anthony J. Silvestre, PhD, for his support, guidance, and groundbreaking work in pursuing health equity over his distinguished career. We are thankful to the Pennsylvania HIV Planning Group and the Pennsylvania Department of Health, Division of HIV Disease for their structural commitment to parity, inclusion, representation, and health equity in HIV prevention and care.

CONFLICT OF INTERESTS

The authors have no potential conflicts of interest to disclose.

REFERENCES

1. Centers for Disease Control and Prevention. HIV surveillance report, 2018. Vol. 31. 2020. Available at: http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html. Accessed October 31, 2020.
2. Fauci AS, Redfield RR, Sigounas G, Weahkee MD, Giroir BP. Ending the HIV epidemic: a plan for the United States. *JAMA*. 2019;321(9):844–845. https://doi.org/10.1001/jama.2019.1343
3. Adams B, Krier S, Netto J, Feliz N, Friedman MR. “All we had were the streets”: lessons learned from a recreation-based community health space for young Black MSM and trans women across the HIV prevention and care continuum. *AIDS Educ Prev*. 2018;30(4):309–321. https://doi.org/10.1521/aeap.2018.30.4.309
4. Hawk M, Coulter RWS, Egan JE, et al. Harm reduction principles for healthcare settings. *Harm Reduct J*. 2017;14(1):70. https://doi.org/10.1186/s12954-017-0196-4
5. Bauermeister JA, Muessig KE, LeGrand S, et al. HIV and sexuality stigma reduction through engagement in online forums: results from the HealthMPowerment intervention. *AIDS Behav*. 2019;23(3):742–752. https://doi.org/10.1007/s10461-018-2256-5
6. Kaplan EH, Merson MH. Allocating HIV-prevention resources: balancing efficiency and equity. *Am J Public Health*. 2002;92(12):1905–1907. https://doi.org/10.2105/AJPH.92.12.1905
7. Kakani P, Chandra A, Mullainathan S, Obermeyer Z. Allocation of COVID-19 relief funding to disproportionately Black counties. *JAMA*. 2020;324(10):1000–1003. https://doi.org/10.1001/jama.2020.14978

The Time Is Ripe for Addressing Gender Inequalities in the Authorship of Scientific Papers

Ana-Catarina Pinho-Gomes, MD, MSc, MPH, DPhil

ABOUT THE AUTHOR

Ana-Catarina Pinho-Gomes is with the School of Population Health & Environmental Sciences, Faculty of Life Sciences & Medicine, King's College London, United Kingdom.

See also Bell and Fong, p. 159.

COVID-19 has brought about dramatic changes to the way we live as individuals, families, and societies. The response to the pandemic across the world, and particularly in Western countries, has been unprecedented. When lockdown was implemented in many European countries and some US states, academic institutions closed their doors, and staff, other than those directly involved in the response to the pandemic, were asked to work from home. However, schools, businesses, and day care centers also closed down. For most researchers, this required conciliating home schooling and caring responsibilities with working remotely in unfamiliar and often challenging circumstances. Public health researchers and practitioners are not immune to this, and many, if not most, have been working from home since the beginning of the pandemic. In this scenario, Bell and Fong (p. 159; published in this issue of *AJPH*) investigated the effect of the pandemic and the drastic changes associated with it on the number of articles submitted to *AJPH* by men versus by women.

Overall, the authors showed that there was a 25% increase in the daily number of articles submitted during the pandemic period. However, the pattern of article submissions differed by gender. The rate of submissions (articles/day) for corresponding authors increased by 11% for women and by 42% for men. The gender imbalance was even more striking for countries other than the United States, with a 113% increase for men and a 27% increase for women. As expected, the gender gap was higher for corresponding author than for first author (36% vs 12% increase for men and women, respectively), as it is not uncommon for the corresponding author to be the last (i.e., the most senior) rather than the first author of an article. This is in keeping with previous research suggesting that the underrepresentation of women is more marked in senior than in junior authorship positions.[1,2]

Although this study lends further support to the detrimental impact of COVID-19 gender inequalities, its findings need to be interpreted in light of some methodological limitations. First, the authors used country-specific dates to define the pandemic period, thus accounting for the different evolution of the pandemic in each country. However, there was substantial heterogeneity even within countries, particularly where policies, such as school closures and stay-at-home orders, were enforced at local and regional rather than national levels.

Second, generalizability to countries other than the United States, which accounted for nearly 70% of all submissions during the study period, is questionable. Indeed, the small number of studies submitted from countries outside North America and Europe precluded subgroup analysis by country or region. Considering how gender roles and women's participation in society and research vary across countries, the findings of this study are unlikely to be applicable to low-income countries, where gender inequalities have been shown to be staggeringly worse than in high-income countries.[3]

Third, this study was unable to explore whether there was a generational effect on gender inequalities. Although women have made progress toward greater equality in the workplace, a gendered distribution of housework prevails in most countries, and, even in the workplace, gender inequalities persist in reward, recognition, and pay.[4] To what extent this is transferrable to academia and research is unclear. However, studies have shown that there has been hardly any progress toward gender parity in authorship, particularly for senior positions.[5]

In addition, this article provides critical insight into gender inequalities in COVID-19–related research. The finding that more than a third of the articles submitted during the pandemic period were related to COVID-19 compellingly demonstrates how COVID-19 reframed and reshaped priorities in public health research and practice across the world, and the worrisome implications of this for noncommunicable diseases and other infectious diseases are starting to emerge. It would have been interesting to understand what proportion of the increase in journal submissions was accounted for by COVID-19–related articles. This would have illustrated whether COVID-19 research was simply added to the research that was already being carried out or it actually replaced research in other areas. In fact, specialized journals in areas directly linked to health care provision reported a marginal increase in submissions from men and a decrease in submissions from women.[6] It is uncertain to what extent the increase in submissions observed in this study reflects greater gender parity in public health or the fact that public health was more involved in generating evidence than specialties at the forefront of the response to COVID-19.

On the other hand, for COVID-19 articles, only about a third of the corresponding authors were women, whereas 52% of all articles had a female corresponding author before the pandemic. This secondary result of the study is arguably one of the most relevant findings. First, the proportion of authors of COVID-19 articles confirms that women are not contributing equally to the COVID-19 pandemic response. Ensuring that women's voices are heard is crucial for improving our understanding of the far-reaching and gendered effects of COVID-19, which will benefit women and men alike.[7]

Second, the fact that there was gender parity in journal submissions before the pandemic raises the question of whether parity was also observed in actual publications. Indeed, this study provides a novel insight into gender inequalities related to research article authorship. Previous studies focused on published articles, whereas this study looked at submissions, irrespective of the outcome. If there are gender imbalances in published but not submitted articles, this suggests that men are more likely to get articles published than women. This hypothesis, if confirmed, is puzzling, considering that gender is not disclosed at any point during the submission and peer-review process. However, unconscious bias may still play a part if reviewers or editors infer the gender of the author from the name, when peer review is not blinded, as is often the case. This hypothesis deserves a thorough investigation, as currently available evidence is sparse.

It is high time that the scientific community, in general, and scientific journals and publishers, in particular, adopt transparent practices regarding gender equality, for instance by making publicly available the proportion of submitted versus accepted articles by age, gender, race, and country of origin of the first or last authors. This would be a major cultural shift in journal publications, and it would obviously require authors to voluntary disclosure those sensitive data. However, it would be a valuable addition to the citation-based impact factors that remain key for assessing the credibility and reputation of scientific journals. Demonstrating commitment to equality and diversity should be compulsory for any journal that claims or aspires to be world leading in science, medicine, and, especially, public health.

This interesting study adds to the pool of evidence supporting the fact that COVID-19 has exacerbated preexisting inequalities between women and men in academia and research. It is another call for individuals, institutions, and society at large to take the necessary steps to promote gender equality in all spheres of life, as this is an essential requisite for enabling women to achieve their full potential. As we emerge from the pandemic, our key priority should be to rebuild a world where all human beings are truly equal and fairness trumps inequity, discrimination, and prejudice. AJPH

CORRESPONDENCE

Correspondence should be sent to Ana-Catarina Pinho-Gomes, School of Population Health & Environmental Sciences, Faculty of Life Sciences & Medicine, King's College London, Addison House, Guy's Campus, London SE1 1UL, United Kingdom (e-mail: cat.pinho-gomes@kcl.ac.uk). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Pinho-Gomes A-C. The time is ripe for addressing gender inequalities in the authorship of scientific papers. *Am J Public Health*. 2021;111(1): 15–16.

Acceptance Date: October 15, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306028

CONFLICTS OF INTEREST

The author has no conflicts of interest to declare.

REFERENCES

1. Nielsen MW, Andersen JP, Schiebinger L, Schneider JW. One and a half million medical papers reveal a link between author gender and attention to gender and sex analysis. *Nat Hum Behav*. 2017;1(11):791–796. https://doi.org/10.1038/s41562-017-0235-x
2. Filardo G, da Graca B, Sass DM, Pollock BD, Smith EB, Martinez MA-M. Trends and comparison of female first authorship in high impact medical journals: observational study (1994–2014). *BMJ*. 2016;352: i847. https://doi.org/10.1136/bmj.i847
3. Morgan R, Lundine J, Irwin B, Grépin KA. Gendered geography: an analysis of authors in the *Lancet Global Health*. *Lancet Glob Health*. 2019;7(12):e1619–e1620. https://doi.org/10.1016/S2214-109X(19)30342-0
4. Treas J, Tai T. Gender inequality in housework across 20 European nations: lessons from gender stratification theories. *Sex Roles*. 2016;74(11):495–511. https://doi.org/10.1007/s11199-015-0575-9
5. Lerchenmüller C, Lerchenmueller MJ, Sorenson O. Long-term analysis of sex differences in prestigious authorships in cardiovascular research supported by the National Institutes of Health. *Circulation*. 2018;137(8):880–882. https://doi.org/10.1161/CIRCULATIONAHA.117.032325
6. Kibbe MR. Consequences of the COVID-19 pandemic on manuscript submissions by women. *JAMA Surg*. 2020;155(9):803–804. https://doi.org/10.1001/jamasurg.2020.3917
7. Pinho-Gomes AC, Peters S, Thompson K, et al. Where are the women? Gender inequalities in COVID-19 research authorship. *BMJ Glob Health*. 2020;5(7):e002922. https://doi.org/10.1136/bmjgh-2020-002922

Embedding Prevention at the Heart of the US Health Conversation

Sandro Galea, MD, DrPH, and Roger Vaughan, DrPH, MS

ABOUT THE AUTHORS

Sandro Galea is with the School of Public Health, Boston University, Boston, MA. Roger Vaughan is an AJPH associate editor and is with the Department of Biostatistics, The Rockefeller University, New York, NY.

See also Privett and Guerrier, p. 145, and Sansom et al., p. 150.

Has there ever been a more important time to focus on prevention? The United States remains in the middle of the COVID-19 pandemic, which at this writing has resulted in the loss of more than 222 000 lives. The COVID-19 pandemic, which transformed the world in 2020, has been fundamentally a problem of prevention. From the first diagnoses of the virus in Wuhan, China, through massive lockdown and mitigation efforts all over the world, through global efforts to accelerate vaccine development, the pandemic has reminded us and elevated the visibility of the need for prevention.

Although there has appropriately been an investment in therapeutic approaches, the core of the global response to COVID-19 has been an effort to prevent viral transmission, recognizing that absent limits on transmission, health care systems would quickly become overwhelmed and no amount of effective therapeutics would help us cope with the burden of SARS-CoV-2 infections.

This focus on prevention has been heartening, important, and appropriate. Indeed, the pandemic quickly made clear that despite our overwhelming global and national investment in health care and medicine, when the world faces an unprecedented surge in a novel disease, health care systems are simply not up to the challenge and our only viable approach to protect health is preventing the health problem to begin with.

LEVERS FOR PREVENTION

It is, of course, odd that it took a global pandemic to remind us that prevention of disease is a far preferable approach to promoting the public's health than is treatment once we are already sick. At an intuitive level, we all recognize that we would rather not get a disease to begin with than receive treatment, even if effective. Ask yourself: would you rather not develop Alzheimer's dementia or develop dementia and then receive treatment for it? When faced with that question, the answer is blindingly obvious to all of us: we do not want to develop the disease, recognizing quite simply the cost, in terms of time, money, and lingering consequences, of developing a disease and being treated for it.

And yet, despite the intuitive appeal of prevention, the US health system remains overwhelmingly, almost prohibitively, weighted toward treatment versus prevention. Although a precise quantification is difficult, most analyses agree that less than 5% of US health care spending is devoted to prevention, a drop in the bucket of what we spend on treatment and cure.[1] Why is this? We suggest that there are three central reasons for this challenge, well illustrated by two articles in this issue of *AJPH*. Although these observations are not new, the COVID-19 pandemic is perhaps an apposite moment to focus, yet again, on prevention in the hope of changing the public conversation.

REASONS WHY

First, prevention simply is not a priority for US health, and consequently our health systems are not structured to lead with prevention. The article in this issue of *AJPH* by Privett and Guerrier (p. 145) illustrates this point elegantly. The authors assessed the time required to provide the US Preventive Services Task Force recommended preventive services using data from a nationally representative adult patient panel. They found that delivering the recommended preventive services required 131% of available physician time, which is clearly infeasible. Privett and Guerrier correctly note that this is a "systems problem, not a time management problem" (p. 145).

We argue that it is a problem that fundamentally rests in the structure of our health care system, which is oriented toward treatment and cure and, in particular, toward highly specialized and fragmented approaches to the provision of such treatments. A focus on prevention in our health care system would have a range of implications, potentially including the prioritization of primary care and changing incentive structures and payment models to make sure that health care providers elevate prevention as a core, rather than an incidental, goal. There seems to be little doubt that health care providers' underengagement in prevention contributes to the burden of preventable illness in the United States; in the coming months, we suspect this will continue to challenge our capacity to respond in a timely fashion to current and emerging threats.[2]

Second, and perhaps just as fundamentally, we as a country have not been thinking about how to create the infrastructure on which we can create a coherent and comprehensive suite of prevention activities. This has been a sentinel failure of the COVID-19 era; decades of underinvestment in public health structures and the attendant fragmentation and poorly resourced public health systems have hampered the national response to the pandemic.[3]

In this issue of *AJPH*, Sansom et al. (p. 150) offer a compelling illustration of the power of appropriately structured health systems and how they can have a dramatic influence on our prevention efforts. Studying the optimal allocation of HIV-prevention resources to reduce HIV incidence, the authors used a national HIV model to estimate new infections from 2018 to 2027. They showed that efficient funding allocations were associated with timely diagnosis and sustained viral suppression through the improved screening of high-risk persons and treatment adherence support for those infected. This achieved reductions of more than 90% over current approaches, showing quite effectively that appropriately structured systems of prevention can achieve dramatic gains. Important to underline here is that promoting health requires systems built with the explicit goal of prevention.

Third, and perhaps underlying the first and second reasons, is that prevention simply is not at the heart of the US health conversation. Decades of investment in curative care, resulting in the most expensive health care system in the world, has resulted in a US system that privileges treatment, and, perhaps more importantly, treatment is seen as the fundamental purpose of the health system. This is reflected in the visibility of doctors and nurses, for example in our health imagination in books, movies, and, in recent months, at the frontline of telling the COVID-19 story; this further cements the role of providers whose fundamental job is treatment and cure, even though we are dealing with a pandemic for which our fundamental priority should be prevention. Changing this attitude requires a reinvention of our national health narrative with a new health vocabulary in which we triumph in the absence of the disease over the important, but arguably secondary, contribution of treatment once the disease has already occurred.

For decades now the evolving US health conversation has drifted away from putting prevention at its core. Returning to prevention at the center requires a rethinking of our foundational approach to health. Doing so calls on us to address all three challenges: to structure health systems to prioritize prevention, to invest in a prevention infrastructure outside these systems, and to change the conversation on health. We can perhaps be forgiven for thinking this too tall a mountain to climb. But the COVID-19 pandemic should serve to remind us that there can simply be no health without prevention at its core, and the extra effort to reinvigorate the prevention conversation is indeed worth it.

A RETURN TO A PUBLIC HEALTH OF CONSEQUENCE

We note, in closing, that this editorial marks our return to monthly commentaries under the public health of consequence label after a year's absence. When we wrote our last editorial in December 2019,[4] we noted, "We end our regular engagement with the section out of an appreciation for the fact that a changing world benefits from insights from different voices."(p1629) In the intervening year, *AJPH* has made tremendous strides toward including a range of voices in its pages, colleagues from whom we have learned and continue to learn much. The intervening year also saw the arrival of COVID-19, upending much of what had become settled in public health and challenging us to rethink what each of us can do to promote the health of the public.

So with gratitude to the *AJPH* editor-in-chief, Alfredo Morabia, for his invitation, we resume these editorials, aiming, as we noted in January 2016,[5] "to develop a more robust intellectual architecture that informs how we think about the very idea of a public health of consequence"(p11) in this rapidly changing world. We look forward to engaging with many of you in discussion and debate on these ideas as we emerge from the COVID-19 moment with the health of the public front and center in our national and global conversations—perhaps as never before. AJPH

CORRESPONDENCE

Correspondence should be sent to Roger Vaughan, The Rockefeller University, 1230 York Ave, New York, NY 10065 (e-mail: roger.vaughan@rockefeller.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Galea S, Vaughan R. Embedding prevention at the heart of the US health conversation. *Am J Public Health*. 2021;111(1):17–19.

Acceptance Date: October 10, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306009

CONTRIBUTORS

The authors contributed equally to this editorial.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

REFERENCES

1. Maani N, Galea S. COVID-19 and underinvestment in the public health infrastructure of the United States. *Milbank Q*. 2020;98(2):250–257. https://doi.org/10.1111/1468-0009.12463
2. Himmelstein DU, Woolhandler S. Public health’s falling share of US health spending. *Am J Public Health*. 2016;106(1):56–57. https://doi.org/10.2105/AJPH.2015.302908
3. Mokdad AH, Ballestros, Echko M, et al. The state of US health, 1990–2016: burden of diseases, injuries, and risk factors among US States. *JAMA*. 2018;319(14):1444–1472. https://doi.org/10.1001/jama.2018.0158
4. Galea S, Vaughan RD. The future of a public health of consequence: a public health of consequence, December 2019. *Am J Public Health*. 2019;109(12):1628–1629. https://doi.org/10.2105/AJPH.2019.305381
5. Galea S, Vaughan R. A public health of consequence. *Am J Public Health*. 2016;106(1):10–11. https://doi.org/10.2105/AJPH.2015.302954

Training Contact Tracers for Populations With Limited English Proficiency During the COVID-19 Pandemic

Pegah Maleki, MSW, Mutaz Al Mudaris, MS, Kuang K. Oo, BA, and Elizabeth Dawson-Hahn, MD, MPH

ABOUT THE AUTHORS

Pegah Maleki is with PolicyLab, Children's Hospital of Philadelphia, Philadelphia, PA. Mutaz Al Mudaris is with the Division of Language Services, Children's Hospital of Philadelphia. Kuang K. Oo is with Lowry Family Health Center, Denver Health and Hospital Authority, Denver, CO. Elizabeth Dawson-Hahn is with the University of Washington, Division of General Pediatrics, and Harborview Medical Center, Seattle.

AJPH January 2021, Vol 111, No. 1

Immigrant communities with limited English proficiency have not been spared from the coronavirus disease 2019 (COVID-19) pandemic. To control disease transmission, effective contact tracing is imperative. As a multidisciplinary team composed of bilingual, bicultural stakeholders from language services, public health, and immigrant health, we provide recommendations to support effective contact tracing for agencies and health departments and share examples of strategies of local, state, and national organizations advancing contact tracing and case investigation with limited English proficiency communities. COVID-19 inequities in immigrant communities with limited English proficiency are likely to worsen without reflection on and adoption of such strategies and recommendations.

LIMITED ENGLISH PROFICIENCY POPULATION NEEDS

More than 9 million cases of COVID-19 and more than 220 000 deaths have been confirmed in the United States.[1] In some regions, immigrants and new Americans have experienced a disproportionate burden of COVID-19 infection because of exposures in essential industries, including food processing and health care. Risk of COVID-19 may be further compounded by limited access to preferred-language public health and occupational safety information, congregate living, and fear or mistrust of health and public health systems.[2]

To control the pandemic, high-volume COVID-19 testing, case investigation, and contact tracing are imperative. Contact tracing is a technical skill, requiring an understanding of the disease and the process of infection. Contact tracers also must have empathy, maintain confidentiality, and rapidly build trust, because the role of a tracer is not only to interview and search for contacts but also to share crucial resources and perform crisis counseling. The ultimate goal of contact tracing is to quickly reduce and stop the transmission of the virus.

Contact tracers often reach individuals who are unaware of potential exposure; therefore, their approach must include sensitivity and patience to explain the benefits of contact tracing for themselves and their community. For immigrant communities with limited English proficiency, this includes having cultural sensitivity[3] and addressing fear and stigma when individuals have tenuous immigration statuses. Contact tracing must be conducted in communities' preferred languages. This means that contact tracers require training in effective "triadic communication," the technical term for communication mediated by an interpreter.

CONTACT TRACING: BOTH SOLUTION AND CHALLENGE

As partnerships between schools of public health and medicine, agencies, cities, and states evolve to bolster the contact tracing workforce, several institutions have developed free online contact tracing courses. These courses include varied content related to cultural humility, recommendations on working with interpreters, and understanding about how experiences can affect willingness to work with health systems and authorities. Online content can supplement training by agencies employing contact tracers to maximize training capacity.

However, the complexity of expanding the contact tracing workforce should not be overlooked. One workforce estimator tool determined that approximately 135 000 contact tracers are needed for the United States.[4] This may be an underestimate. In Wuhan, China, tracing efforts included one contact tracer per 1200 people. Extrapolating to the United States, effective contact tracing could require a workforce of up to 300 000 people.[3] Furthermore, this workforce will need to be prepared to reach the 8.3% of Americans who speak English less than well (the definition of limited English proficiency).[5] The National Association of City and County Health Officials estimates that $7.6 billion are needed to scale up contact tracing to 100 000 contact tracers in the United States.[6]

The National Academy for State Health Policy describes how states are scaling up their contact tracing capacity—through a combination of in-house workforce expansion, contracting part of their workforce to a third party, and formal partnering to build training and capacity.[6] The funding to increase contact tracing varies from state funding of local health jurisdictions to use of federal funding (i.e., Coronavirus Aid, Relief, and Economic Security Act funding is supporting local health jurisdictions in Montana).[6] Given the chronic underfunding of public health,[6] the need for foundations to provide funding support is increasing. Foundations are uniquely poised to bring together grantees, partners, and community leaders in coalition building[7] and may play a key role in funding effective public health interventions in the setting of insufficient state and federal funding.

RECOMMENDATIONS AND AREAS OF OPPORTUNITY

On the local, state, and national level, governmental and nongovernmental bodies have rapidly mobilized to support case investigation and contact tracing with limited English proficiency communities (Table 1), and we encourage institutions to mirror effective and ongoing efforts. We recommend building on the strengths of online contact tracing courses and suggest augmenting internal training and resources to include our recommendations for public health departments and other agencies tasked with hiring and training contact tracers (Appendix A, available as a supplement to the online version of this article at http://www.ajph.org). These resources can ensure that contact tracers have the knowledge, skills, and tools necessary to provide equitable care and information to communities with limited English proficiency.

We acknowledge that national and state budgets may place limitations on contact tracing recruitment and training, and we encourage recognition of immigrant community assets and the employment of multilingual community representatives and professional interpreters as contact tracers themselves as our most cost-effective and therefore top-recommended strategies.

Our four recommendations include

1. Recognize community assets.
2. Ensure that contract tracers can communicate effectively in communities' preferred languages.
3. Work with professional medical interpreters.
4. Ensure that interpreting and technology modalities are matched to programmatic needs.

Recognize Community Assets

Public health authorities should partner with visible community members and leaders who can share guidance on best practices for building trust and maintaining relationships with individuals who may be understandably suspicious of outsiders. As critical partners for public health authorities, community leaders can share input on culturally appropriate and linguistically accessible community resources (e.g., food, mental health, and health programs) and virtual or distanced outreach and education (i.e., WhatsApp chat groups, Facebook livestreaming, and YouTube videos).

Communicate in Preferred Languages

Public health departments and other agencies should create a toolkit for communication across language barriers and implement interactive training, inclusive of modules on (1) best practices for working with medical interpreters (shown in Appendix A, Table A), (2) the significance of language access, (3) resources on efficient health communication with limited English proficiency contacts, and (4) cultural humility or cross-cultural engagement. Professional medical interpreters, as well as other multilingual community members (who can undergo bilingual proficiency testing), should be recruited to become contact tracers themselves to ensure a multilingual workforce reflective of the community served.

Work With Professional Medical Interpreters

Well-qualified, professional medical interpreters who can increase rapport and act as cultural brokers should be hired or contracted. Agencies can maintain internally constructed rosters or consult national registries of

TABLE 1— Examples of Local, State, and National Activities to Support Case Investigation and Contact Tracing With Immigrant and Limited English Proficiency Communities: United States

Level	Activity	Funding	URL
Local			
Denver Health and Hospital Authority (Denver, CO)	Created a video compilation of community leaders sharing COVID-19 information and messaging in 12 languages (each speaking in native language)	City of Denver's Immigrant and Refugee Commission, New American Neighbors, Denver Public Schools, EDUCA radio	https://www.denverhealth.org/blog/2020/04/stopping-the-spread-of-covid-19-in-any-language
Bhutanese Society of Kentucky (Louisville)	Shared COVID-19 updates via Facebook livestreaming to ensure that community questions were answered and that individuals were receiving up-to-date information on stay-at-home orders and case numbers.	Unknown	https://www.facebook.com/watch/live/?v=643501296484850&ref=watch_permalink
Somali Health Board COVID-19 Hub (King County, WA)	Developed a compilation of Web resources about COVID-19 maintained on the Somali Health Board Web site in Somali, including health guidelines, Webinars, news, and resources. Held weekly Community-COVID Conversations on Facebook Live to connect with the Somali-speaking community and eliminate the potential for literacy gaps.	COVID-19 grant funding from Washington Department of Health	https://www.covidshb.org
State			
Minnesota Department of Health	Funded community-based organizations to increase their respective community's understanding of and participation in COVID-19 testing, case interviews, and contact tracing, specifically in residents of Minnesota and the 11 Tribal Nations that are communities of color; American Indian residents; lesbian, gay, bisexual, transgender, and questioning residents; and residents with limited English proficiency.	Minnesota	https://www.health.state.mn.us/communities/equity/funding/covidoutreach.html
Hawaii Department of Health	Built a partnership between the University of Hawaii and Hawaii Department of Health to train contact tracers and scale up community health workers' engagement in contact tracing.	Hawaii	https://www.hawaii.edu/news/2020/05/13/uh-doh-covid-19-contact-tracing-training
New York State Assembly	Senate Bill S8362A passed by the New York State Senate requiring that contact tracers be representative of the linguistic and cultural diversity communities served within the state.	Not applicable	https://www.nysenate.gov/legislation/bills/2019/S8362
National			
National Resource Center for COVID-19 Prevention and Mitigation Among Refugee, Immigrant and Migrant Communities based at the University of Minnesota	Created a multidisciplinary center to support state and local health departments working with refugee, immigrant, and migrant communities that have been disproportionately affected by COVID-19 through best and promising practices, linguistically and culturally appropriate health communications and health	US Centers for Disease Control and Prevention and the International Organization for Migration	https://nrcrim.umn.edu

Continued

TABLE 1— Continued

Level	Activity	Funding	URL
	education resources, online training for public health professionals, pilot projects between health departments and community-based organizations, and national dissemination of resources.		
Contact tracing resources at the Centers for Disease Control and Prevention	Compiled a communication toolkit for public health professionals, departments, and health systems working with migrants, refugees, and other limited English proficiency populations containing translated materials in various languages, as well as guidance and resources for public health response.	US Centers for Disease Control and Prevention	https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/communication-toolkit.html
	Developed a community engagement checklist for health departments to internally assess communication, competency, and partnership with limited English proficiency communities.		https://www.cdc.gov/coronavirus/2019-ncov/downloads/php/open-america/Contact-Tracing-Community-Engagement-Checklist.pdf
Refugee Health Initiative - International Rescue Committee (IRC)	Built an online platform to connect refugee and immigrant health care professionals trained outside the United States to collaborations to support the COVID-19 response.	IRC internal funding	https://www.rescue.org/press-release/irc-launches-online-platform-refugees-and-immigrants-united-states-seeking-obtain https://refugees.rescue.org

professional medical interpreters to have available for the contact tracing team.

Ensure That Modalities Are Matched to Needs

Contact tracers must have access to the equipment and resources needed to provide language services, such as strong cell phone networks for tracers making home visits to ensure connection to interpreters or training for operators to communicate effectively via telephonic interpreter if returned calls are anticipated to a switchboard number.

A MOVE TOWARD EQUITY

Ensuring the continued growth in both numbers and skills of contact tracers is critical to equitably addressing the COVID-19 pandemic. Contact tracers play a vital role in providing equitable services to each case and contact, regardless of English proficiency or preferred language. The work of agencies and health departments will be strengthened by adequate funding and preparation of the contract tracing workforce to communicate across language barriers, consistent and continued availability of language access resources, and continued partnership with immigrant and limited English proficiency communities.

CORRESPONDENCE

Correspondence should be sent to Pegah Maleki, MSW, The Children's Hospital of Philadelphia, PolicyLab, 3401 Civic Center Blvd, Philadelphia, PA 19104 (e-mail: pegahmaleki21@gmail.com). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Maleki P, Al Mudaris M, Oo KK, Dawson-Hahn E. Training contact tracers for populations with limited english proficiency during the COVID-19 pandemic. *Am J Public Health*. 2021;111(1):20–24.

Acceptance Date: October 15, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306029

CONTRIBUTORS

P. Maleki is a bilingual public health intern with several years of experience partnering with interpreters to support refugee and immigrant survivors of violence. M. Al Mudaris is a certified Arabic medical interpreter originally from Iraq. K. K. Oo is a multilingual care navigator and former refugee from Myanmar. E. Dawson-Hahn is a pediatrician and public health researcher who focuses on community-engaged and public health–partnered research and program development with families who have experienced migration.

All authors contributed equally to this editorial.

ACKNOWLEDGMENTS

The effort for this editorial was supported in part by the Minnesota Center of Excellence in Refugee Health, which is supported by the US Centers for Disease Control and Prevention (grant 5 NU50CK000459).

The authors thank Katherine Yun, MD, MHS, and Janine Young, MD, for their guidance, expertise in providing care to limited English proficiency communities, and assistance in editing this editorial; Ashok Gurung, MS, for sharing examples of Bhutanese refugee community engagement; Anisa Ibrahim, MD, for sharing her expertise on public health communication within the Somali community; Jeremy

Michel, MD, MHS, for his support as a reader; and William Stauffer, MD, MSPH, and Erin Mann, MPH, for their guidance from the National Resource Center for COVID-19 Prevention and Mitigation Among Refugee, Immigrant and Migrant Communities based at the University of Minnesota (E. Dawson-Hahn is a member of the project team at this center).

Note. The contents are those of the authors and do not necessarily represent the official views of, nor an endorsement by, the Minnesota Center of Excellence in Refugee Health, US Centers for Disease Control and Prevention, US Department of Health and Human Services, or US government.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

REFERENCES

1. Centers for Disease Control and Prevention. United States COVID-19 cases and deaths by state. 2020. Available at: https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/us-cases-deaths.html. Accessed August 12, 2020.
2. Centers for Disease Control and Prevention. Coronavirus disease 2019 (COVID-19): health equity considerations and racial and ethnic minority groups. 2020. Available at: https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html. Accessed August 12, 2020.
3. Fraser M, Lane JT, Ruebush E, Staley D, Plescia MA. A Coordinated, National Approach to Scaling Public Health Capacity for Contact Tracing and Disease Investigation. Arlington, VA: Association of State and Territorial Health Officials; 2020. Available at: https://www.astho.org/COVID-19/A-National-Approach-for-Contact-Tracing. Accessed August 12, 2020.
4. Luo E, Chong N, Erikson C, et al. Contact tracing workforce estimator. 2020. Available at: https://www.gwhwi.org/estimator-613404.html. Accessed August 12, 2020.
5. US Census Bureau. People that speak English less than "very well" in the United States. April 8, 2020. Available at: https://www.census.gov/library/visualizations/interactive/people-that-speak-english-less-than-very-well.html. Accessed August 18, 2020.
6. Lent M, Higgins E, Rosenthal J. How states are ramping up their COVID-19 contact tracing capacity. National Academy for State Health Policy. June 8, 2020. Available at: https://www.nashp.org/how-states-are-ramping-up-their-covid-19-contact-tracing-capacity. Accessed October 7, 2020.
7. Doykos P, Gray-Akpa K, Mitchell F. New directions for foundations in health equity. *Health Aff (Millwood)*. 2016;35(8):1536–1540. https://doi.org/10.1377/hlthaff.2016.0256

Could the COVID-19 Crisis Help Eradicate Chronic Homelessness?

Lucas G. Wiessing, PhD, Carole Seguin-Devaux, PhD, and Cristiana S. Merendeiro, MA

ABOUT THE AUTHORS

Lucas G. Wiessing is with the Public Health Unit, European Monitoring Centre for Drugs and Drug Addiction, Lisbon, Portugal. Carole Seguin-Devaux is with the Department of Infection and Immunity, Luxembourg Institute of Health, Esch sur Alzette, Luxembourg. Cristiana S. Merendeiro is with the CRESCER—Community Intervention Association, Lisbon, Portugal.

In the current COVID-19 pandemic, people living on the street or in temporary accommodations may be at higher risk for infection because of close contact with others and a lack of hygienic conditions.[1] Vulnerable people experiencing prolonged homelessness suffer frequently from tuberculosis, asthma, bronchitis, and HIV infection, and they are therefore at high risk for COVID-19 complications. This population has an all-cause mortality that is five to 10 times higher than that of the general population, with up to 17.5 years lower life expectancy. Most causes of death among people experiencing chronic homelessness are related to lack of timely and effective health care, which will increase even further during the COVID-19 pandemic. In the United States, 550 000 people are experiencing homelessness on any given night and, despite differences in definitions, Germany, France, Canada, Australia, and Brazil all report having more than 100 000 individuals experiencing homelessness (the Appendix [available as a supplement to the online version of this article at http://www.ajph.org] lists further references).

Substance use is one of the main problems affecting people who experience homelessness, as are drug-related infectious diseases. Homelessness was a key contributing factor in recent HIV outbreaks among people who inject drugs across Europe and the United States.[2] In this unprecedented COVID-19 emergency, homelessness is expected to worsen the health crisis among people who use drugs, for example through drug relapse, overdose, or difficulty accessing drugs and sterile equipment. There are already alarming signs of interruptions of essential drug services, such as opioid substitution treatment or safe injection services.

Immediate solutions have been implemented: COVID-19 testing has been initiated in mobile stations, shelters, and harm-reduction services. Many cities have started housing individuals experiencing homelessness in empty hotels and temporary shelters. However, they may not be able to adhere to ground rules, may be evicted, or leave voluntarily. Other potential problems are overcrowding (making it impossible to adhere to physical distancing), lack of spaces to isolate the sick, and no resources to properly screen and assess people with symptoms.

THE HOUSING FIRST APPROACH TO HOMELESSNESS

We argue that permanent solutions, not short-term results, must be found. Housing First methods treat affordable housing as a human right and provide people who remain chronically homeless with an immediate, permanent, and independent place to live, combined with support and treatment services. Although traditional approaches defend the necessity to enhance “housing readiness,” Housing First offers people who experience homelessness a place of their own without requiring compliance to psychiatric treatment or sobriety. Housing First takes a consumer-driven and recovery-oriented approach and promotes an individualized intervention based on a harm-reduction philosophy. People are provided with their own apartment on the open rental market, supported by a team of specialists, and connected to social and health services in the community with the aim of social integration. This support team is committed to work with each person as long as needed. Tenants need to meet a staff member during scheduled home visits and contribute with 30% of their income to housing expenses.[3] This goes a long way in solving other social and health problems, promoting community integration and engagement with drug or infectious diseases treatment. It is a more efficient allocation of resources from an economic, social, and health standpoint.[4,5]

Housing First ends homelessness in at least eight out of every 10 people, with better long-term outcomes than traditional approaches: number of days spent stably housed per year in independent accommodation (housing sustainment rates are > 80%), stabilization of drug and alcohol consumption and health status, with improvements reported in some cases, fewer psychiatric symptoms, and increased community integration.[4,6] Housing First costs need not be higher than those spent on temporary accommodation, and significant further cost offsets are achieved in health and legal services, including spending on hospitals and prisons, coupled with benefits in housing stability.[5] By combining reduced risk exposure with health care, Housing First provides important protection to this vulnerable population, with likely significant reductions in mortality from drug and alcohol use, injury, accident, and homicide.

Housing First programs were started in North America to offer people who experienced homelessness rapid access to a settled home in the community in combination with mobile support services. They have further spread more widely in Europe using local and national governmental bodies to provide training in recovery-oriented care.[7] A major barrier to scaling-up Housing First programs is affordable housing, especially in markets with low vacancy rates and high prices. In Finland, a successful integrated program with more than 7290 homes was critical to decrease homelessness in the past 10 years.[7] All possible channels and funding agencies, such as the Ministry of Environment, were used: private market, social housing, and new or renovated supported housing units.

Housing First services can effectively house most people who have experienced chronic homelessness; however, a small percentage of participants (15%–20%) still have difficulty achieving housing stability. This proportion appears to be consistent through the literature and related to mental illness (in particular time spent in psychiatric hospitals), time spent in prison, and a good perceived control for mastering circumstances. However, it appears to be impossible to predict with confidence the individual characteristics associated with housing instability. Therefore, Housing First should be tried with all eligible people. For people who have needs that are not fully met by Housing First programs and who keep experiencing ongoing housing instability, alternatives should be considered.

FINAL CONSIDERATIONS

The COVID-19 crisis has upended many beliefs in the immutability of society. Now is the time to eradicate chronic homelessness through political commitment to a global rollout of Housing First action. This should be combined with strong community-wide prevention of homelessness and its drivers, such as poverty and incarceration, through legislation, as well as social security and health insurance systems that provide income support for basic needs, such as food and affordable rent, as are already in place in many countries. In Lisbon, Portugal, plans to provide permanent housing to all people who experience chronic homelessness were fast-tracked because of COVID-19, and 300 independent apartments have been added to the 80 previously available.

Housing First approaches are likely to reduce the risks of COVID-19 transmission by promoting health among residents. Societal change will be required to efficiently counteract the widespread inequality exacerbated by the new economic crisis. Housing First should be one key element in a package of solutions to reduce the social misery and public health risks of people living in often inhumane circumstances. AJPH

CORRESPONDENCE

Correspondence should be sent to Lucas Wiessing, Principal Scientist, Public Health Unit, European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), Praça Europa 1, Cais do Sodré, 1249-289 Lisbon, Portugal (e-mail: lucas.wiessing@emcdda.europa.eu). Reprints can be ordered at http://www.ajph.org by clicking the “Reprints” link.

PUBLICATION INFORMATION

Full Citation: Wiessing LG, Seguin-Devaux C, Merendeiro CS. Could the COVID-19 crisis help eradicate chronic homelessness? *Am J Public Health*. 2021;111(1):25–26.

Acceptance Date: October 15, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306015

CONTRIBUTORS

All authors contributed equally to this editorial.

CONFLICTS OF INTEREST

The authors have no competing interests.

REFERENCES

1. Tsai J, Wilson M. COVID-19: a potential public health problem for homeless populations. *Lancet Public Health*. 2020;5(4):e186–e187. https://doi.org/10.1016/S2468-2667(20)30053-0
2. Des Jarlais D, Sypsa V, Feelemeyer J, et al. HIV outbreaks among people who inject drugs in Europe, North America, and Israel. *Lancet HIV*. 2020;7(6):e434–e442. https://doi.org/10.1016/S2352-3018(20)30082-5
3. Tsemberis S, Gulcur L, Nakae M. Housing first, consumer choice, and harm reduction for homeless individuals with dual diagnosis. *Am J Public Health*. 2004;94(4):651–656. https://doi.org/10.2105/AJPH.94.4.651
4. Pleace N, Quilgars D. Improving health and social integration through housing first: a review. Available at: https://www.york.ac.uk/media/chp/documents/2013/improving_health_and_social_integration_through_housing_first_a_review.pdf. Accessed Aug 26, 2020.
5. Ly A, Latimer E. Housing first impact on costs and associated cost offsets: a review of the literature. *Can J Psychiatry*. 2015;60(11):475–487. https://doi.org/10.1177/070674371506001103
6. Greenwood RM, Manning RM, O'Shaughnessy BR, et al. Homeless adults' recovery experiences in housing first and traditional services programs in seven European countries. *Am J Community Psychol*. 2020;65(3–4):353–368. https://doi.org/10.1002/ajcp.12404
7. Housing First Europe Hub. Housing First in Europe. 2020. Available at: https://housingfirsteurope.eu/guide/what-is-housing-first/housing-first-in-europe. Accessed August 26, 2020.

The Case for a National SNAP Fruit and Vegetable Incentive Program

Sara John, MS, Reece Lyerly, MS, MPH, Parke Wilde, PhD, Eliza Dexter Cohen, BA, Eliza Lawson, MPH, and Amy Nunn, ScD

ABOUT THE AUTHORS

Sara John and Parke Wilde are with the Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA. Reece Lyerly is with the Friedman School of Nutrition Science and Policy and the Rhode Island Public Health Institute, Providence. Eliza Dexter Cohen and Eliza Lawson are with the Rhode Island Public Health Institute. Amy Nunn is with the Rhode Island Public Health Institute and School of Public Health Center for Health Equity Research, Brown University, Providence.

Supplemental Nutrition Assistance Program (SNAP) enrollment has increased dramatically during the COVID-19 economic crisis. Currently, one in three households with children experiences food insecurity, the greatest prevalence in modern times.[1] SNAP effectively reduces poverty and improves food insecurity,[2] and the current recession has increased many US households' reliance on federal nutrition programs. These new developments have intensified ongoing public debate about the most effective program designs for promoting food security and dietary quality.

SNAP fruit and vegetable (FV) incentives aim to improve diet quality for participants by providing matching funds for FVs purchased with electronic benefit transfer (EBT). SNAP incentives encourage healthy eating behaviors by subsidizing FV purchase and consumption. FV incentives have been piloted nationwide, providing important evidence than can inform optimal program design. However, incentives are not uniformly available to all SNAP participants, and there are currently insufficient federal resources appropriated to expand incentives nationwide. We review the scientific evidence base for FV incentives and their correlation with healthy eating behaviors, highlight potential challenges for scaling FV incentive programs, and explain the public health opportunity associated with nationwide expansion of evidence-based FV incentives.

EVIDENCE BASE

SNAP provides more than 37 million Americans monetary benefits for food. Given widespread SNAP participation, incremental program changes have the potential to have large, positive impacts on US food security and nutrition, further aligning SNAP with agency mission. The 2008 Farm Bill's Healthy Incentives Pilot (HIP) offered a $0.30 rebate per every $1.00 of SNAP benefits spent on targeted FVs. This program was associated with a reduction in the gap between actual and recommended FV intake by 20%; SNAP households randomly assigned to receive FV incentives increased daily consumption of FVs by 26% (¼ cup equivalent) and monthly household purchases increased 11% ($6.15).[3]

Subsequently, the 2014 Farm Bill authorized the Food Insecurity Nutrition Incentives (FINI) Program to fund community FV incentives for SNAP participants. The 2018 Farm Bill increased funding and renamed FINI the Gus Schumacher Nutrition Incentive Program (GusNIP). The FINI Interim Report evaluating 2015–2017 grantees showed that FINI increased monthly FV purchases for SNAP participants living near a participating retailer by up to 16% ($15.32) but did not translate to detectable increases in FV consumption.[4] However, the consumption finding should be interpreted with caution. The wide array of FV incentive program designs and limited uptake across the 2600 FINI-participating retailers complicated the evaluation of FINI outcomes. Some programs designed to measure more discrete measurable outcomes demonstrated large improvements in FV consumption; for example, the FINI-funded Rhode Island Public Health Institute's Food on the Move program, a mobile produce market offering a 50% discount on all EBT purchases, found that SNAP customers spent $10.54 more on FVs per transaction per month compared to non-SNAP customers and was associated with increases in FV consumption (Reece Lyerly, written communication, September 1, 2020).

CHALLENGES AND OPPORTUNITIES

While growing evidence shows that FV incentives improve healthy eating behaviors, successful incentive programs face challenges as consumer demand for incentives outpaces program budgets. For example, in 2018, the

Massachusetts Healthy Incentives Program spent its entire three-year budget of $1.3 million in less than one year, followed by program suspensions in 2019 and 2020. Similarly, Food on the Move sales skyrocketed when consumer demand quadrupled with program expansion. While this growth was laudable, it jeopardized the sustainability of both programs and prompted contractions in program scope. Forced contractions confuse customers and likely limit continuity in healthy eating behaviors, the intended outcome of FV incentives.

A compounding challenge is that FINI and GusNIP require applicants to solicit dollar-for-dollar nonfederal financial matching contributions. Ultimately, onerous matching requirements are unrealistic for many state and nonprofit institutions that operate programs, limiting the scope of FV incentives. With the current GusNIP funding structure, grant funds are often insufficient to cover the full cost of incentives and provide inadequate resources for administering programs across retail settings. Dispensing with nonfederal match requirements would expand program scope and contribute to continuity in service.

RECOMMENDATIONS FOR SCALING INCENTIVES

Successful FV incentive programs' impact and growth provide evidence for scaling incentives. The decentralized FINI model of smaller-scale grants culminated in a wide array of incentive program designs, providing critical insight for scaling FV incentives into a cohesive, nationwide program that maximizes impact. Table 1 highlights important program design considerations and evidence-based recommendations for a national FV incentive program. We propose the following for a national FV incentive:

Use 100% Match Rate and No Match Cap

Debate has been ongoing about the appropriate match rates and match caps and how best to optimize and simplify FV incentive structures. Match rates refer to the incentive provided to the customer relative to the customer's EBT expenditure. Match caps refer to imposed incentive maximums. HIP and farmers' markets historically used lower match rates, but most FINI retailers (84%) provide a 100% match rate,[4] with anticipated larger increases in FV spending relative to HIP.[5] We recommend a 100% (dollar-for-dollar) match rate; this approach maximizes impact and is easy to communicate.[4] Although most FINI grantees impose match caps to contain costs,[4] such restrictions can unnecessarily complicate programs, as few HIP households reached match caps.[3]

Use Instant Electronic Incentive Mechanisms

There is differing opinion on how best to administer FV incentives. Some programs distribute incentives for redemption on future purchases to motivate customer return, but many redemption models culminate in incomplete incentive redemption (Reece Lyerly, written communication, September 1, 2020).[4] While token or coupon

TABLE 1— Recommendations for Maximizing Impact When Scaling Up Fruit and Vegetable Incentive Programs: Evidence From the Healthy Incentives Pilot and Food Insecurity Nutrition Incentive Program

Program Element	Program Design Choices	Recommendation
Match		
Rate	100%, 40%, 30%	Use *100% match rate* and *no match cap* for a clear, compelling program.
Cap	Transaction-based, household-based, none	
Mechanism		
Economic	Instant, rebate, voucher	Use an *instant electronic incentive mechanism* for streamlined administration and high redemption.
Delivery	Electronic, physical	
Targets		
Fruits and vegetables	Fresh, frozen, canned, local	Allow *all forms of fruits and vegetables* to earn additional *SNAP benefit* across *all authorized retailers*, focusing expansion to grocery stores.
Population	SNAP, lower-income	
Retailer	Farmers' markets, grocery stores, mobile markets, CSA	

Note. CSA = community-supported agriculture; SNAP = Supplemental Nutrition Assistance Program.

incentives have lower start-up costs, they can be operationally cumbersome and difficult to monitor.[4] Most importantly, electronic instant incentives optimize redemption rates (Reece Lyerly, written communication, September 1, 2020) and increase capacity for monitoring and evaluation, which is critical in evaluating the impacts of the proposed national incentive model. We endorse using existing SNAP technology to provide immediate redemption of incentives through EBT cards; these models optimize redemption and reduce stigma through discrete redemption of incentives.

Expand Target Foods, Population, and Retailers

A final set of incentive program considerations revolve around target foods, population, and retailers. Half of FINI-funded projects target only local, fresh FVs to support local agriculture.[4] However, we recommend incentives apply to fresh, canned, and frozen FVs to maximize consumption of FVs year-round given smaller effect size in programs that place restrictions on FV form.[6] Moreover, most SNAP benefits are redeemed in grocery stores and supermarkets; FV incentives should therefore be designed for large retail settings where they are likely to have the greatest public health impact. Widespread implementation will further amplify impact through promotional effects (https://bit.ly/35X0yjY).

CALL TO ACTION

FINI and GusNIP established FV incentive programs that varied in design and implementation that collectively contributed to important changes in healthy food access and enhanced healthy eating behaviors among SNAP participants. However, only a small fraction of SNAP participants currently has access to FV incentive programs. Recent increases in SNAP participation also represent an opportunity to improve the health of millions of Americans and to stimulate economic activity through increased purchasing power. Scaling FV incentives to all SNAP participants has been associated with health benefits that could culminate in more than $1 billion in health care savings related to nutrition-driven chronic disease.[7] During this time of economic crisis and rising food insecurity, we call on the federal government to institutionalize evidence-based FV incentives for all SNAP participants.

CORRESPONDENCE

Correspondence should be sent to Sara John, Tufts University, Friedman School of Nutrition Science and Policy, 150 Harrison Ave, Boston, MA 02111 (e-mail: sara.john@tufts.edu). Reprints can be ordered at http://www.ajph.org by clicking the “Reprints” link.

PUBLICATION INFORMATION

Full Citation: John S, Lyerly R, Wilde P, Cohen ED, Lawson E, Nunn A. The case for a national SNAP fruit and vegetable incentive program. *Am J Public Health*. 2021;111(1):27–29.

Acceptance Date: September 20, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305987

CONTRIBUTORS

All authors have directly participated in the development of this editorial.

ACKNOWLEDGMENTS

This work was supported by the US Department of Agriculture Food Insecurity Nutrition Incentive Program (grants 2017-70025-26693, 2017–2020 and 2018-102728-00001, 2018–2021), AARP Foundation (grant HUN-2016-12-003, 2016–2018), Blue Cross Blue Shield of Rhode Island (2018 Transitional Blue Angel Community Health Grant), and Rhode Island Department of Health—Health Equity Zones.

Note. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the funders.

CONFLICTS OF INTEREST

There are no conflicts of interest to disclose.

REFERENCES

1. Bauer L. The COVID-19 crisis has already left too many children hungry in America. Brookings Institute. May 6, 2020. Available at: https://www.brookings.edu/blog/up-front/2020/05/06/the-covid-19-crisis-has-already-left-too-many-children-hungry-in-america. Accessed May 12, 2020.
2. Keith-Jennings B, Llobrera J, Dean S. Links of the Supplemental Nutrition Assistance Program with food insecurity, poverty, and health: evidence and potential. *Am J Public Health*. 2019;109(12):1636–1640. https://doi.org/10.2105/AJPH.2019.305325
3. Olsho LE, Klerman JA, Wilde PE, Bartlett S. Financial incentives increase fruit and vegetable intake among Supplemental Nutrition Assistance Program participants: a randomized controlled trial of the USDA Healthy Incentives Pilot. *Am J Clin Nutr*. 2016;104(2):423–435. https://doi.org/10.3945/ajcn.115.129320
4. Vericker T, Dixit-Joshi S, Taylor J, et al. The evaluation of Food Insecurity Nutrition Incentives (FINI) interim report. Prepared by Westat for the US Department of Agriculture, Food and Nutrition Service; 2019.
5. Andreyeva T, Long MW, Brownell KD. The impact of food prices on consumption: a systematic review of research on the price elasticity of demand for food. *Am J Public Health*. 2010;100(2):216–222. https://doi.org/10.2105/AJPH.2008.151415
6. Rummo PE, Noriega D, Parret A, Harding M, Hesterman O, Elbel BE. Evaluating a USDA program that gives SNAP participants financial incentives to buy fresh produce in supermarkets. *Health Aff (Millwood)*. 2019;38(11):1816–1823. https://doi.org/10.1377/hlthaff.2019.00431
7. Mozaffarian D, Liu J, Sy S, et al. Cost-effectiveness of financial incentives and disincentives for improving food purchases and health through the US Supplemental Nutrition Assistance Program (SNAP): a microsimulation study. *PLoS Med*. 2018;15(10):e1002661. https://doi.org/10.1371/journal.pmed.1002661

Clinical-Track Faculty: Making Them Count in Public Health Education

Olivia S. Anderson, PhD, MPH, RD, Emily Youatt, PhD, MPH, Laura Power, MD, MPH, and Ella August, PhD, MA, MS

ABOUT THE AUTHORS

Olivia S. Anderson is with the Department of Nutritional Sciences, University of Michigan School of Public Health, Ann Arbor. Emily Youatt is with the Department of Health Behavior Health Education, University of Michigan School of Public Health. Laura Power and Ella August are with the Department of Epidemiology, University of Michigan School of Public Health.

Public health education must continually adapt as it trains practitioners to address the dynamic public health landscape. New criteria from the Council on Education for Public Health underscore the importance of public health practice in public health education, requiring candidates in some degree programs to work with practice partners to graduate.[1] Tenure-track faculty, often focused on obtaining grant funding and publishing, are generally not well positioned to teach practice-based concepts. Clinical-track faculty, often focused on practice-oriented work and held to different expectations for scholarly productivity than tenure-track faculty, have the potential to fill practice-oriented curricular gaps. To optimize clinical faculty contributions to the public health curriculum, we need to better understand their presence and roles. A deeper understanding of the clinical track will illuminate the value those faculty bring to their institutions and, in institutions without clinical faculty, whether it is worth starting a clinical-track line.

At our own institution, the University of Michigan School of Public Health, the number of clinical faculty hired in the past five years grew substantially. In our setting, clinical faculty work in each of our six academic departments hold leadership roles in creating new academic programs, drive accreditation efforts, participate in teaching, work with community practice partners, and conduct research. Yet the extent to which other schools of public health employ clinical faculty and the duties of clinical faculty in these environments are not well documented. To begin to understand the presence of clinical faculty in public health education, including their roles and potential value to the field, we must first document basic information about these faculty in schools of public health.

ENUMERATION OF CLINICAL FACULTY

Currently, the Association of Schools & Programs of Public Health (ASPPH) does not enumerate clinical faculty in a separate category in their annual reports of faculty.[2] In an attempt to bridge this knowledge gap, our team conducted a Web site review of all accredited US schools of public health for faculty with “clinical” in their title, excluding clinical instructors and lecturers; visiting, emeritus, and adjunct clinical faculty; and clinical faculty with joint appointments in which their primary appointment was nonclinical or outside public health.

Our review demonstrates that clinical faculty have a significant presence in US schools of public health. Just over half (33 of 60) of schools had at least one clinical faculty member. In total, there were 321 clinical faculty members across these schools. Collectively, among schools of public health with clinical faculty, 10% of faculty members were clinical (321 clinical faculty/[321 clinical faculty + 2743 other faculty]). The clinical faculty count is from our Web review; the other faculty count is from ASPPH, which includes tenure- plus research-track faculty who teach. As the denominator does not include research faculty who do not teach, the percentage of clinical faculty may be an overestimation. Conversely, we may have missed faculty who serve in roles similar to clinical faculty but whose titles reflect only rank. At individual institutions, the percentage of clinical faculty ranged from 1% to 77%. Clinical faculty were especially prominent at research-intensive institutions; nearly two thirds of research-intensive institutions with a Carnegie Basic Classification of R1 (very high research activity) and R2 (high research activity) included clinical faculty, whereas institutions without a focus on research had far fewer clinical faculty.

EXPLAINING PATTERNS OF APPOINTMENTS

Why are we seeing this pattern? We can speculate. Tenure-track faculty at research-focused institutions must prioritize research, as most are merited on research dollars and activities rather than practice activities. Clinical faculty may have been hired at these types of institutions to provide a connection to practice, or they may have been hired to teach core and competency-focused courses, as teaching has been a traditional role of clinical faculty.[3] The need for additional faculty to teach in new and expanding programs may also drive clinical faculty hires. Data published by the de Beaumont Foundation in partnership with ASPPH show a 300% increase in the number of graduate public health degrees conferred between 1992 and 2016.[4] Data from this same report show that, during this same period, the number of academic institutions awarding public health degrees quadrupled. Similarly, the number of graduates and degree programs offering a bachelor's of public health swelled in the past three decades.[5] Faculty are needed for nontraditional public health education, including online education, and clinical faculty may play an outsized role in schools and programs of public health to meet this demand.

QUESTIONS THAT NEED ASKING AND ANSWERING

The absence of data on the role of clinical faculty prompts a number of questions on how this track functions across academic public health institutions. There is a large disparity between clinical- and tenure-track faculty in rank, with many more clinical faculty at lower ranks than tenure-track faculty. In our sample, more than half (53%) of clinical faculty were at the assistant level and only 16% were full professors; tenure-track faculty were much more balanced (Figure 1). Reasons for this differential in rank distribution should be studied, with specific attention to differences in hiring practices, contract lengths, promotion criteria, and other factors that might lead to a disproportion of assistant-level clinical faculty.

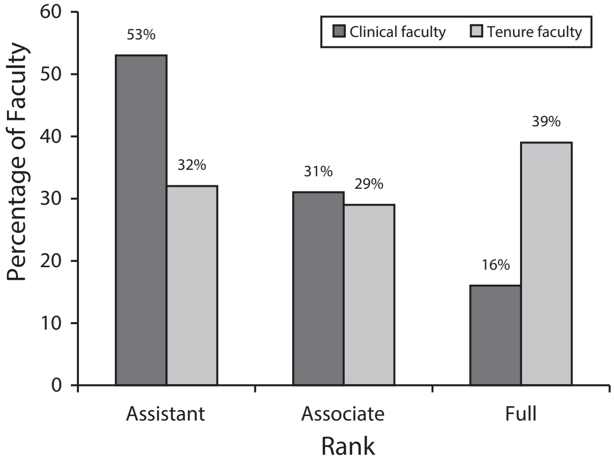


FIGURE 1— Distribution of Ranks for Clinical Faculty and Tenure-Track Faculty in US Schools of Public Health: 2019

This disparity in rank could also be attributable in part to the credentials of clinical faculty and how they relate to their ability to succeed. Most (88%) clinical faculty in our sample had a doctoral degree, but for about 10% their highest degree was at the master's level. Without a doctoral degree, it may not be possible to advance through the ranks. Additionally, 14% of clinical faculty in schools of public health were physicians. Physicians and other clinicians may be more likely to see patients in addition to their academic activities, precluding the focus that may be required to advance in an academic institution.[6,7] Exploring this disparity, and how it may affect the sustainability and ultimate quality of the clinical line, is imperative.

The very name of the clinical track should be reevaluated: whether and how it serves faculty and whether it should be revised. The word "clinical" has been used appropriately for other applied health professions, such as medicine and nursing, but has little connection to public health and may not serve our clinical faculty well. Because we do not know what types of activities clinical public health faculty engage in, it is not clear what the most appropriate title would be.

Appraising teaching, service, research, and practice activities among clinical faculty across institutions is critical. Are there standard expectations for teaching and practice activities? How do formal expectations align with actual activities? What are the expectations for promotion? Another important question is how clinical-track activities align with or are shaped by funding sources. If clinical faculty are hired to teach heavy loads, they will probably be paid with "hard" (institution) funds. But at some institutions, tenure-track and clinical faculty may be expected to cover a portion of their salary. If this is the case for clinical faculty, they will be beholden to their own funding sources. If they are participating in public health practice through funded activities, what do these entail?

Clinical faculty work in the majority of US schools of public health, playing important roles in meeting the educational and practice missions of our academic institutions. We hope the questions we raised lead to more investigation, planning, and strategic thinking about clinical faculty contributions to academic public health. AJPH

CORRESPONDENCE

Correspondence should be sent to Olivia S. Anderson, Assistant Clinical Professor, University of Michigan, School of Public Health, 1415 Washington Heights, Ann Arbor, MI 48109 (e-mail: oliviasa@umich.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Anderson OS, Youatt E, Power L, August E. Clinical- track faculty: making them count in public health education. *Am J Public Health*. 2021;111(1):30–32.

Acceptance Date: September 23, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305994

CONTRIBUTORS

O. S. Anderson and E. August developed the research question and wrote the editorial. L. Power organized and analyzed the data. All authors conducted the Web site review and reviewed the editorial.

ACKNOWLEDGMENTS

We would like to acknowledge Angela Beck, who helped with the initial Web site review of clinical faculty in schools of public health. We would also like to thank Angela Beck and Joseph Eisenberg for reviewing the final draft of the editorial.

CONFLICTS OF INTEREST

The authors report no potential competing interests.

REFERENCES

1. Council on Education for Public Health. Accreditation criteria. 2016. Available at: https://ceph.org/about/org-info/criteria-procedures-documents/criteria-procedures. Accessed October 1, 2019
2. Association of Schools and Programs of Public Health. Instructions and data definitions—domestic members. 2019. Available at: https://www.aspph.org/connect/data-center. Accessed May 7, 2020.
3. US Government Accountability Office. Contingent workforce: size, characteristics, compensation, and work experiences of adjunct and other non-tenure-track faculty. Available at: https://www.gao.gov/products/GAO-18-49. Accessed January 15, 2020.
4. Leider JP, Plepys CM, Castrucci BC, Burke EM, Blakely CH. Trends in the conferral of graduate public health degrees: a triangulated approach. *Public Health Rep*. 2018;133(6):729–737. https://doi.org/10.1177/0033354918791542
5. Leider JP, Castrucci BC, Plepys CM, Blakely C, Burke E, Sprague JB. Characterizing the growth of the undergraduate public health major: US, 1992–2012. *Public Health Rep*. 2015;130(1):104–113. https://doi.org/10.1177/003335491513000114
6. Blush RR III, Mason HL, Timmerman NM. Pursuing the clinical track faculty role: from clinical expert to educator. *AACN Adv Crit Care*. 2017;28(3):243–249. https://doi.org/10.4037/aacnacc2017250
7. Klein KC, Kelling SE, Pais K, Lee CA, Bostwick JR. From clinical assistant to clinical associate professor: examination of a sample of promotion guidelines. *Curr Pharm Teach Learn*. 2019;11(4):346–351. https://doi.org/10.1016/j.cptl.2019.01.009

The Importance of Physician Concern and Expertise in Increasing Abortion Health Care Access in Local Contexts

Jenny A. Higgins, PhD, MPH, Nicholas B. Schmuhl, PhD, Cynthie K. Wautlet, MD, MPH, Laurel W. Rice, MD

ABOUT THE AUTHORS

All authors are with the Department of Obstetrics and Gynecology, University of Wisconsin-Madison. Jenny A. Higgins is also with the Department of Gender and Women's Studies, University of Wisconsin-Madison.

On June 29, 2020, the US Supreme Court issued an opinion in *June Medical Services, L.L.C. v. Russo* that ruled Louisiana's admitting privileges law unconstitutional, thereby blocking it from taking effect and allowing Louisiana abortion clinics to remain open. The Supreme Court reached this decision after it examined research showing that admitting privilege requirements have no medical benefit and instead place unnecessary burdens on clinics, preventing many people from accessing needed reproductive health care.[1]

Although evidence carried the day in *June Medical Services*, admitting privileges are hardly the only barrier to abortion care access—in Louisiana or elsewhere. Categories of abortion restrictions include, but are not limited to, public and private payer prohibitions (e.g., denial of abortion coverage and claims), unnecessary but mandated services (e.g., ultrasound viewing, compulsory 24-hour waiting periods, counseling with inaccurate information about the sequelae of abortion), mandated parental involvement in minors' decisions to have abortions, prohibition of terminations after certain gestational ages, and restrictions on the use of telemedicine or advanced practice professionals in abortion care provision.[2] These restrictions buck the recommendations of the American Public Health Association[3] and the American Medical Association.[4] They also work synergistically to create a landscape in which abortion can be difficult if not impossible to access, especially for those with the fewest social and economic resources—including Black and Indigenous people and other people of color.

Moreover, *June Medical Services*'s Supreme Court ruling does nothing to change abortion access or laws in other states. In fact, the wording of the Supreme Court's decision leaves the door wide open for future lawsuits regarding state-based regulations. Along these lines, although popular media outlets focus overwhelmingly on the potential reversal of *Roe v. Wade*, especially in light of the current Supreme Court vacancy, reproductive health experts underscore the importance of state-level abortion policies, even with *Roe v. Wade* in the balance.[5] Existing passed and signed state laws would become enforceable immediately if *Roe v. Wade* is overturned, criminalizing abortion in the majority of US states and territories, including our home state of Wisconsin. Even with *Roe v. Wade* in place, many state regulations significantly curtail abortion access, and the Louisiana law is one of more than 450 state policies restricting access that have passed in the past decade alone.

UNDEREXAMINED ROLE OF PHYSICIAN CONCERNS

Physicians both provide abortion health care and hold the public's trust, ranking above teachers, police officers, and clergy in terms of their perceived honesty and ethics.[6] However, physician attitudes about abortion health care policy's impacts on patients and the larger practice of medicine and public health are surprisingly underresearched and underused.

Multiple studies document physician attitudes toward other state and federal laws and programs, including the Affordable Care Act, Medicare, and the federally mandated Physicians Quality Reporting Initiative.[7] Medical and public health leaders have argued against legislative interference with doctor–patient relationships and have underscored physicians' critical role in shaping health care policy.[8] But abortion, a health care procedure involved in 25% of all US pregnancies,[9] is often omitted from studies of physician attitudes and their potential policy influence.

Voters trust the integrity of physicians, and physicians' potential role in shaping abortion-related policy and attitudes has significant implications for abortion care availability and legality at the local and state levels and beyond. We illustrate some of these implications with results from a survey of clinicians at Wisconsin's largest medical school.

WISCONSIN AS A CASE STUDY

Wisconsin is a political battleground state. In 2010, a sea change election shifted the governorship, state house, and state senate to Republican control. This transformation resulted in the implementation of multiple abortion restrictions in 2011 through 2013. These include a mandatory 24-hour waiting period, a ban on abortion 20 weeks after fertilization, a prohibition of telemedicine for medication abortion care, and a ban on insurance coverage of abortion for state workers. The laws also require that only physicians provide abortion services, even though research from other states shows that nurse practitioners and other advanced practice providers deliver these services safely.[10]

For medication abortions, not only are telemedicine services verboten, but patients are legally mandated to return to the same physician on separate days to be counseled and then observed while taking the medication. These medically unnecessary requirements are especially onerous for rural and low-income residents, including Black and Indigenous people and other people of color. Wisconsin Medicaid also fails to cover abortion services in most cases, even though it does pay for prenatal and birthing care. Most low-income people, therefore, must pay for abortion care out of pocket—an expense that many cannot afford.[11] Along with 28 other states, Wisconsin is now considered "hostile" to abortion health care.[12]

Catholic hospital penetration is higher in Wisconsin than nationally,[13] a trend that has limited abortion access and the provider pipeline. Abortion services in some regions have ceased to exist, whereas numerous religiously affiliated health care institutions have implemented "restrictive covenants" in employment contracts. Opposed by the American Medical Assocation,[14] these covenants prohibit specific services that physicians can provide, notably abortion, even if they were to provide those services at secular health care systems on their own time.

Cumulatively, these factors contributed to the closure of 40% of the state's abortion facilities between 2009 and 2017, which led to significantly higher birthrates in counties experiencing the greatest distance increases to abortion health care.[15] Given this restrictive environment, Wisconsin creates an apt setting for physician attitudes about abortion health care policy.

SURVEYING LOCAL LEADING DOCTORS

Using existing and adapted measures, we developed a cross-sectional 45-question survey, described in detail elsewhere,[16,17] that we designed to gauge physicians' knowledge, attitudes, and referral practices regarding abortion and abortion health care policies.

In conjunction with experts at the University of Wisconsin Survey Center, we fielded our survey to all practicing physician faculty members (n = 1357) at the Wisconsin School of Medicine and Public Health—the largest and only state-supported medical school in the state. We used best practices to increase participation, including a motivating incentive structure (e.g., $5 bills enclosed in hard-copy study invitations), Web and mail mixed-mode methodology, and up to three reminder e-mails and a final article questionnaire distributed to initial nonresponders. We collected responses from February to May 2019.

Of 1357 distributed surveys, respondents completed and returned 913, for an adjusted response rate of 67%. Participants represented more than 20 medical specialties, and 94% said their patients include women of reproductive age. We used the term "women" in our questions because the overwhelming majority of abortion patients identify as women, but we note that trans men and gender-nonconforming individuals also need and seek abortions.

MAJOR PHYSICIAN OPPOSITION TO RESTRICTIONS

We found that physicians across specialties oppose restrictions on abortion health care services and policies that prohibit physician involvement in abortion care. Our findings underscore substantial concern that abortion restrictions would negatively affect patient care, the patient–provider relationship, and the ability of medical institutions to attract and retain a strong physician workforce.

As described in another analysis of these data,[16] the overwhelming majority of physicians in our sample supported abortion, including 80% for abortion health care services (both in-clinic and medication abortion), 80% for unrestricted patient access to abortion, and 84% for abortion providers. Physicians expressed considerable concern that restrictive abortion laws will make it difficult for patients to receive the care they need and for physicians to offer timely or appropriate care (Figure 1). Less than 10% were not at all worried.

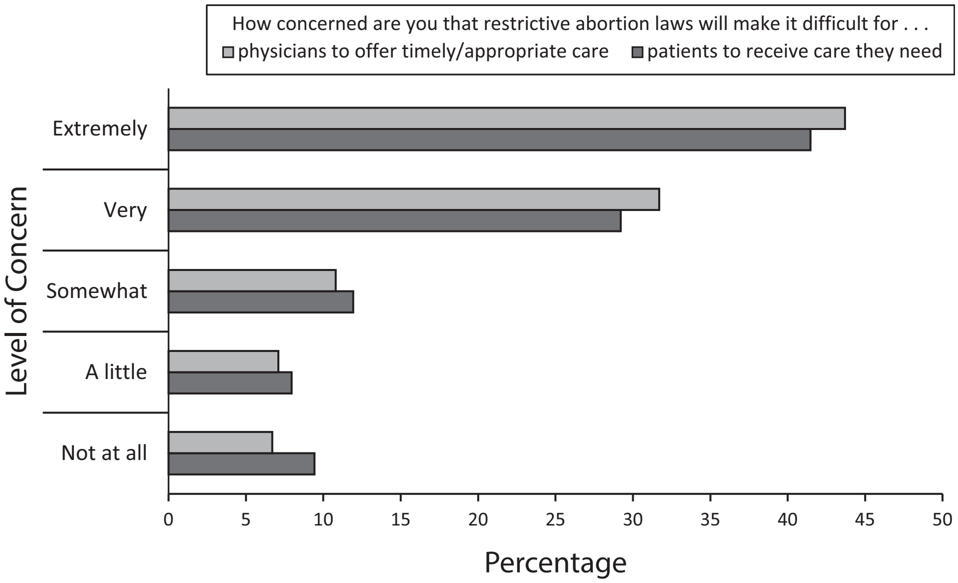


FIGURE 1— Physician Attitudes Toward the Effects of Restrictive Policies on Abortion Health Care Access and Delivery: Survey of All Clinical Faculty at Wisconsin School of Medicine and Public Health; Madison, WI; 2019

Ninety-one percent said that women's health care in Wisconsin would get worse if *Roe v. Wade* were overturned and the state's abortion law took effect (79% a lot worse, 12% somewhat worse, 5% neither better nor worse, 2% somewhat better, and 2% a lot better). Virtually all (99%) were at least a little concerned about legislation interfering in the doctor–patient relationship (48% extremely concerned, 33% very, 14% somewhat, 5% a little, and 1% not at all). Physicians also overwhelmingly opposed restrictive covenants. Nine of 10 (91%) agreed that physicians should not be prohibited from providing reproductive health care to patients outside their health care system (83% strongly agree, 7% somewhat agree, 5% neither agree nor disagree, 2% somewhat disagree, and 3% strongly disagree).

Finally, physicians were worried about how abortion restrictions would affect their own medical institution. More than four in five (83%) expressed at least some concern that restrictive abortion laws would make it difficult to recruit faculty (12% extremely concerned, 19% very concerned, 22% somewhat concerned, 15% a little concerned, and 17% not at all concerned). Two thirds (66%) were worried about effects on trainee recruitment (12% extremely concerned, 19% very concerned, 32% somewhat concerned, 20% a little concerned, and 34% not concerned). Although these concerns were highest among obstetrician–gynecologists and other primary care physicians, the trend held across all medical specialties.

WIELDING PHYSICIAN ATTITUDES

Public health and medical leaders have called for using physician attitudes to change policies and public perceptions.[18,19] Abortion policy is an opportune and time-critical topic for such capitalization: physician attitudes could guide stakeholders and influencers, such as journalists, public health and medical leaders, and—ultimately—voters. The time for this influence is now, especially in battleground states where abortion access is already restricted and could be criminalized. For example, physician attitudes could be used to shed light on and potentially suspend restrictive covenants at religiously affiliated health care institutions.

Physicians' attitudes could also carry weight with their own institutional leadership, whose mandates involve clinician recruitment and downstream effects on the state's physician labor force. In taking a stand on abortion health care access, physicians could influence not only their patients and public health practice but also their profession and institutions. AJPH

CORRESPONDENCE

Correspondence should be sent to Jenny Higgins, Professor, Gender and Women's Studies, 3309 North Charter St, University of Wisconsin, Madison, WI 53706 (e-mail: jenny.a.higgins@wisc.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Higgins JA, Schmuhl NB, Wautlet CK, Rice LW. The importance of physician concern and expertise in increasing abortion health care access in local contexts. *Am J Public Health*. 2021;111(1): 33–36.

Acceptance Date: September 25, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305997

CONTRIBUTORS

J. A. Higgins assisted with the survey, performed policy-related analysis, and led the writing of the editorial. N. B. Schmuhl administered the project and performed formal analysis. N. B. Schmuhl and C. K. Wautlet created survey questions and contributed to the methodology. N. B. Schmuhl, C. K. Wautlet, and L. W. Rice performed study conceptualization and supervision. L. W. Rice delivered the survey. All authors edited the editorial.

ACKNOWLEDGMENTS

We thank the University of Wisconsin-Madison's Office of the Vice Chancellor for Research and Graduate Education, which provided funding for the study.

The authors would like to thank Lisa Harris, Lisa Martin, and Meghan Seewald at the University of Michigan for sharing their survey instrument and consulting on the content of our survey instrument. We are also grateful to the University of Wisconsin Survey Center for their invaluable methodological expertise and multiple reviews of the survey instrument. We acknowledge early contributions to this work by Helen Zukin (literature review) at the University of Wisconsin-Madison.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

HUMAN PARTICIPANT PROTECTION

The Health Sciences institutional review board at the University of Wisconsin-Madison deemed the study minimal risk and exempt from full review.

REFERENCES

1. *June Medical Services L.L.C., et al., Petitioners v. Dr. Rebekah Gee, Secretary, Louisiana, Department of Health and Hospitals, Respondent*. Brief of social science researchers as amici curiae in support of petitioners. Nos. 18-1323, 18-1460. Available at: https://www.supremecourt.gov/DocketPDF/18/18-1323/124089/20191202144643998_18-1323%2018-1460%20Amici%20Brief.pdf. Accessed October 1, 2020.
2. Guttmacher Institute. An overview of abortion laws. Available at: https://www.guttmacher.org/state-policy/explore/overview-abortion-laws. Accessed July 27, 2020.
3. American Public Health Association. Restricted access to abortion violates human rights, precludes reproductive justice, and demands public health intervention. Policy no. 20152. Washington, DC. 2015. Available at: https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2016/01/04/11/24/restricted-access-to-abortion-violates-human-rights. Accessed October 1, 2020.
4. American Medical Association. Code of Medical Ethics. 4.2.7 Abortion. 2020. Available at: https://policysearch.ama-assn.org/policyfinder/detail/abortion?uri=%2FAMADoc%2FEthics.xml-E-4.2.7.xml. Accessed October 1, 2020.
5. Nash E. Abortion rights in peril—what clinicians need to know. *N Engl J Med*. 2019;381(6):497–499. https://doi.org/10.1056/NEJMp1906972
6. Brenan M. Nurses again outpace other professions for honesty, ethics. 2018. Available at: https://news.gallup.com/poll/245597/nurses-again-outpace-professions-honesty-ethics.aspx#:~:text=WASHINGTON%2C%20D.C.%20%2D%2D%20More%20than,the%2017th%20consecutive%20year. Accessed April 21, 2020.
7. Emanuel EJ, Pearson SD. Physician autonomy and health care reform. *JAMA*. 2012;307(4):367–368. https://doi.org/10.1001/jama.2012.19
8. Weinberger SE, Lawrence HC 3rd, Henley DE, Alden ER, Hoyt DB. Legislative interference with the patient–physician relationship. *N Engl J Med*. 2012;367(16):1557–1559. https://doi.org/10.1056/NEJMsb1209858
9. Jones RK, Jerman J. Population group abortion rates and lifetime incidence of abortion: United States, 2008–2014. *Am J Public Health*. 2017;107(12):1904–1909. https://doi.org/10.2105/AJPH.2017.304042
10. Weitz TA, Taylor D, Desai S, et al. Safety of aspiration abortion performed by nurse practitioners, certified nurse midwives, and physician assistants under a California legal waiver. *Am J Public Health*. 2013;103(3):454–461. https://doi.org/10.2105/AJPH.2012.301159
11. Henshaw SK, Joyce TJ, Dennis A, Finer LB, Blanchard K. Restrictions on Medicaid funding for abortions: a literature review. 2009. Available at: https://www.guttmacher.org/sites/default/files/report_pdf/medicaidlitreview.pdf. Accessed October 1, 2020.
12. Nash E. State abortion policy landscape: from hostile to supportive. 2019. Available at: https://www.guttmacher.org/article/2019/08/state-abortion-policy-landscape-hostile-supportive. Accessed October 1, 2020.
13. American Civil Liberties Union. Health care denied: patients and physicians speak out about Catholic hospitals and the threat to women's health and lives. 2016. Available at: https://www.aclu.org/issues/reproductive-freedom/religion-and-reproductive-rights/health-care-denied. Accessed October 1, 2020.
14. American Medical Association. Restrictive covenants. Code of medical ethics opinion 11.2.3.1. Available at: https://www.ama-assn.org/delivering-care/ethics/restrictive-covenants. Accessed May 4, 2020.
15. Venator J, Fletcher J. *Undue Burden Beyond Texas: An Analysis of Abortion Clinic Closures, Births, and Abortions in Wisconsin*. Cambridge, MA: National Bureau of Economic Research; 2019. NBER working paper 26362.
16. Schmuhl NB, Rice LW, Wautlet CK, Higgins JA. Physician attitudes about abortion at a Midwestern academic medical center. Available at: https://www.medrxiv.org/content/10.1101/2020.05.08.20094540v1. Accessed October 1, 2020.
17. Wautlet CK, Schmuhl NB, Higgins JA, Zukin HL, Rice LW. Physician attitudes toward reproductive justice: results from an institution-wide survey. Paper presented at: Annual Meeting of the American College of Obstetricians and Gynecologists; April 24–27, 2020; Seattle, WA.
18. Avorn J. Engaging with patients on health policy changes: an urgent issue. *JAMA*. 2018;319(3):233–234. https://doi.org/10.1001/jama.2017.20257
19. Khatana SA, Patton EW, Sanghavi DM. Public policy and physician involvement: removing barriers, enhancing impact. *Am J Med*. 2017;130(1):8–10. https://doi.org/10.1016/j.amjmed.2016.07.020

Restrictive Abortion Laws Exacerbate Stigma, Resulting in Harm to Patients and Providers

Janet M. Turan, PhD, MPH, and Henna Budhwani, PhD, MPH

ABOUT THE AUTHORS

Janet M. Turan and Henna Budhwani are with the Department of Health Care Organization and Policy, University of Alabama at Birmingham, School of Public Health.

Restrictive, often punitive, abortion laws and policies—such as mandating that all second-trimester abortions be performed in a hospital, limitations on the pool of abortion providers, required ultrasound viewing, and required waiting times before an abortion—stigmatize those who seek and those who provide abortion services. This abortion-related stigma produces a variety of stigmatic and psychological harms by creating and perpetuating feelings of shame and psychological stress about abortion and imposing the government's disapproval of abortion at every point in the delivery of services.[1–3]

ABORTION-RELATED STIGMA

Abortion-related stigma is created by cultural norms and reinforced by policies that harm those who provide and those who receive abortions. Abortion-related stigma has been defined as "a negative attribute ascribed to women who seek to terminate a pregnancy that marks them, internally or externally, as inferior to ideals of womanhood."[4(p628)] This is the case even though we know from national statistics that abortion is an extremely common gynecological experience among American women, with approximately 25% of women having an abortion in their lifetime.[5] Social norms that purport the exceptionality of abortion label those who seek abortion as deviants who are "promiscuous, sinful, selfish, dirty, irresponsible, heartless or murderous."[4(p629)] Abortion can be seen as violating traditional standards of womanhood, motherhood, and sexual purity. Overt discrimination routinely occurs when those who seek abortion services are denied access to accurate information and treatment and are subject to punishment, including shame, endangerment of job or socioeconomic opportunities, and rejection in their communities.[3,4]

STIGMA CODIFIED INTO LAW

Abortion-related legislative actions, informed by unfounded negative characteristics or stereotypes related to abortion services and those who access these services, exacerbate, reinforce, and perpetuate stigmatization at an institutional level. For example, abortion-related laws build on the misconceptions that those who seek abortions are irresponsible or selfish and on the inaccurate stereotype that abortion is dangerous or unsafe. The stigmatized then suffer negative social and health outcomes, in part through experiences of prejudice and discrimination, which create daily stress and psychosocial distress that can interfere with physical and mental well-being.[3]

This structural stigma can grow through inequitable laws and policies, perpetuating discrimination by actors who react to the society-level stigmatization of a condition. Furthermore, public policy can activate a stereotype by making an association between a group and a behavior or reminding people about negative associations they may already hold about that group, such as those seeking or providing abortion services. People's evaluations are misinformed by the stereotypes or stigma communicated through legal messaging that reinforces the relationship between a particular policy (e.g., mandatory ultrasounds) and a particular group (e.g., those seeking abortion services). In other words, laws, as well as the public debate of these laws, campaigns, and news coverage relating to the passage of stigmatizing policies, can increase negative attitudes toward discredited groups. Thus, laws and policies can exacerbate abortion-related stigma and discrimination experienced on the individual level.

EFFECTS OF ABORTION STIGMA ON HEALTH

Abortion stigma encourages members of society to shame those who seek abortion and fosters fear and psychological stress in patients who perceive this stigma. Abortion itself is not associated with an increased risk of any physical or mental health issues, but experiences and fears of abortion-related stigma can result in lower self-efficacy, reduced perceptions of social support to help with abortion decision-making, increased use of denial and avoidance coping techniques, and avoidance of needed services.[1,3,4] This can include fewer people seeking reproductive health services because of fear of interpersonal and societal-level persecution and judgment. These represent devastating health consequences for people who experience stigma because of their abortion.

EXAMPLE OF ABORTION-RELATED STIGMA IN ALABAMA

In a study on young Alabama women's perceptions of reproductive options, participants described the inevitability of parenting; participants perceived parenting as the only acceptable option when faced with an unintended pregnancy.[6] This perception resulted from opinions that abortion was a shameful and socially unacceptable option, as well as the difficulties in accessing abortion caused by restrictive state laws. Stigma about abortion caused women to hide their abortion history from family members, community members, and health care providers. Another study found that abortion stigma in Alabama made it difficult for women to disclose to others why they needed help with transportation or time off from work to be able to visit distant clinics for abortion counseling and services.[7]

MISINFORMATION AND LEGAL RESTRICTIONS

Restrictive policies, such as those enacted in Alabama, are reflections of society's ideologies and therefore reinforce stigmatizing norms. Abortion stigma is codified in laws that limit abortion access and promote the provision of inaccurate information and thus is embedded across educational, legal, health, and welfare systems. The effects of this structural stigma are compounded by poverty and other socioeconomic deficits. Laws that single out abortion facilities and regulate them differently (more stringently) than other outpatient clinics, contribute to the exceptionality of abortion and convey the idea that abortion is different from other medical services. Such laws constrain abortion access and invoke and perpetuate inaccurate perceptions that abortion is dangerous and morally wrong, creating the belief that those who have abortions are deviating from appropriate behavior. The resulting stigma negatively affects both patients and providers.[2]

Specifically, informed consent requirements often expose the patient to such things as misleading information about physical or psychological risks of abortion services, fetal imagery designed to reflect greater development than is accurate, references to the patient as "the mother," and making the patient listen to fetal heart tones. These requirements create the inaccurate perception that abortion is a major medical procedure and that the fetus is viable, even in circumstances when it is not. These tactics obscure the pregnant person from view, decontextualize the fetus, overstate the fetus's independence, and ignore the pregnant person's circumstances and preferences. Restrictive abortion laws threaten a patient's reproductive autonomy: the ability to make decisions based on one's personal considerations and free from external forces, including the judgment of other people and institutions. By making abortion services logistically and financially difficult to access, such laws and policies fundamentally convey the notion that pregnant individuals need to be protected from making the wrong decision.

CONCLUSIONS

Abortion laws being enacted across the United States—such as imposing stringent requirements on facilities offering five or more first-trimester abortions per month, mandating all second-trimester abortions be performed in a hospital, limiting the pool of clinicians, requiring at least 24 hours before a procedure, requiring that health care providers perform an ultrasound, giving patients state-mandated verbal information, offering printed materials that are in part inaccurate or misleading, and criminalizing violations of the statutory requirements—create and reinforce the unfounded and unsubstantiated exceptionality of abortion, the perception that abortion is morally wrong, and the shaming of abortion patients and providers.[1,2,4]

These laws treat patients as fundamentally suspect by promoting the inaccurate stereotype that those who seek abortion services are morally deviant and incompetent decision makers. The resulting stigma increases the risk of poor psychological and physical health outcomes among pregnant individuals and stigmatizes, devalues, and professionally harms abortion providers. AJPH

CORRESPONDENCE

Correspondence should be sent to Janet M. Turan, Professor, University of Alabama at Birmingham, Department of Health Care Organization and Policy, RPHB 517D, 1665 University Blvd, Birmingham, AL 35233 (e-mail: jmturan@uab.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Turan JM, Budhwani H. Restrictive abortion laws exacerbate stigma, resulting in harm to patients and providers. *Am J Public Health*. 2021; 111(1):37–39.

Acceptance Date: September 28, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305998

CONTRIBUTORS

The authors contributed equally to this editorial.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

REFERENCES

1. Norris A, Bessett D, Steinberg JR, Kavanaugh ML, De Zordo S, Becker D. Abortion stigma: a reconceptualization of constituents, causes, and consequences. *Womens Health Issues*. 2011;21(3 suppl):S49–S54. https://doi.org/10.1016/j.whi.2011.02.010
2. Harris LH, Debbink M, Martin L, Hassinger J. Dynamics of stigma in abortion work: findings from a pilot study of the Providers Share Workshop. *Soc Sci Med*. 2011;73(7):1062–1070. https://doi.org/10.1016/j.socscimed.2011.07.004
3. Foster DG, Steinberg JR, Roberts SC, Neuhaus J, Biggs MA. A comparison of depression and anxiety symptom trajectories between women who had an abortion and women denied one. *Psychol Med*. 2015;45(10):2073–2082. https://doi.org/10.1017/S0033291714003213
4. Kumar A, Hessini L, Mitchell EM. Conceptualising abortion stigma. *Cult Health Sex*. 2009;11(6):625–639. https://doi.org/10.1080/13691050902842741
5. Jones RK, Jerman J. Population group abortion rates and lifetime incidence of abortion: United States, 2008–2014. *Am J Public Health*. 2017;107(12):1904–1909. https://doi.org/10.2105/AJPH.2017.304042
6. Smith W, Turan JM, White K, et al. Social norms and stigma regarding unintended pregnancy and pregnancy decisions: a qualitative study of young women in Alabama. *Perspect Sex Reprod Health*. 2016; 48(2):73–81. https://doi.org/10.1363/48e9016
7. White K, deMartelly V, Grossman D, Turan JM. Experiences accessing abortion care in Alabama among women traveling for services. *Womens Health Issues*. 2016;26(3):298–304. https://doi.org/10.1016/j.whi.2016.01.003

Public Libraries as Key Partners for Advancing Health Equity

Melissa A. Simon, MD, MPH, Catherine A. O'Brian, PhD, Magdalena Nava, MPH, Rabih Dahdouh, MS, Q. Eileen Wafford, MSt, MLIS, Shenita Mack, MLIS, and Kristi L. Holmes, PhD

ABOUT THE AUTHORS

Melissa A. Simon, Catherine A. O'Brian, Magdalena Nava, and Rabih Dahdouh are with the Center for Health Equity Transformation, Feinberg School of Medicine, Northwestern University, Chicago, IL. Q. Eileen Wafford and Kristi L. Holmes are with the Galter Health Sciences Library and Learning Center, Feinberg School of Medicine. Shenita Mack is with the Chicago Public Library, Chicago.

Public libraries have an extensive population reach in the United States, with public library services available to the vast majority of the US population. A Public Library Service survey conducted in 2016 found that nearly 311 million people in the United States, or 96% of the US population, lived in a public library service area, the geographic area for which a public library offers services.[1] In many cases, the accessibility of public libraries extends to an online presence that can be accessed remotely, such as 400 million e-books that are available to US library patrons annually.[1] Further, US public libraries are used by a broad segment of the population. In fact, it was estimated that 171 million registered users, or 52% of the US population, visited public libraries more than 1.35 billion times over the course of one year.[1]

Lower-income Americans, Hispanics, and African Americans are more likely to affirm that public libraries positively affect their lives and communities than are other Americans.[2] US public libraries and public library staff have provided safe spaces and intensive support for people experiencing mental illness and substance abuse, homelessness, immigration challenges, and trauma.[3]

Even in disenfranchised communities, such as many in the segregated neighborhoods of Chicago, Illinois, amid area gun violence, deep poverty, and isolation, libraries offer a safe space, and librarians are well trusted to support information access across racial/ethnic and other diversity divides. Some Chicago area libraries have added social workers to their staff and tailored their programs to meet local community needs, such as homelessness and applying for public aid programs. During the COVID-19 pandemic, public librarians, such as those the Chicago Public Library (CPL) employs, have continued serving the community in a variety of ways, including providing traditional library services such as making e-books available, disseminating COVID-19 resources, and connecting those in need with food.

In essence, public libraries are emerging in key roles for improving the health of underserved communities. We describe a budding academic–library research partnership formed between Northwestern University and the CPL to equip the city with resources and tools to reach diverse populations who seek health and wellness information, including information and resources about clinical trials and preventive services. We put forth this example to encourage similar partnerships with public libraries to address identified community needs.

WHY PUBLIC LIBRARIES?

US public libraries often serve as social centers by providing programming, hosting events, and meeting specific needs of patrons such as job seekers and students.[4] For example, US public libraries have a long history of offering assistance to patrons searching for employment opportunities, preparing for exams, and applying to school. In recent years, they have increasingly provided patrons help in connecting with agencies providing social and mental health services.[4] Many US public libraries also support basic literacy programming.[4]

The Pew Research Center's studies of US public libraries conducted from 2011 through 2016 included survey results showing that trust in librarians is high because of their demonstrated ability to curate and share reliable knowledge.[4] The notion of public libraries as trusted spaces has also been affirmed in a study of first-generation Mexican immigrants who participated in classes in six US public libraries. The study found that participation in library programs increased trust of the library, the librarians, and other library users in this study population.[5]

HEALTH FOR ALL

In 2018, researchers at Northwestern University Feinberg School of Medicine approached CPL leadership to pitch a collaborative research project that would bridge medical researchers, health science librarians, and public librarians to develop digital tools for increasing awareness of and participation in clinical trials research among people from health disparity populations. CPL has 81 locations serving 2.7 million residents in Chicago's 77 community areas. Well-established CPL programs that improve the lives of diverse Chicago residents include programs in science, technology, engineering, and mathematics initiatives and digital literacy programs. However, few programs have directly touched on the health inequities experienced in many CPL neighborhoods—hence this opportunity.

The Health for All study was originated and launched shortly after those initial meetings, with grant funding from the National Library of Medicine. A design-thinking approach was employed to ensure fit and responsiveness to the needs of CPL patrons and libraries. Researchers and librarians from the study's Library Partnership Advisory Committee conducted needs assessments, focus groups, and usability testing, leading to a Health for All Web-based resource for library patrons to learn about clinical trials. Resources specifically addressed barriers identified by library patrons and librarians—such as distrust of clinical trials, researchers, and universities. The Health for All tool has been deployed across 10 CPL branches and is now being promoted across CPL as a digital resource; evaluation is ongoing. Qualitative research findings accrued thus far speak to the perceived value of the tool in engendering confidence in clinical research participation among diverse library patrons.

NAVIGATING WELLNESS

In recognition of the importance of disease and illness prevention to public health, the US Preventive Services Task Force (USPSTF) was formed in 1984 as an independent group of national experts in prevention and evidence-based medicine that works to improve the health of all Americans by making evidence-based recommendations about clinical preventive services.[6] Building on the infrastructure developed in Health for All, researchers and the Library Partnership Advisory Committee successfully applied for National Library of Medicine grant funding to scale the partnership efforts beyond clinical trials—and to health and wellness more broadly. Development of new wellness modules within Health for All—coined Navigating Wellness—is under way, with the goals of working closely with public librarians to encourage medically underserved library patrons to seek out USPSTF preventive services recommendations directly and equipping them with tailored information and community resources that will allow them to find, navigate, and connect with primary care providers and discuss preventive services with them.

OPPORTUNITIES WITH PUBLIC LIBRARIES

According to the Pew Research Center, 42% of patrons report using libraries' digital resources to search for health information.[2] Based on the extensive population reach and inclusivity of public libraries as well as their long-standing status as trusted spaces, it has been posited that public libraries may serve as an opportune space for health-promoting services. In fact, a trial implemented in urban neighborhoods selected to reach diverse, underserved communities found that participatory research in the public library system offers a scalable approach to reduce cancer health disparities.[7]

The Health for All public library–academic partnership we describe is an example of how public libraries can serve as a safe space to support health disparity populations in dismantling the information divides that perpetuate health inequities. Public libraries such as Health for All's CPLs can work together with medical researchers to forge trust and deliver health information to advance health equity. At this time, the COVID-19 pandemic is having a disproportionate adverse impact on health disparities populations in the United States, which may be further exacerbated if these populations forego or face barriers to participating in COVID-19 trials or utilizing COVID-19 vaccines or therapies that may be forthcoming. Thus, initiatives at public libraries such as Health for All and Navigating Wellness are now more important than ever. AJPH

CORRESPONDENCE

Correspondence should be sent to Melissa Simon, Director of the Center for Health Equity Transformation, Professor, Department of Obstetrics and Gynecology, Feinberg School of Medicine, Northwestern University, 633 N St Clair St, Suite 1800, Chicago, IL 60611 (e-mail: m-simon2@northwestern.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Simon MA, O'Brian CA, Nava M, et al. Public libraries as key partners for advancing health equity. *Am J Public Health*. 2021;111(1):40–42.

Acceptance Date: October 4, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306004

CONTRIBUTORS

M. A. Simon conceptualized and led the projects Health for All and Navigating Wellness and led the drafting of the editorial. C. A. O'Brian played a key role in drafting the editorial. M. Nava, R. Dahdouh,

Q. E. Wafford, and S. Mack played key roles in the development and dissemination of the project platforms. K. L. Holmes played a leading role in project development. All authors contributed to the drafting of the editorial and approved the submitted version.

ACKNOWLEDGMENTS

This work was supported by the National Institutes of Health (NIH), National Library of Medicine (grants G08LM012688; G08LM013188).

We thank the staff and patrons of the Chicago Public Library and branch libraries for their partnership and participation; without them, this project would not have been possible.

Note. The content of this editorial is solely the responsibility of the authors and does not necessarily represent the views and policies of the NIH or the US Preventive Services Task Force.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest. M. A. Simon is a member of the US Preventive Services Task Force.

REFERENCES

1. Institute of Museum and Library Services. Public Libraries Survey. Available at: https://www.imls.gov/research-evaluation/data-collection/public-libraries-survey. Accessed July 2, 2020.
2. Horrigan JB. Libraries at the crossroads. 2015. Available at: https://www.pewresearch.org/internet/2015/09/15/libraries-at-the-crossroads. Accessed July 1, 2020.
3. Whiteman ED, Dupuis R, Morgan AU, et al. Public libraries as partners for health. *Prev Chronic Dis.* 2018;15:E64. https://doi.org/10.5888/pcd15.170392
4. Howard J. The complicated role of the modern public library. Available at: https://www.neh.gov/article/complicated-role-modern-public-library. Accessed July 1, 2020.
5. Vårheim A. Trust in libraries and trust in most people: social capital creation in the public library. 2014. Available at: https://www.journals.uchicago.edu/doi/abs/10.1086/676487?mobileUi=0&journalCode=lq. Accessed July 2, 2020.
6. Agency for Healthcare Research and Quality. US Preventive Services Task Force. Available at: https://www.ahrq.gov/cpi/about/otherwebsites/uspstf/index.html. Accessed July 3, 2020.
7. Rapkin BD, Weiss E, Lounsbury D, et al. Reducing disparities in cancer screening and prevention through community-based participatory research partnerships with local libraries: a comprehensive dynamic trial. *Am J Community Psychol*. 2017;60(1–2):145–159. https://doi.org/10.1002/ajcp.12161

Excess Medical Spending From the Minnesota Perspective

Stefan Gildemeister, MA

ABOUT THE AUTHOR

Stefan Gildemeister is with the Health Economics Program, Minnesota Department of Health, St. Paul.

In last month's issue of *AJPH*, Speer et al. aimed to bring a long-standing discussion in health services research to public health, in part to "help catalyze needed change."[1(p1744)] It is particularly timely, as the current pandemic has dramatized the chronic underfunding of public health and the resulting constraints on responding to rising chronic conditions, entrenched and systemic health disparities, and emerging infectious diseases.

Many US states are engaged with the intertwined problems of excess and wasteful medical spending, and they have abundant motivation to eliminate waste in medical care. It isn't just good politics: it also helps protect residents from medical care that has no clear benefit and could create potential harm; it finances the delivery of high-quality, essential health care to an eligible population while limiting the fiscal burden; and it frees up resources that can be invested in a range of policy initiatives beyond medical care.

Indeed, over the past 20 years states have reset incentives, financed pilot studies, promoted structural change and transparency, conducted research, and made regulatory decisions, all to bring discipline to excess medical spending and wring out waste. For example, in the late 1990s, Minnesota paired coverage and structural reforms with a cost containment package to arrest spending growth. At the same time, the private sector and the state's employee health insurance program began experimenting with early value-based purchasing programs.[2] Multiple public–private partnerships worked to reduce unnecessary cesarean deliveries, diagnostic imaging, and rehospitalizations. And with the 2008 health reforms, Minnesota invested in initiatives to find the "value signal" in cost and quality, including by establishing the Minnesota All Payer Claims Database in the state's public health department.

A number of these projects and initiatives were thought to have been successful, at least for a time, although data to monitor progress were limited and formal evaluations were rare. In addition, several of these initiatives were narrowly focused rather than aimed at systemic change. There are a variety of reasons many of these have been repealed, "defanged," deimplemented, or just discontinued, but lasting commitment to change in the face of oppositions is among them. Consequently, individually or collectively these initiatives have not fundamentally and sustainably altered the trend of excessive spending—inefficiencies and waste remain entrenched.[3] Minnesota residents paid more than $9 million in annual out-of-pocket spending (of a total $54.9 million) for just 18 low-value services,[4] a select set of high-volume inpatient treatments exhibited up to an eightfold difference in commercial prices across facilities,[5] and administrative health plan spending continues to grow nearly in synch with rising excess medical spending.

For states to make more progress, we need sustained political will, resources, and data to inform improvement, including the following:

1. Timely and more complete data on the process of care delivery.[6] A 2016 ruling found that the federal Employee Retirement Security Act preempts any state requirement to submit data to an all-payer claims database for self-insured employer health plans, which in Minnesota account for about 60% of individuals with private coverage.
2. A second-generation of low-value care metrics, including costly services that generate little clinical value.[7] For example, Choosing Wisely is a well-publicized provider-led campaign aimed at identifying low-value services. Its strength—to be a provider-led initiative—has also been a limitation in identifying low-value measures that are significant revenue generators for the medical community.
3. A framework and data collection system that permits monitoring administrative spending for providers and health plans, as well as the potential for savings.[8] Currently no studies have identified interventions that have succeeded in decreasing administrative spending, but

systematically collecting data to assess where this spending is generated and why is an important first step.

4 A renewal of public health and population health economics so that reallocation of the resources that Speer et al. discuss can be informed by robust empirical evidence.

In its recommendations for transforming health and human services, the recently formed Minnesota Health and Human Services Blue Ribbon Commission included provisions focused on reducing low-value care and waste associated with prescription drug pricing.[9] Activities more globally aimed at excess medical spending—establishing spending caps and exploring global budgeting—became victims of staff reassignments to pandemic response roles. Ironically, it may be the pandemic that keeps constraining excess medical spending on the front burner. For effective public health, we need data systems, creative analytics and data science, strong partnerships, and dedicated staff, something that we had to enhance in Minnesota's COVID-19 response. Sustaining these partnerships, including to model disease hotspots and hospital capacity; maintaining the distributed data systems that generate near real-time data from electronic health records; and supporting clear and concise science communication may be the motivation to sustainably reduce excess medical spending through new thinking. AJPH

CORRESPONDENCE

Correspondence should be sent to Stefan Gildemeister, Director, Health Economics Program, 85 E Seventh Pl, Suite 220, Saint Paul, MN 55101 (e-mail: stefan.gildemeister@state.mn.us). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Gildemeister S. Excess medical spending from the minnesota perspective. *Am J Public Health*. 2021;111(1):43–44.

Acceptance Date: October 12, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306012

CONFLICTS OF INTEREST

The author has no conflicts of interest to declare.

REFERENCES

1. Speer M, McCullough JM, Fielding JE, Faustino E, Teutsch SM. Excess medical care spending: the categories, magnitude, and opportunity costs of wasteful spending in the United States. *Am J Public Health*. 2020;110(12):1743–1748. https://doi.org/10.2105/AJPH.2020.305865
2. Christianson JB, Feldman R. Evolution in the Buyers Health Care Action Group purchasing initiative. *Health Aff (Millwood)*. 2002;21(1):76–88. https://doi.org/10.1377/hlthaff.21.1.76
3. Minnesota Department of Health. Minnesota health care spending: 2017 estimates and ten-year projections. Available at: https://www.health.state.mn.us/data/economics/docs/2017spendingrpt.pdf. Accessed November 10, 2020.
4. Minnesota Department of Health. Analysis of low-value health services in the Minnesota All Payer Claims Database. 2017. Available at: https://www.health.state.mn.us/data/apcd/docs/lvsissuebrief.pdf. Accessed November 10, 2020.
5. Minnesota Department of Health. Commercial case price variation among high-volume inpatient treatments in Minnesota hospitals (July 2014 to June 2015). 2018. Available at: https://www.health.state.mn.us/data/apcd/docs/pricevariationpt2.pdf. Accessed November 10, 2020.
6. Shachar C, Gerke S, Cohen IG. Maximizing use of claims data to address COVID-19: we need to revisit *Gobeille v. Liberty Mutual*. *Health Aff Blog*. August 7, 2020. Available at: https://www.healthaffairs.org/do/10.1377/hblog20200805.788636/full. Accessed November 10, 2020.
7. Morden NE, Colla CH, Sequist TD, et al. Choosing wisely—the politics and economics of labeling low-value services. *N Engl J Med*. 2014;370(7):589–592. https://doi.org/10.1056/NEJMp1314965
8. Shrank WH, Rogstad TL, Parekh N. Waste in the US health care system: estimated costs and potential for savings. *JAMA*. 2019;322(15):1501–1509. https://doi.org/10.1001/jama.2019.13978
9. Minnesota Health and Human Services Blue Ribbon Commission. Final Report of the Blue Ribbon Commission on Health and Human Services; September 24, 2020. Available at: https://mn.gov/dhs/assets/DHS-7367-ENG-MN-HHS-Blue-Ribbon-Commission-final-report_tcm1053-439621.pdf. Accessed November 23, 2020.

Safe and Accessible Voting: The Role of Public Health

Edward P. Ehlinger, MD, MSPH, Carmen Rita Nevarez, MD, MPH

ABOUT THE AUTHORS

Edward P. Ehlinger formerly was with the Association of State and Territorial Health Officials, Arlington, VA, and the Minnesota Department of Health, St. Paul. Carmen R. Nevarez is with the Center for Health Leadership and Practice, Public Health Institute, Washington, DC. Both authors serve on the Jacob & Valeria Langeloth Foundation board, New York, NY.

More than any other factor, our health is determined by the physical, social, cultural, and economic environments in which we live. Recognizing this, as far back as 1988, the Institute of Medicine (IOM; now called the National Academy of Medicine) challenged public health professionals to "collectively" take on the task of "assuring the conditions in which people can be healthy."[1] Public health professionals widely agree, and for more than 30 years, we have been asking and reasking ourselves: How do we do that?

In answering that question, we too often slip into public health jargon, including "social determinants of health," "health impact pyramids," and "policy, system, and environmental change strategies." These terms are useful in their place, but they are too abstract, academic, and bureaucratic to effectively communicate with the public and generate meaningful change. A more pragmatic and effective approach would focus on action, and a good place to start is with voting. As public health professionals, we must embrace our civic role by voting, doing everything in our power to encourage all eligible people to vote, and, during the COVID-19 pandemic, making certain voting is safe for everyone.

Voting strengthens democracy and enhances health by giving people a role in the policy processes that affect all social determinants of health. Policy formation starts with a perception of the public will and is primarily shaped by voting results. From there, policy formation goes on to affect services, systems, and environments at all levels of the health impact pyramid in every community. The evidence is clear: civic engagement, particularly through voting, is one of the greatest influencers of public policy.

Multiple studies confirm the health consequences of voting. This manifests in two distinct ways. First, voting helps decide political leadership. When more people vote, leaders have an increased incentive to address the needs of communities (including health needs) that they might otherwise have ignored. Second, voting itself, as an act of civic engagement, supports health on an individual level. One study, conducted across 44 countries, showed that voter participation was associated with better self-reported health (https://bit.ly/2IDNVAN).[2] Another study showed that those who did not vote reported poorer health outcomes. The 10 least healthy US states have a voting participation rate nearly 10 percentage points lower than the 10 healthiest states.[3] Research also shows that social, economic, and health inequities have a large effect on electoral participation.[4]

History also records the impact of suffrage on health. Although multiple factors played a role, it was after women got the right to vote in 1920 that the maternal and infant mortality rates dropped dramatically.[5] This can be attributed greatly to the passage of the Sheppard-Towner Act of 1921, which set up maternal and child health units in every state health department, expanded collection of birth and death data, supported home-visiting initiatives, and began federal funding of state health programs. Similarly, when the Voting Rights Act of 1965 passed, infant mortality rates again dropped and the Black–White disparity in those rates narrowed, attributable to the legislation that was passed in response to new voter enfranchisement (https://bit.ly/3505tOQ).[6] In both cases, policies responded to the needs of the people when previously disenfranchised people expressed their will by voting. What landmark pieces of legislation have we never even imagined because nearly 40% of people do not vote?

Although everyone should be engaged in increasing voter participation (part of the collective action the IOM has identified to improve living conditions), public health professionals are in a unique position to promote civic engagement in a safe and nonpartisan way that enhances health and builds democracy. This year, when gatherings pose a risk to health, the public health work on voting takes on a distinct urgency and importance. Our job is twofold: we must guarantee that all voting

AJPH January 2021, Vol 111, No. 1

can be done safely, and we must simultaneously work to ensure that everyone who can vote does so. Because public health professionals often work directly with populations that have frequently experienced voter suppression efforts, it is well within public health's mission to help people in these communities vote and to work to remove the systemic barriers that prevent or discourage people from voting. Increasing civic participation is an essential task for anyone interested in advancing health equity, and part of the job of a public health worker is to help make that happen.

From a voter safety perspective, there are many potential options to carry out this mission, especially during COVID-19, including voting by mail, voting early, increasing the number of polling sites, and observing social-distancing measures when voting in person. In every state, there are many initiatives promoting voting that could benefit from the involvement of public health. One effort is We Can Vote (https://wecanvote.us), which is working to elevate voting as a public health issue. Another example is the organization VotER (https://vot-er.org)—established to bring together a team of physicians, designers, and behavioral scientists—which offers patients the chance to register to vote while with a medical provider in a nonpartisan, noninterruptive, and completely optional way. Public health organizations such as the American Public Health Association, the Association of State and Territorial Health Officials, and the National Association of County and City Health Officials are implementing a similar program, called VoteSafe, for the public health community. Public health workers should review the options available in their state, publicize the information to the public, and lend their influence in promoting healthy voting.

In addition, many in public health philanthropy are rallying their resources to support civic participation. The Langeloth Foundation (where we are board members), for example, recently granted $20 million to organizations supporting civic engagement and participation efforts, including the nonpartisan State Infrastructure Fund (https://bit.ly/3nP18GO) and the Heartland Fund (https://bit.ly/33ZubQe). This was more than 20% of Langeloth's $88 million endowment. These intermediaries support a network of on-the-ground voter engagement and civic participation organizations in several states. With traditional voter engagement activities upended by the COVID-19 pandemic, the State Infrastructure Fund and the Heartland Fund have supported organizations that now have to pivot to remote and digital organizing strategies and tactics.

Our country is in the midst of cascading and interconnected crises: an infectious disease pandemic, nationwide protests against racial injustice, and catastrophic economic strain for millions of people. Each of these crises reveals the deficiencies and inadequacies of our health, social, and economic systems and the need for significant policy changes to address the flaws. With a major election already under way, it is more important than ever that all of our citizens have their voices heard. This is essential not just for the health of our democracy but for the health of individuals and communities. The consequences of the election will last far beyond November 3, 2020 and will be seen in the decisions of policymakers for years to come. Likewise, the efforts made to increase voting participation, security, and safety will positively affect civic engagement in future elections. There is no time to lose. All hands are needed to elevate voting as an essential tool for improving public health. Public health workers must become part of the broad-based effort to get out the vote and to ensure that voting is safe for everyone. AJPH

CORRESPONDENCE

Correspondence should be sent to Edward Ehlinger, 4815 Dupont Ave S, Minneapolis, MN 55419 (e-mail: edehlinger@gmail.com). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Ehlinger EP, Nevarez CR. Safe and accessible voting: the role of public health. *Am J Public Health*. 2021;111(1):45–46.

Acceptance Date: October 13, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306011

CONTRIBUTORS

Both authors contributed equally to this editorial.

ACKNOWLEDGMENTS

This editorial received financial and communications support from the Jacob & Valeria Langeloth Foundation.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

REFERENCES

1. Institute of Medicine, Committee for the Study of the Future of Public Health. *The Future of Public Health*. Washington, DC: National Academies Press; 1988. Available at: https://www.ncbi.nlm.nih.gov/books/NBK218215. Accessed October 16, 2020.
2. Kim S, Kim CY, You MS. Civic participation and self-rated health: a cross-national multi-level analysis using the World Value Survey. *J Prev Med Public Health*. 2015;48(1):18–27. https://doi.org/10.3961/jpmph.14.031
3. United Health Foundation, America's Health Rankings. Available at: https://www.americashealthrankings.org. Accessed October 15, 2020.
4. Brown CL, Raza D, Pinto AD. Voting, health and interventions in healthcare settings: a scoping review. *Public Health Rev*. 2020;41:16. https://doi.org/10.1186/s40985-020-00133-6
5. Centers for Disease Control and Prevention. Achievements in public health, 1900–1999: healthier mothers and babies. 1999. Available at: https://www.cdc.gov/mmwr/preview/mmwrhtml/mm4838a2.htm. Accessed October 15, 2020.
6. Collins WJ, Thomasson MA. The declining contribution of socioeconomic disparities to the racial gap in infant mortality rates, 1920–1970. *South Econ J*. 2004;70(4):746–776. https://doi.org/10.2307/4135271

COVID-19: The Promise and Failure of Law in an Inequitable Nation

Wendy E. Parmet, JD, Scott Burris, JD, Lance Gable, JD, MPH, Sarah de Guia, JD, Donna E. Levin, JD, and Nicolas P. Terry, LLM

ABOUT THE AUTHORS

Wendy E. Parmet is with the Center for Health Policy & Law, Northeastern University, Boston, MA. Scott Burris is with the Center for Public Health Law Research, Temple University, Philadelphia, PA. Lance Gable is with Wayne State University Law School, Detroit, MI. Sarah de Guia is with ChangeLab Solutions, Oakland, CA. Donna E. Levin is with the Network for Public Health Law, Edina, MN. Nicolas P. Terry is with the Hall Center for Law and Health, Robert H. McKinney School of Law, Indiana University, Indianapolis.

Despite years of legal preparedness efforts—including new and reformed federal and state laws and regulations—and detailed plans to guide the response to a public health emergency, the US response to COVID-19 has been an appalling failure. As of October 2020, the United States has had more than 219 000 confirmed COVID-19 deaths and a death rate per 100 000 far higher than that of most developed countries.[1] Worse, COVID-19 deaths and infection rates exhibit stark racial, ethnic, and socioeconomic disparities.[2]

For the most part, law has done what it needs to do in the face of a pandemic: it has created and apportioned government powers and duties, set out rules of conduct, offered protection of individual rights against unreasonable interference, and provided tools for enforcement. Law has worked—on paper. In practice, several factors have made the implementation of the law a significant part of our failed response.

A FAILURE OF LEADERSHIP

One factor is the lack of leadership.[3] Laws that empower government officials to take actions in response to a pandemic can be effective only if those powers are used and used wisely. In the current pandemic, many political leaders at both the federal and state levels have failed to use the relevant legal powers at their disposal. For example, the federal government has yet to effectively use the Defense Production Act to monitor, coordinate, and increase the production, procurement, and distribution of personal protective equipment and other needed supplies.[3] Likewise, the Department of Health and Human Services has failed to use all of the flexibility granted to it by the Medicaid Act to enhance coverage during the pandemic. And despite provisions in the rapidly passed Families First Coronavirus Response Act and the Coronavirus Aid, Relief, and Economic Security Act, Congress and the President have failed in their basic federal duty to extend support for state and local governments and support Americans who have been hard hit by the recession.

The failure to use laws effectively has not been only at the federal level. In the spring of 2020, many governors chose to discontinue using their emergency powers and "reopened" their states, even when doing so clashed with the White House's own guidelines and even as most courts upheld their emergency orders. Many states have also continued to reject the expansion of their Medicaid programs. Too many states also failed to protect citizens from eviction or workers from infection-prone working conditions. Preemption also proved repeatedly problematic as governors perversely used their authority to prevent city and county officials from imposing measures responsive to local conditions. Fights over masks, school openings, and gathering bans continue to expose state–local fault lines.

ENABLING LAWS TO WORK

Even when laws are used, their efficacy may depend on a range of other factors. For example, public health agencies, including the Centers for Disease Control and Prevention (CDC), are given both legal mandates and regulatory authority. But they cannot fulfill either if they lack the resources needed to do their jobs. It is no coincidence that the nation's poor response to COVID-19 came after years of decline in federal and state funding for public health agencies.[4]

Political interference with the science-based activities of health agencies poses another problem that has loomed large during the current pandemic. When public health agencies base their actions and messaging on politics rather than science, they lose the public's confidence, and their initiatives are doomed to failure. For that reason, Congress should consider creating new legal protections for the CDC and the

AJPH January 2021, Vol 111, No. 1

US Food and Drug Administration, potentially by reestablishing them as independent agencies.[3] Likewise, governors and local officials should clearly state the scientific evidence on which their emergency orders rely.[3]

Individuals also need the resources and wherewithal to comply with public health laws. It is easy to issue a stay-at-home order. It is considerably harder to enable people to sustain themselves and their families during a stay-at-home order or to ensure that small businesses survive shutdowns. For this reason, many of the most crucial laws during this or any pandemic are not those that empower officials but those that support individuals and small businesses, especially those in vulnerable communities. Sick leave, expanded access to health insurance, access to broadband Internet, and protections against evictions and utility shutoffs are only some of the critical measures that need to be implemented if our public health laws are to succeed and the US response is to be even remotely equitable.[3]

More broadly, the United States needs to reconsider the law's role in a pandemic response. For too long, the United States has treated public health laws as cheap substitutes for public health infrastructure, as if empowering a health agency was the same as providing it with the people, expertise, information systems, and resources it needs to use its powers effectively. For decades, pandemic preparation focused too much on writing new plans and laws, ignoring the devastating effects of budget cuts and political interference with public health agencies.[3] In sector after sector, potentially useful laws that were on the books were left unused, public health agencies lacked the resources to carry out their legal mandates, leaders failed to convey accurate messages, and individuals failed to receive the social supports they needed to comply with the laws that were issued.

LAW'S CULPABILITY IN SOCIAL INEQUALITY

As we assess law's role in the current pandemic, it is important to recognize not only law's unrealized potential to protect public health but also its culpability in magnifying the inequities and disparities on which COVID-19 has feasted.

> The COVID-19 pandemic has laid bare the life-and-death consequences of inadequate and discriminatory laws and policies such as unequal worker protections, divisive immigration policies, and uneven access to health care, to name a few.[3]

Inadequate civil rights laws, discriminatory policing practices, insufficient nursing home regulation, excessive incarceration, the federal government's failure to meet its obligations to Tribal governments, and the shortcomings of our environmental protection laws exemplify laws' contribution to the inequitable social conditions that allowed COVID-19 to reap its deadly toll on communities of color, people with disabilities, immigrants, those living in congregate spaces, and Native Americans. As we contemplate law's role in protecting the public from the next pandemic, it is critical that we look not only to reforming and bolstering public health laws but to reexamining and revising the wide array of other laws that have left this country so inequitable and thus so vulnerable to a novel coronavirus.

A MORE EFFECTIVE LEGAL RESPONSE

Legal action at the federal, state, and local levels can still be part of a better, more effective and equitable response to COVID-19 and future pandemics. In addition to the recommendations already offered, Congress and the President can use federal powers to send more money to states, cities, and struggling families; issue and enforce stronger occupational safety and health protections; use the Defense Production Act to ease medical equipment shortages; repeal the public charge rule and stop immigration enforcement that interferes with COVID-19 control; and reverse the decision to leave the World Health Organization. States that have not expanded their Medicaid program should do so. States should also limit preempting local public health measures and depopulate their prisons. Local governments can use their powers to issue control orders tailored to local epidemic conditions and to fill gaps in protection for workers and families. All leaders at every level must recognize the importance of projecting unity and clear, credible, science-based messages.

Perhaps most important, policymakers need to understand both the importance and limits of law's relationship to public health. Law is a powerful tool that can play an important role in helping a society respond to a pandemic. But for law to be effective, there must be strong leadership, ample resources fairly distributed, and the public's trust. To date, all three have been lacking. AJPH

CORRESPONDENCE

Correspondence should be sent to Wendy E. Parmet, 416 Huntington Ave, Boston, MA 02115 (e-mail: w.parmet@northeastern.edu). Reprints can

be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Parmet WE, Burris S, Gable L, de Guia S, Levin DE, Terry NP. COVID-19: The Promise and Failure of Law in an Inequitable Nation. *Am J Public Health*. 2021;111(1):47–49.

Acceptance Date: October 10, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306008

CONTRIBUTORS

All authors contributed equally to this editorial.

ACKNOWLEDGMENTS

The authors wish to thank the de Beaumont Foundation, the American Public Health Association, and the Robert Wood Johnson Foundation for supporting the report *Assessing Legal Responses to COVID-19*, as well as all of the authors who contributed to the report and Faith Khalik, Bethany Saxon, Leslie Zellers, and Liz Voyles for their invaluable work on it.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

REFERENCES

1. Johns Hopkins University School of Medicine. Mortality analyses. Available at: https://coronavirus.jhu.edu/data/mortality. Accessed October 18, 2020.
2. Krieger N. ENOUGH: COVID-19, structural racism, police brutality, plutocracy, climate change—and time for health justice, democratic governance, and an equitable sustainable future. *Am J Public Health*. 2020;110(11):1620–1623. https://doi.org/10.2105/AJPH.2020.305886
3. Burris S, de Guia S, Gable L, Levin DE, Parmet WE, Terry NP, eds., Assessing legal responses to COVID-19. Available at: https://static1.squarespace.com/static/5956e16e6b8f5b8c45f1c216/t/5f36c0702e9042616f13505c/1597423914220/COVID19PolicyPlaybook_Aug2020.pdf. Accessed October 18, 2020.
4. Trust for America's Health. The impact of chronic underfunding of America's public health system: trends, risks, and recommendations, 2019. Available at: https://www.tfah.org/report-details/2019-funding-report. Accessed October 18, 2020.

Using Informational Murals and Handwashing Stations to Increase Access to Sanitation Among People Experiencing Homelessness During the COVID-19 Pandemic

Yoonhee P. Ha, MSc, MPhil, Nicole McDonald, BA, Shari Hersh, MFA, Stephanie R. Fenniri, MS, MPA, Amy Hillier, PhD, MSW, and Carolyn C. Cannuscio, ScD

The coronavirus disease 2019 (COVID-19) pandemic has upended every aspect of life in the United States and forced Americans to rethink their daily activities, including how they work, attend school, secure food, obtain health care, and maintain social connections. For vulnerable populations that were already facing significant barriers to health, such as people experiencing homelessness, the pandemic has only generated new hardships and exacerbated existing inequities.

1700 Block of East-Bound Vine St., Philadelphia, PA. (Mural by Nilé Livingston. Photograph by Conrad Benner.)

Broad Street Ministry, 315 South Broad St., Philadelphia, PA. (Mural by Dora Cuenca. Photograph by Conrad Benner.)

2774 Kensington Ave., Philadelphia, PA. (Mural by NDA. Photograph by Conrad Benner.)

Compared with the general population, people experiencing homelessness suffer from poorer health and have higher rates of mental illnesses, infectious and noncommunicable diseases, and premature mortality.[1,2] Since the start of the pandemic, this highly vulnerable population has also faced increased risks of being exposed to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)—the virus that causes COVID-19. Nightly, many of these individuals must make the difficult decision between lodging in crowded shelters, where the risk of outbreaks is high, and staying outdoors, where they must weather the elements and risk their safety.[3–5] Many people experiencing homelessness also have little or no access to personal protective equipment and testing, and even when testing is available, it may be challenging to conduct contact tracing and quarantine individuals in this population because of their lack of housing and limited access to mobile phones and mailing addresses.[6] Furthermore, given their preexisting medical conditions and other factors such as poor nutrition and lack of health insurance, people experiencing homelessness are also more likely to have worse outcomes if they develop COVID-19.[1,7]

The COVID-19 pandemic has also affected the nonprofit organizations that provide people experiencing homelessness with basic needs such as food, clothing, and medical care. Across the United States, communities are engaging in a collective effort to shelter in place and practice social distancing to reduce the person-to-person transmission of SARS-CoV-2. Although these measures are essential to “flattening the curve” of active cases of COVID-19, they have dramatically reduced the number of people who are able to volunteer for nonprofit organizations.[8] Likewise, the temporary and permanent shuttering of businesses has resulted in sharp declines in the monetary and material donations that sustain these entities.[8,9] It is also likely that the high unemployment rate will eventually translate into increased numbers of people experiencing homelessness.

Before the pandemic, there were an estimated 5700 people experiencing homelessness in Philadelphia, Pennsylvania.[10] Broad Street Ministry, a local nonprofit organization that continues to provide hospitality services to the homeless and other vulnerable populations during the pandemic, recognized the need for improving access to sanitation for the people it serves. Although handwashing with soap and water for 20 seconds or more remains a simple yet crucial way to reduce the spread of SARS-CoV-2, the closing of local businesses and other public

839 South St., Philadelphia, PA. (Mural by NDA. Photograph by Conrad Benner.)

facilities has significantly reduced the homeless population's access to restrooms and showers with soap and water.

In late March 2020, Broad Street Ministry collaborated with Mural Arts Philadelphia, the nation's largest public arts program; Streets Dept, a street art photo blog; *HAHA MAGAZINE*, a global arts magazine; and four local artists to use art as a public health intervention. In just a little more than a week, the community partners installed *Wash Your Hands*, a series of informational murals and portable handwashing stations.

As shown in the accompanying photographs (Images 1–4), each of the colorful and vibrant eight foot by eight foot murals stands in stark contrast to its urban surroundings and draws attention to one or more handwashing stations. The murals also raise awareness of steps viewers can take to protect themselves against COVID-19, including washing one's hands with soap and water for at least 20 seconds, refraining from touching one's face, maintaining physical distance of at least six feet with others, and wearing a mask. Notably, as people engage with the murals and use the handwashing stations, they become a part of the messaging and effort to end the pandemic.

To date, the community partners have installed four murals and 15 handwashing stations in parts of the city that have heavy foot traffic of people experiencing homelessness. Broad Street Ministry estimates that more than 2500 people, including members of the larger public, use the handwashing stations daily. With dedicated funding from the Starbucks Foundation and Independence Foundation, the nonprofit organization and its community partners have committed to refilling the stations with soap, water, and paper towels for the duration of the pandemic so that all Philadelphians will have access to sanitation regardless of their housing status. AJPH

ABOUT THE AUTHORS

Yoonhee P. Ha, Amy Hillier, and Carolyn C. Cannuscio are with the Center for Public Health Initiatives and the Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia. Nicole McDonald is with Broad Street Ministry, Philadelphia. Shari Hersh is with Mural Arts Philadelphia, Philadelphia. Stephanie R. Fenniri is with the Center for Social Impact Strategy, University of Pennsylvania.

CORRESPONDENCE

Correspondence should be sent to Yoonhee P. Ha, MSc, MPhil, Jordan Medical Education Center, 6th Floor, 3400 Civic Center Blvd, Building 421, Philadelphia, PA 19104-5162 (e-mail: hayp@pennmedicine.upenn.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Ha YP, McDonald N, Hersh S, Fenniri SR, Hillier A, Cannuscio CC. Using informational murals and handwashing stations to increase access to sanitation among people experiencing homelessness during the COVID-19 pandemic. *Am J Public Health*. 2021;111(1):50–53.

Acceptance Date: August 28, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305961

CONTRIBUTORS

Y. P. Ha conceptualized the article. Y. P. Ha and N. McDonald wrote the article. All authors contributed to design and editing.

ACKNOWLEDGMENTS

Y. P. Ha was supported by the Medical Scientist Training Program, Perelman School of Medicine, University of Pennsylvania, Philadelphia.

We thank the nonprofit organizations, media outlets, artists, and photographer who installed the informational murals and handwashing stations and made this article possible. We also thank Peter P. Reese, MD, MSCE, and Alison M. Buttenheim, PhD, MBA, for reviewing an earlier version of the article.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

REFERENCES

1. Zlotnick C, Zerger S, Wolfe PB. Health care for the homeless: what we have learned in the past 30 years and what's next. *Am J Public Health*. 2013; 103(suppl 2):S199–S205. https://doi.org/10.2105/AJPH.2013.301586
2. Aldridge RW, Story A, Hwang SW, et al. Morbidity and mortality in homeless individuals, prisoners, sex workers, and individuals with substance use disorders in high-income countries: a systematic review and meta-analysis. *Lancet*. 2018;391(10117):241–250. https://doi.org/10.1016/S0140-6736(17)31869-X
3. Moffa M, Cronk R, Fejfar D, Dancausse S, Padilla LA, Bartram J. A systematic scoping review of environmental health conditions and hygiene behaviors in homeless shelters. *Int J Hyg Environ Health*. 2019;222(3):335–346. https://doi.org/10.1016/j.ijheh.2018.12.004
4. Fuller T. Major outbreak in San Francisco shelter underlies danger for the homeless. *New York Times*. April 17, 2020. Available at: https://nyti.ms/3ca7kmd. Accessed September 11, 2020.
5. Stewart N. "It's a time bomb": 23 die as virus hits packed homeless shelters. *New York Times*. August 18, 2020. Available at: https://nyti.ms/2RAhrZy. Accessed September 11, 2020.
6. Eyrich-Garg KM. Mobile phone technology: a new paradigm for the prevention, treatment, and research of the non-sheltered "street" homeless? *J Urban Health*. 2010;87(3):365–380. https://doi.org/10.1007/s11524-010-9456-2
7. Culhane DP, Treglia D, Steif K, Kuhn R, Byrne T. Estimated emergency and observational/quarantine capacity need for the US homeless population related to COVID-19 exposure by county; projected hospitalizations, intensive care units and mortality. 2020. Available at: https://works.bepress.com/dennis_culhane/237. Accessed April 24, 2020.
8. Bowman J. In Imperial County, nonprofits struggle to serve homeless during COVID-19. KPBS. April 24, 2020. Available at: https://www.kpbs.org/news/2020/apr/24/imperial-county-nonprofits-struggle-serve-homeless. Accessed April 24, 2020.
9. Crary D, McCormack K. Amid pandemic, charities and nonprofits face huge challenges. *AP News*. April 22, 2020. Available at: https://apnews.com/0cca8af954b111ef460d823f7cd81a49. Accessed September 11, 2020.
10. City of Philadelphia Office of Homeless Services. Know homelessness. Available at: http://philadelphiaofficeofhomelessservices.org/know-homelessness. Accessed April 24, 2020.

Community Trace: Rapid Establishment of a Volunteer Contact Tracing Program for COVID-19

Linda Niccolai, PhD, ScM, Tyler Shelby, BS, Brian Weeks, MSPH, Christopher Schenck, BS, Justin Goodwin, MS, Rachel Hennein, BS, Meghan Rossini, MPH, Jennifer Vazquez, DNP, RN, Dorothyann van Rhijn, MD, James Meek, MPH, and Maritza Bond, MPH

Contact tracing was one of the core public health strategies implemented during the first months of the COVID-19 pandemic. In this essay, we describe the rapid establishment of a volunteer contact tracing program in New Haven, Connecticut. We describe successes of the program and challenges that were faced. Going forward, contact tracing efforts can best be supported by increased funding to state and local health departments for a stable workforce and use of evidence-based technological innovations. (*Am J Public Health*. 2021;111:54–57. https://doi.org/10.2105/AJPH.2020.305959)

Contact tracing, a well-known and evidence-based intervention used for infectious disease control, was one of the only feasible public health strategies during the early months of the COVID-19 pandemic in the United States. This activity is typically conducted by state and local health departments, but the scale of COVID-19 exceeded their capacity.

INTERVENTION

A volunteer effort coordinated by Yale University, in close partnership with state and local health departments, was launched to provide contact tracing for COVID-19.

PLACE AND TIME

This program was implemented in New Haven, Connecticut, in March 2020 (Figure 1a).

PERSON

This program served New Haven residents and members of the Yale community. Volunteers were recruited from the health science schools at Yale University.

PURPOSE

The purpose of this program was to provide surge capacity to state and local health departments.

IMPLEMENTATION

Nearly 200 volunteers from the university—primarily students of public health, medicine, and nursing—were recruited via e-mail. One-time training sessions were conducted live via Web-conferencing by state and local health department staff experienced with contact tracing. Separate trainings were conducted for case interviewers and contact notifiers. Each group received training on the basics of COVID-19 biology and contact tracing, and case interview volunteers received additional interview training. Instructions, scripts, and answers to frequently asked questions were provided to all volunteers. Volunteers used e-mail and GroupMe, a mobile chat-group app, to communicate.

Following training, two parallel contact tracing programs were launched (Figure 1b). There was a total of nearly 50 volunteers who were active on a weekly basis. All interviews and notifications were conducted remotely via phone. The first program implemented was for the university community. Members of the university health plan—including Yale employees, students, and their dependents—who tested positive for COVID-19 and provided consent were referred to the volunteer team for case interviews. Yale Health authorized volunteers to conduct interviews on behalf of the health plan, and volunteers signed confidentiality agreements. Call outcomes were stored in a secure database created by Yale Health. The second program was a collaboration with the New Haven Health Department, which serves ~130 000 residents of the city. Volunteers in this team, which was authorized by New Haven's director of health, also signed confidentiality

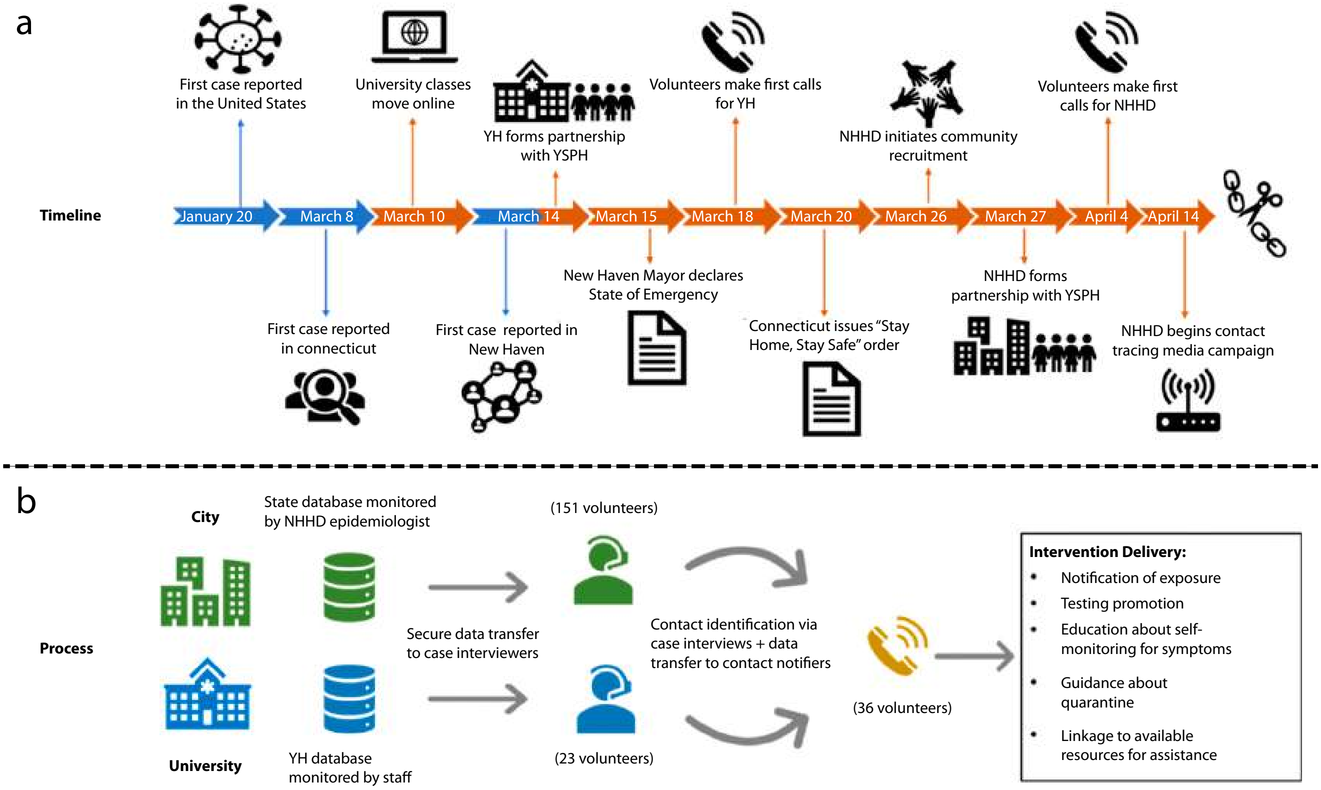


FIGURE 1— Diagram Showing (a) Timeline Spread of COVID-19 (Blue) and the Public Health Actions Taken (Orange), and (b) Contact Tracing Process Detailing Key Steps, Team Organization, and Intervention Components: New Haven, CT, 2020

Note. NHHD = New Haven Health Department; YH = Yale Health; YSPH = Yale School of Public Health.

agreements. The city epidemiologist identified newly diagnosed residents in the state's electronic reportable disease surveillance database and referred them to the volunteer case interview team. The Health Department created an interview tool using Veoci, a locally based emergency management software platform, to guide the case interviews. Case interviewer volunteers working with the city also performed routine needs assessments and provided linkages to available supports. Yale Health members who resided in New Haven were referred to the city program. Protected health information from both programs was maintained on secure servers managed by the university or city and was shared as needed with volunteers via Yale Secure Box.

Once contacts were identified via case interviews, these data were transferred on a daily basis to those volunteering to notify contacts; all of these volunteers served both programs. Contacts were called, notified of their exposure, and provided guidance on testing, self-monitoring of symptoms, and quarantine. Mandated testing and 14-day monitoring of contacts were not possible because of a lack of resources, resulting in the program being more similar to a contact notification system in practice.

EVALUATION

Process and outcome evaluations using both qualitative and quantitative approaches are under way and will be reported separately. Several key observations during the first three months of program development and implementation are reported here, as they have immediate relevance for others considering contact tracing programs in their own jurisdictions (see the box on page 56)

Successes of the program include the completion of many case interviews and contact notifications, which also resulted in the less tangible but equally important benefit of substantial community outreach. This work also strengthened public health and academic partnerships, which together bring unique strengths to complex public health problems (e.g., authority and resources, respectively). Finally, students benefited from the opportunity to volunteer at a time when

EARLY SUCCESSES, CHALLENGES, AND RECOMMENDATIONS ASSOCIATED WITH THE VOLUNTEER CONTACT TRACING PROGRAM: NEW HAVEN, CT, MARCH 14–MAY 25, 2020

SUCCESSES

Contact notification outcomes

- 119 cases fully interviewed for Yale Health
- 998 cases fully interviewed for city of New Haven
- 1024 contacts successfully notified

Community outreach

- Appreciation expressed by many cases and contacts
- Information about additional resources provided to many cases and contacts (e.g., hotline referrals for social services, housing or nutrition assistance, mental health)

Partnerships

- Increased collaboration between state and local health department and academic institutions
- Synergies of health department authority and academic resources, flexibility, and expertise

Volunteerism

- Availability of health science students with relevant background
- Provided applied public health experience and training

CHALLENGES AND RECOMMENDATIONS

Testing and 14-d monitoring of contacts

- Inadequate testing infrastructure

Recommendation: Increased access to testing for contacts

- Lack of human resources

Recommendation: Enhanced contact monitoring via automated messaging and app-based communication

Data management systems

- Delays in the transfer of data between organizations

Recommendation: Shared data systems or more fluid data transfer between health departments and contact tracers

- Missing or incorrect data reported with test results

Recommendation: Increased collection of accurate contact information at the time of testing

Community awareness and trust

- Lack of awareness of program

Recommendation: Public awareness campaigns via news outlets or social media

- Refusals or reluctance to participate

Recommendation: Engage community leaders as advocates

Workforce sustainability

- Volunteer availability shifts over time

Recommendation: Offer incentives such as cost-free credit to student volunteers

classes and clinical activities were suspended, and they expressed a strong desire to contribute to halting the pandemic.

We also faced challenges. The arrival of the COVID-19 pandemic demanded rapid development of data systems necessary to collect, store, and share data. Second, the rapid rate at which the COVID-19 pandemic evolved resulted in limited time to establish awareness and to build required trust. To overcome this, the city disseminated information via local media outlets and social media. Finally, the dependence on a volunteer workforce raised significant concerns about sustainability.

ADVERSE EFFECTS

We are not aware of any adverse events of this program, but such considerations are paramount for the development and implementation of any new contact tracing program.

SUSTAINABILITY

Volunteer workforce sustainability posed a great challenge. In response to waning volunteer capacity, we issued subsequent calls for volunteers. However, the number of active volunteers continued to fluctuate over time as some graduated and others returned to their course work. To provide stability to the program, the New Haven Health Department proactively repurposed 40 public health nurses, who typically staff public schools, to contact tracing.

PUBLIC HEALTH SIGNIFICANCE

As work and social settings continue to reopen, the role of contact tracing in the COVID-19 pandemic will become even more critical. Increasing face-to-face interactions will pose a challenge to preventing resurgences, and we must remain vigilant with testing and tracing.

Several additional key points can inform future efforts. First, public health agencies must increase their infrastructure for contact tracing. Long-term contact tracing solutions will likely be more effective and reliable if they are built upon a foundation of trained professionals who can fully devote their efforts to contact tracing. This may be achieved by repurposing currently employed public health staff, or by employing community members to conduct contact tracing through new hires. This would additionally raise community awareness and trust as well as mitigate high rates of unemployment in the community. Alternatively, providing cost-free credit or practicum hours to students could add to the sustainability and accountability of programs unable to hire or task-shift employees.

Second, database management will be critical to any contact tracing endeavor. The speed and scale of the COVID-19 pandemic have identified many gaps in current systems, and there is a need to develop comprehensive alternatives that allow accurate and secure data storage, as well as efficient communication between separate health agencies and contact tracers.

Third, creative solutions must be pursued to decrease the number of manual work hours required to conduct contact tracing; there are several technological approaches being employed, such as Bluetooth-based contact tracing. Although the adaptation of technology to augment contact tracing shows promise, any such solutions must remain grounded in the protection of individual privacy and the evidence-based collection of accurate and actionable data.

In conclusion, there is a striking need for public health funding and infrastructure development to make COVID-19 contact tracing feasible and effective. We recommend that programs working with new hires or volunteers use standardized resources to ensure quality (e.g., Association of State and Territorial Health Officials, https://www.astho.org/COVID-19/Making-Contact-Tracer-Training; Johns Hopkins University, https://www.coursera.org/learn/covid-19-contact-tracing; Resolve to Save Lives, https://contacttracingplaybook.resolvetosavelives.org). Successful programs will require sustainable workforces, new software systems, and technological solutions. This will require increased governmental funding to be appropriately disbursed to state and local health departments that are tasked with the responsibility of this work. Such well-funded programs will ultimately protect the public's health by preventing ongoing transmission of COVID-19. AJPH

ABOUT THE AUTHORS

Linda Niccolai and James Meek are with the Yale School of Public Health and the Connecticut Emerging Infections Program at Yale, New Haven, CT. Tyler Shelby, Justin Goodwin, and Rachel Hennein are with Yale School of Public Health and Yale School of Medicine, New Haven, CT. Christopher Schenck is with Yale School of Medicine, New Haven, CT. Brian Weeks, Jennifer Vazquez, and Maritza Bond are with New Haven Health Department, New Haven, CT. Meghan Rossini and Dorothyann van Rhijn are with Yale Health at Yale University, New Haven, CT.

CORRESPONDENCE

Correspondence should be sent to Linda M. Niccolai, PhD, Yale School of Public Health, 60 College St, New Haven CT 06520 (e-mail: Linda.niccolai@yale.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Niccolai L, Shelby T, Weeks B, et al. Community trace: rapid establishment of a volunteer contact tracing program for COVID-19. *Am J Public Health*. 2021;111(1):54–57.

Acceptance Date: August 23, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305959

CONTRIBUTORS

This volunteer program was conceptualized by L. Niccolai, T. Shelby, B. Weeks, J. Meek, and M. Bond. The program was supervised by L. Niccolai, T. Shelby, B. Weeks, D. van Rhijn, and M. Bond and managed by C. Schenck, J. Goodwin, R. Hennein, M. Rossini, and J. Vazquez. The manuscript was drafted by L. Niccolai and T. Shelby and reviewed and approved by all authors. We gratefully acknowledge Connecticut Department of Public Health staff for assistance with training.

CONFLICTS OF INTEREST

The authors report no conflicts of interest.

HUMAN PARTICIPANT PROTECTION

No human participant protection was required because we do not report human participant data.

Adapting Backpack Medicine in COVID-19 Response for People Experiencing Homelessness in Southern California

Jemma Alarcón, MD, MPH, and Tipu V. Khan, MD

The Backpack Medicine Program (BPM) at Ventura County Medical Center, in partnership with the Ventura County Health Care Agency, created the BPM COVID Response Team to address health care needs exacerbated by the COVID-19 pandemic among individuals experiencing homelessness. Over four weeks, the BPM COVID Response Team tested more than 150 patients and identified 24 positive results. The Ventura County Health Care Agency has provided temporary housing to more than 400 people among three different cities across Ventura, California. (*Am J Public Health*. 2021;111:58–61. https://doi.org/10.2105/AJPH.2020.305956)

People experiencing homelessness suffer from a risk of mortality three to four times that of the general population and are at high risk for contracting severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and for developing coronavirus disease 2019 (COVID-19) because of underlying comorbidities, which include lung disease and immunocompromised states. We describe a multidisciplinary public health intervention to address health care needs exacerbated by the COVID-19 pandemic among individuals experiencing homelessness.

The Backpack Medicine Program (BPM) at Ventura County Medical Center (VCMC), in partnership with the Ventura County Health Care Agency, has created the BPM COVID Response Team to best care for this population. Over four weeks, the BPM COVID Response Team has tested more than 150 patients and identified 24 positive results. In response to COVID-19, the Ventura County Health Care Agency has provided temporary housing to more than 400 people. This intervention aids preventing outbreaks in Ventura—a coastal county in Southern California located between Santa Barbara and Los Angeles counties—while providing health care for some of the most vulnerable members of our community. Lessons learned from this intervention may be useful in designing targeted public health responses as we transition from sheltering in place to more regular social activities.

INTERVENTION

As part of a multidisciplinary public health intervention to address health care needs exacerbated by the COVID-19 pandemic among individuals experiencing homelessness, the BPM at VCMC, in partnership with the Ventura County Health Care Agency and the VCMC Family Medicine Residency Program has created new strategies to best care for this population.

Individuals experiencing homelessness suffer from disproportionate health disparities[1–3] that are exacerbated by poor access to consistent quality health care.[4–6] They are also at increased risk for contracting SARS-CoV-2 and for developing COVID-19 because of underlying comorbidities, which include lung disease and immunocompromised states.[1–6]

Backpack medicine programs are designed to address the unique needs and circumstances of individuals experiencing homelessness by meeting patients where they are. BPM's services now include SARS-CoV-2 testing, quarantine, and rapid housing for individuals at risk for developing severe forms of COVID-19.

PLACE AND TIME

Our program targets homeless encampments, homeless shelters, and individuals living in parks and under freeways throughout the county. The program began in 2018 serving the city of Ventura and now also includes the California cities Ojai, Oxnard, Simi Valley, Santa Paula, Port Hueneme, Fillmore, and Thousand Oaks.

At the onset of the COVID-19 pandemic, the BPM team responded by creating a mobile testing unit that began operations March 16, 2020.

Ventura County is a coastal county in Southern California located between Santa Barbara and Los Angeles counties. In 2019 its population was estimated to be 846 006. The City of San Buena Ventura (Ventura) is a beach town with 111 000 residents and is where the county medical center, VCMC, is housed.

PERSON

Our program was developed to aid people experiencing homelessness. The US Code defines a homeless individual as "an individual . . . who lacks a fixed, regular, and adequate nighttime residence."[6] On any given night, it is estimated that more than 1669 individuals lack an adequate place to sleep at night in Ventura County.[7]

PURPOSE

VCMC is the mainstay of medical care for our population experiencing homelessness. Frequently, we find that the patient's presenting disease could have been addressed and likely prevented with adequate primary care. Individuals without a home face significant challenges in accessing care, including stigma, lack of proper identification documents, difficulty prioritizing health in the face of competing needs, lack of transportation, and different perceptions of illness.[1–6]

The objective of the BPM program is to provide comprehensive high-quality care to Ventura residents, targeting individuals without a home by using a multidisciplinary team. The BPM COVID Response Team was created as part of the BPM to protect our vulnerable homeless population and reduce hospitalizations, emergency visits, and the likelihood of COVID-19 outbreaks.

FIGURE 1— **Backpack Medicine Physician Providing SARS-CoV-2 Testing at a Homeless Encampment in Ventura County, CA, April 14, 2020**

IMPLEMENTATION

The BPM team is staffed by primary care physicians (residents and attending physicians), medical students, and public health nurses. Services include syringe exchange, alcohol and drug counseling, behavioral health, and social services. The goal of the program is to provide a mobile patient-centered medical home delivered directly to patients who need this integrated care model the most.

We provide wound care; basic primary care, including vaccinations; testing for sexually transmitted infections; housing and benefit assistance; and behavioral health and addiction medicine services, including medication-assisted treatment.

In response to COVID-19, the BPM team expanded its services and created a dedicated COVID response telephone line. Staffed 24 hours a day by a nurse or physician, individuals are assessed, and, if testing is indicated, a mobile team is dispatched to the person's location. Once tested, they are offered a hotel room to quarantine until either a negative result is received or, if positive, until the patient meets discharge criteria. If the patient declines relocation, they are asked to quarantine in their encampment and call the COVID Response Line or 911 if they have worsening symptoms (Figure 1).

Patients experiencing homelessness presenting to the VCMC Emergency Room that are tested for SARS-CoV-2 are offered a hotel room at our "COVID site" before discharge (Figure 2). The COVID site is a hotel that has been contracted to provide temporary housing and isolation to individuals without a

FIGURE 2— **SARS-CoV-2 Testing Tent at the COVID Hotel, Ventura County, CA, April 14, 2020**

home that have or may have COVID-19. Individuals that have a negative result but high-risk comorbidities (e.g., respiratory disease or immunocompromised states) are offered temporary housing at a separate hotel known as the "well site."

Patients at the COVID site are seen daily by a BPM physician. Assessments include pulse oximetry, vital signs monitoring, physical exam, and point of care ultrasound.

Innovative aspects of the program include the use of a telephone line and the ability to have a coordinated response with VCMC and the department of public health. Physicians responding to the telephone line and local outbreaks and visiting the encampments also work at VCMC. Residents play a role across hospital departments, including the emergency department, surgery, and the intensive care unit, and are able to provide unique continuity of care for patients in and outside the hospital.

Another important aspect of our response has been the ability to provide outreach and medical services to farmworkers at sites that are experiencing outbreaks.

EVALUATION

Over four weeks, the BPM COVID Response Team has tested more than 150 patients and identified 24 positive results. The telephone line receives and triages more than 20 to 30 calls a day. Before COVID-19, the BPM would serve 240 patients per year. In response to COVID-19, the Ventura County Health Care Agency has provided temporary housing to more than 400 people.

At the COVID site, the BPM has cared for 14 patients with positive results. Ten of the 24 patients who tested positive declined to relocate. The use of novel tools, such as point of care ultrasonography has allowed us to closely monitor patients and avoid unnecessary hospital admissions. Our sickest patient, a 45-year-old male with hypertension, was short of breath and noted to have a daily average of 89% oxygen saturation with unilateral B-lines on lung ultrasonography. Over seven days, he improved and did not require transfer to a higher level of care. By providing this level of service, contact between COVID-19 patients and health care professionals has been minimized. To date, none of the patients housed in the COVID site have required hospital admission.

Patients have expressed gratitude for the services provided by the team, in particular when the team member can communicate in Spanish.

We continue evaluating the BPM COVID Response Team's impact and ways to improve and expand its services. The family medicine residents enjoy serving patients where they live and are thankful for the inspiration and meaningful insights that guide individualized management.

ADVERSE EFFECTS

Given the complex situations some of our patients experience, including when they are intoxicated, we occasionally have law enforcement accompany the team. Law enforcement has agreed to play a supportive role, linking patients with resources and answering questions rather than policing the patients. However, their presence, at times, dissuades patients from engaging with the team. We continue to work on this area.

A significant challenge encountered by our patients is accessing a phone. Many do not own a cell phone, or, if they do, they lack access to electricity to charge it.

SUSTAINABILITY

The BPM is an integral part of the VCMC Family Medicine Residency Program and the Ventura Health Care Agency. Given its strong institutional support, and the critical mission it serves, we anticipate continuing to work until our services are no longer needed.

The COVID Response Team enhances the BPM's ability to provide primary care and expand our services.

PUBLIC HEALTH SIGNIFICANCE

Innovative strategies are needed to improve our delivery and provision of health care for individuals experiencing homelessness. The BPM provides direct care to individuals where they are while training family medicine residents. The development of effective strategies to adapt and respond to prevent local outbreaks among vulnerable members of our community is necessary for the health of our communities at large. Our work is supporting Ventura County's response while hopefully serving as an example to other communities trying to serve individuals without a home in the midst of the COVID-19 pandemic. AJPH

ABOUT THE AUTHORS

Jemma Alarcón and Tipu V. Khan are with the Family Medicine Residency Program, Ventura County Medical Center, Ventura, CA.

CORRESPONDENCE

Correspondence should be sent to Jemma Alarcón, MD, MPH, 300 Hillmont Ave, Bldg 340, Room 120, Ventura, CA 93003 (e-mail: jemma.alarcon@ventura.org). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Alarcón J, Khan TV. Adapting backpack medicine in COVID-19 response for people experiencing homelessness in Southern California. *Am J Public Health*. 2021;111(1):58–61.

Acceptance Date: August 23, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305956

CONTRIBUTORS

J. Alarcón led the writing of the article, contributed substantially to its conceptualization, and aided in reviewing and analyzing the program evaluation data. T. V. Khan contributed to the writing, guided project development, led program evaluation, and gathered and analyzed the data.

ACKNOWLEDGMENTS

We would like to thank the members of the Backpack Medicine Program, in particular James Boyd for his dedication to serving individuals experiencing homelessness and the Ventura County Medical Center Family Medicine Residency program faculty, staff, residents, and alumni. We would also like to thank the Ventura County Healthcare Agency for its continuous support of caring for some of the most vulnerable members of our community.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

HUMAN PARTICIPANT PROTECTION

No institutional review board approval was required because this program evaluation was part of required programmatic activities in the Backpack Medicine Program and Ventura County Medical Center.

REFERENCES

1. Bharel M, Creaven B, Morris G, et al. Health care delivery strategies: addressing key preventive health measures in homeless health care settings. 2011. Available at: https://nhchc.org/wp-content/uploads/2020/02/Preventive-Health-Care-Delivery-Startegies.pdf. Accessed October 13, 2020.
2. Fazel S, Geddes JR, Kushel M. The health of homeless people in high-income countries: descriptive epidemiology, health consequences, and clinical and policy recommendations. *Lancet*. 2014;384(9953):1529–1540. https://doi.org/10.1016/S0140-6736(14)61132-6
3. Corrigan P, Pickett S, Kraus D, Burks R, Schmidt A. Community-based participatory research examining the health care needs of African Americans who are homeless with mental illness. *J Health Care Poor Underserved*. 2015;26(1):119–133. https://doi.org/10.1353/hpu.2015.0018
4. Capp R, Rosenthal MS, Desai MM, et al. Characteristics of Medicaid enrollees with frequent ED use. *Am J Emerg Med*. 2013;31(9):1333–1337. https://doi.org/10.1016/j.ajem.2013.05.050
5. Hwang SW, Weaver J, Aubry T, Hoch JS. Hospital costs and length of stay among homeless patients admitted to medical, surgical, and psychiatric services. *Med Care*. 2011;49(4):350–354. https://doi.org/10.1097/MLR.0b013e318206c50d
6. Legal Information Institute. US Code. General definition of homeless individual. Available at: http://www.law.cornell.edu/uscode/text/42/11302. Accessed June 14, 2014.
7. Ventura County Continuum of Care Alliance. 2019. San Bernardino County homeless count and subpopulation survey: final report. 2019. Available at: https://wp.sbcounty.gov/dbh/sbchp/wp-content/uploads/sites/2/2019/05/2019-homeless-count-and-survey-report.pdf. Accessed February 17, 2020.

CONFLICTS OF INTEREST

> Guest Editors for the "Student Perspectives During COVID-19" section were Roger Gonzales, Jaimee Watts Isley, Wayne R. Lawrence, Jennifer Drey, Brady Rowe, Emily Q. Ritter, *AJPH* Think Tank; and Paulina Sosa, *AJPH* Assistant Editor.

All editors collaboratively developed the concept of the goals, structure, and content of this special section, led the solicitation process for submissions, posted and promoted a call for papers from the general public, and reviewed articles that came in, up to the 80-paper limit. P. Sosa managed and moderated all incoming paper submissions and liaised between the Think Tank and *AJPH* regularly. All members of the *AJPH* Think Tank contributed equally to authoring the editorial prologue describing the special section's content.

AFFILIATIONS

Paulina Sosa, MPH, is with Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD. Jaimee Watts Isley, DNP, RN, is with the School of Nursing, University of North Carolina at Chapel Hill. Wayne R. Lawrence, DrPH, MPH, is with the National Cancer Institute, National Institutes of Health, Bethesda, MD. Brady Rowe is with School of Public Health, Yale University, New Haven, CT. Roger Gonzales, MPH, is with the College of Public Health, University of Nebraska Medical Center, Omaha. Jennifer Drey is with the Rollins School of Public Health, Emory University, Atlanta, GA. Emily Q. Ritter is with the Gillings School of Global Public Health, University of North Carolina at Chapel Hill.

STATEMENTS

None of the Guest Editors have any conflicts of interest to disclose. AJPH

https://doi.org/10.2105/AJPH.2021.111.1.62

Adaptability, Change, Hope: Student Perspectives During the COVID-19 Pandemic

Jaimee Watts Isley, DNP, Roger Gonzales, MPH, Jennifer Drey, BAJ, Emily Q. Ritter, BS, Wayne R. Lawrence, DrPH, MPH, Brady Rowe, BA, and Paulina Sosa, MPH

ABOUT THE AUTHORS

Jaimee Watts Isley is with the School of Nursing, University of North Carolina at Chapel Hill. Roger Gonzales is with the College of Public Health, University of Nebraska Medical Center, Omaha. Jennifer Drey is with the Rollins School of Public Health, Emory University, Atlanta, GA. Emily Q. Ritter is with the Gillings School of Global Public Health, University of North Carolina at Chapel Hill. Wayne R. Lawrence is with the National Cancer Institute, National Institutes of Health, Bethesda, MD. Brady Rowe is with School of Public Health, Yale University, New Haven, CT. Paulina Sosa is with Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD. The authors were also Guest Editors for the special section on "Student Perspectives During COVID-19."

See also the Student Perspectives on COVID-19 section, pp. 62–87.

The *AJPH* Student Think Tank compiled this special section to give a platform to the voices and stories of public health students during the COVID-19 pandemic—a time that has revealed what public health is and what public health could be. In addition to the COVID-19 pandemic, the United States has struggled through another pandemic: structural racism. As students, we each hold a unique and important perspective as we navigate our way socially, professionally, and academically through these times of uncertainty. Each selected piece captures these individual points of view, sharing the truths and lived experiences that will drive the change necessary to embark on the future of public health. This special section is a collection of articles presenting powerful student experiences that come together around three crucial messages: adaptability, change, and hope.

ADAPTABILITY

The COVID-19 pandemic has required students to repeatedly adapt to new roadmaps for navigating their education. First was the sudden switch to virtual coursework, followed by the more subtle adaptations that started to take place in the various corners of public health. "Flexibility" and "new normal" became the catchwords of 2020. Students have served as proof of the incredible human capacity to reorient in new conditions to survive. Despite this innate potential, public health has not always been successful at this.

Taylor van Doren paused to reflect on a past pandemic of similar magnitude and saw a striking similarity in the people. In "The 1918 Influenza Pandemic Has Lessons for COVID-19: An Anthropology Student Perspective" (p. 79), mortality data, both then and now, has made it clear that socioeconomic status is a strong indicator of who is most at risk. Midstream and upstream interventions that address variations in risk are fundamental for protecting vulnerable populations. We are also reminded that adaptation is not one size fits all. As the authors in the section discuss, we saw several areas of health care move quickly and efficiently to find safe and innovative ways to approach their patients' needs; however, some areas were more capable at this task than others.

In "How the COVID-19 Pandemic Has Affected Hospice Care: Perspective of a Student Volunteer" (p. 81), Theresa Dickerson shares the observation that although technology brought patients, families, and providers closer in other disciplines, hospice patients, especially those with advanced mental decline, were unable to adapt to new technology in the same way. The reader is left to question whether public health can sustain being reactionary to health issues that arise rather than placing greater effort on prevention and preparedness. In the "Student Perspectives From the COVID-19 Epicenter: Bridging Educational Training and Public Health Practice" (p. 71), Ocampo et al. wonder whether we must wait for the next crisis to emphasize the importance of flexibility and creativity in our training and ask whether institutions can steer public health education toward more adaptable practice.

What is known for certain is that change is needed.

CHANGE

Change in public health is usually considered a slow and lengthy process. The COVID-19 pandemic challenged this assumption and emphasized the importance of being ready for any and all scenarios. As soon as the virus began to spread, the public learned that we were not prepared to handle a pandemic. Throughout the world, public health students embraced this change in their own way: some students created resources for their communities and others were advocates for public health and oppressed communities. To continue their scholarly activities, students were faced with taking courses online and completing assignments remotely, oftentimes while working and caring for loved ones. Embracing change was not the same for everyone.

Twardzik et al. raise awareness of the challenges that people with disabilities face during the pandemic in the article "Disability During a Pandemic: Student Reflections on Risk, Inequity, and Opportunity" (p. 85). The authors discuss how changes to allow able-bodied people to continue to work and to participate in remote learning were rapid. This bittersweet observation confirmed that people with disabilities have not been given equitable consideration. Other students struggled with their lack of access to family members labeled "essential workers." This label should indicate protection and health care access, but through a powerful story, the reader is compelled to see that this was not the case for many.

In "Essential or Expendable During the COVID-19 Pandemic? A Student-Lived Experience on Grieving the Unjust and Early Deaths of Vulnerable Populations" (p. 66), Ariana Ávila shares the story of her *tío*, a migrant farmworker who tirelessly worked for his community and was part of the agricultural backbone of this country. Despite being deemed "essential," he was treated as expendable and passed away because of the lack of COVID-19 protections in his workplace. Unfortunately, this story relates to many families in vulnerable populations, who meet with an impossible decision: to financially support their families or to protect their health. Stories like this illustrate the need for employers to prioritize the health of workers, which is particularly difficult in the agricultural and other essential industries.

Public health practitioners are challenged to reevaluate how to communicate information to the public if they hope to rebuild a more trusting relationship with the community. In "Public Health Is Political: A Student's View on a Necessary Shift in Public Health Curricula" (p. 69), Windisch and Wijaya consider the need for changes in public health curricula. This pandemic has exposed flaws in how public health professionals disseminate information and how the general population consumes it. Going forward, public health training needs to incorporate effective methods for engaging communities across political and ideological differences.

In "A New Normal Is Paramount for Public Health Research and Practice: A Student Perspective on COVID-19" (p. 83), Asari Offiong bluntly reminds readers that our pre–COVID-19 lifestyle no longer exists. This reality has forced a new normal that must now focus on population-level change.

The pandemic is not over, and public health students are still undergoing the process of change. Despite this, COVID-19 has not shaken their hope for a better public health system; it has only increased it.

HOPE

Hope resonates among the articles in this special section: hope to learn from the lessons of this pandemic and rebuild a society that is more just, not return to the society of the past; hope for a future that not only includes an end to COVID-19 but contains equitable access to health care, the dismantling of structural racism, and an end to plutocratic politics. Although these are not the only crises, they are the ones most magnified by the COVID-19 pandemic.

Huffstetler et al. argue that the COVID-19 pandemic brought awareness to a structural system that was deeply rooted in economic and social inequities in "Human Rights Advocacy and Us, the Next Generation of Public Health Leaders" (p. 74). The authors discuss structural racism's contribution to increasing the risk of contracting COVID-19 for racial and ethnic minorities and to encountering barriers in accessing adequate health care.

In the article "Reflections on the COVID-19 Pandemic From a Frontline Physician and Public Health Student" (p. 77), Charlotte Roy finds hope in the thought that the pandemic will lead to society coming to a new understanding of the role we play in one another's health. Roy asks students to realize that they are the future of public health and will need to use innovative methods for eliminating social inequities and building a more resilient public health infrastructure.

Despite the number of issues and disparities highlighted, there remains a collective hope that we will move forward together in reimagining public health and in creating a more equitable and healthier future.

CONCLUSIONS

The authors selected for this special section represent students from vastly different educational backgrounds. Despite these differences, they are bound together by shared student experiences. These curated articles provide a unique and diverse perspective from the intersection of public health and social policy. The COVID-19 pandemic will have lasting ramifications; it forces us to confront and condemn policies that uphold social inequities as well as advocate better public health preparedness and response.

We live in a world full of opportunities, challenges, and innovation. Today's public health students are tomorrow's public health leaders. Through their stories, we learn that the future leaders of public health are willing to be adaptable in an ever-changing world. They are individuals with a passion for hope that persists even when faced with great adversity. These students have been called to action, and they are responding. Armed with insight gained from witnessing the global response to a pandemic and with academic experience, students must use the ongoing societal momentum for health equity to create a more inclusive society. And that gives us hope for a healthier future. AJPH

CORRESPONDENCE

Correspondence should be sent to Professor Jaimee Watts Isley, Undergraduate Program Division, School of Nursing, University of North Carolina at Chapel Hill, Carrington Hall, S Columbia St, Chapel Hill, NC 27599 (e-mail: jwisley@e-mail.unc.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Watts Isley J, Gonzales R, Drey J, et al. Adaptability, change, hope: student perspectives during the COVID-19 pandemic. *Am J Public Health*. 2021;111(1):63–65.

Acceptance Date: October 20, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306033

CONTRIBUTORS

The authors contributed equally to this editorial.

ACKNOWLEDGMENTS

The authors would like to thank Luisa N. Borrell, DDS, PhD, MPH, Alfredo Morabia, MD, PhD, MSc, MPH, and Daniel Tarantola, MD, for their expert insight.

Note. The opinions expressed by the authors are their own, and this material should not be interpreted as representing the official viewpoint of the US Department of Health and Human Services, the National Institutes of Health, or the National Cancer Institute.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

Essential or Expendable During the COVID-19 Pandemic? A Student-Lived Experience on Grieving the Unjust and Early Deaths of Vulnerable Populations

Ariana Ávila, MPH

ABOUT THE AUTHOR

Ariana Ávila is a doctoral student with the Department of Anthropology at the University of North Carolina—Chapel Hill.

See also Watts Isley et al., p. 63, and the Student Perspectives on COVID-19 section, pp. 62–87.

AJPH January 2021, Vol 111, No. 1

On June 13, 2020, my *tio* (uncle) passed away as a result of complications caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). He spent his life taking care of his family and, through his work, contributing to the wellness of his community. As an adolescent, my *tio* emigrated from Mexico to Texas and Florida to work in the agricultural fields. Eventually, my father joined him to work the citrus fields of southwest Florida. For more than 35 years, they worked the fields together. As the coronavirus disease 2019 (COVID-19) pandemic, caused by SARS-CoV-2, escalated in the United States, their jobs positioned them as frontline workers, in charge of feeding the country.

At age 67 years, my *tio* continued to work as a migrant farmworker. After the Florida orange season, he migrated to the Midwest to work in the corn and sweet potato fields. My *tio's* chronic diabetes and high blood pressure made him vulnerable to SARS-CoV-2. Despite the risks of contracting the virus, the opportunity to provide for his family during "off season" attracted him to work temporarily in Wisconsin. Shortly after arriving in Wisconsin, my *tio* started to feel ill but continued to work because this job required his daily presence and offered limited flexibility to take sick days. He was not admitted to the hospital until he fainted. He passed away in Wisconsin more than 1500 miles away from his family in Florida.

ESSENTIAL OR EXPENDABLE?

Unfortunately, my *tio*'s story is the reality of many individuals working in agriculture, poultry- and meat-processing plants, cleaning services, and other workspaces where lives have been treated as expendable during the COVID-19 pandemic in the United States. At the beginning of the pandemic, COVID-19–positive cases were surging in poultry- and meat-processing plants, specifically throughout rural America.[1] As of mid-October 2020 in Immokalee, Florida, a rural agricultural town in Collier County, more than 2364 people had positive test results for COVID-19.[2] In response, organizations like Doctors Without Borders and Partners in Health mobilized to work alongside the local health department.

Despite worker-led organizing to demand testing and paid sick leave for people experiencing COVID-like symptoms, agricultural corporations and state and local health departments, as well as the federal government, have done little to protect workers and residents. According to the US Department of Homeland Security, agricultural workers are considered "critical infrastructure workers within the Food and Agriculture sector,"[3] but agricultural businesses are not mandated to conduct screening activities and are not equipped with testing services for their workers before arriving at, after leaving, or while working at the farms. The compromised or less-than-optimal health status caused by years of working in the fields, living conditions of migrant farmworkers, inequitable access to health care services, varying immigration statuses, packed buses from labor camps to the fields, language barriers, and unbalanced power structures between corporations and farmworkers intersect to create unique challenges for this population during the pandemic.

As cases surged across the United States (and globally), the Centers for

Disease Control and Prevention revised their guidance on critical infrastructure workers, stating that those potentially exposed to the virus could continue to work provided they remain asymptomatic.[4] This does not prevent transmission of SARS-CoV-2. Public health professionals should be doing more to save lives and protect people from health threats. We must treat the deaths and illnesses of farmworkers from COVID-19 as workers' rights cases.

GRIEF AND IDENTITY

In a culture rooted in family, it was difficult to accept that my *tio* passed away without anyone at his side. How could we move forward without being able to have closure? As I prepared for my *tio's* service, I found myself experiencing an internal conflict. As a public health professional and medical anthropology doctoral student, it was important to respectfully voice my concerns about COVID-19 transmission in enclosed spaces. I wanted to dissect various interrelated and complex issues: the implications of agribusiness and the lack of COVID-19 testing for contracted employees; what it meant to be a migrant worker during a pandemic; the reality of US imperialism that ultimately drove my family to migrate to the United States for economic stability; how structural racism within the United States caused COVID-19 to disproportionately affect Black or Indigenous people and other people of color; how accessibility (or lack thereof) to good health care intersected with socioeconomic status; and, ultimately, the lack of US government leadership in the COVID-19 response.

Yet as my *tio's* niece, I accepted that my professional background would be secondary to our mourning process. With masks, gloves, and an overwhelming amount of hand sanitizer, we held the funeral services and burial ceremony. We gathered, we hugged, and we honored his memory. The thought of contracting the same virus that unexpectedly brought us together lingered in our minds. As a family separated by political borders, we found alternatives to provide remote grieving spaces for my *abuelita* (grandma) and family members who were unable to attend the service. Public health reports on the COVID-19 pandemic seldom address transnational grieving. How do we cope with loss when traditional ceremonies cannot occur?

INTERSECTIONALITY AND HEALTH

We must reiterate that the COVID-19 pandemic is not the great equalizer.[5] The pandemic is revealing the social inequalities in the US health care system. In public health reports, we discuss rates of COVID-19 cases and deaths as if each number does not represent a human life. The longer we fail to change the US health care policies and to confront how gender, immigration status, socioeconomic status, and racialization affect health in the United States, the longer we participate in an unjust system. It is necessary to strategize how we listen to and act for communities disproportionately affected by the COVID-19 pandemic in the United States.

Following the work of Kimberlé Crenshaw,[6] we must take an intersectional approach to the pandemic. Through this lens, we learn how systems of oppression work together to produce social inequality. The role of structural factors is masked by cultural explanations in the public health literature on immigrant health.[7] Viruell-Fuentes et al.[7] concluded that the lack of integration of intersectionality theory into immigrant health literature is a gap that must be closed to address inequality. When we take an intersectional approach to health in the context of the COVID-19 pandemic, we see the systems of oppression acting together.

A WAY FORWARD

Aftermaths are for the privileged because those disproportionately affected by the pandemic will continue to live in its presence. Too many of us will live with mourning the unjust and early deaths of loved ones because of the lack of policies to protect the health of the most vulnerable during the pandemic. Unfortunately, the effects of the pandemic will persist beyond the availability of a vaccine. As public health professionals, we must demand the equitable distribution of resources, quality of life, health care, and vaccines for all people living in the United States. For a successful vaccine distribution, we must reflect on the intersections of identity. What will large-scale vaccination look like for vulnerable communities? What strategies could we use to reach equitable vaccination rates? Without considering these questions, there will not be an aftermath to the pandemic. AJPH

CORRESPONDENCE

Correspondence should be sent to Ariana Ávila, MPH, Department of Anthropology, University of North Carolina—Chapel Hill, 313B Alumni Bldg, CB#3115, Chapel Hill, NC 27599-3115 (e-mail: ariana4@live.unc.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Ávila A. Essential or expendable during the COVID-19 pandemic? A student-lived experience on grieving the unjust and early deaths of vulnerable populations. *Am J Public Health*. 2021; 111(1):66–68.

Acceptance Date: October 4, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306001

ACKNOWLEDGMENTS

I would like to thank the *AJPH* Student Think Tank for offering a space of conversation on the severe acute respiratory syndrome coronavirus 2 pandemic and public health futurity. I would also like to thank the reviewers, my advisers, and my friends for their feedback and comments. Most of all, I would like to honor my family and the two *tios* we have lost as a result of coronavirus disease 2019 complications—I am forever indebted to their years of joy and perseverance.

CONFLICTS OF INTEREST

The author has no conflicts of interest to disclose.

REFERENCES

1. Green E. *The coronavirus hits poultry processing plants in the South*. National Public Radio. May 22, 2020. Available at: https://www.npr.org/2020/05/22/861202489/the-coronavirus-hits-poultry-processing-plants-in-the-south. Accessed July 30, 2020.
2. Florida Department of Health, Division of Disease Control and Health Protection. Florida's COVID-19 Data and Surveillance Dashboard. Available at: https://experience.arcgis.com/experience/96dd742462124fa0b38ddedb9b25e429. Accessed October 16, 2020.
3. Cybersecurity and Infrastructure Security Agency, US Department of Homeland Security. *Guidance on the Essential Critical Infrastructure Workforce*. 2020. Available at: https://www.cisa.gov/publication/guidance-essential-critical-infrastructure-workforce. Accessed July 29, 2020.
4. Centers for Disease Control and Prevention. Critical Workers: Interim Guidance. Available at: https://www.cdc.gov/coronavirus/2019-ncov/community/critical-workers/implementing-safety-practices.html. Accessed July 30, 2020.
5. Mein SA. COVID-19 and health disparities: the reality of "the Great Equalizer." *J Gen Intern Med*. 2020;35(8):2439–2440. https://doi.org/10.1007/s11606-020-05880-5
6. Crenshaw K. Mapping the margins: intersectionality, identity politics, and violence against women of color. *Stanford Law Rev*. 1991;43(6):1241–1299. https://doi.org/10.2307/1229039
7. Viruell-Fuentes EA, Miranda PY, Abdulrahim S. More than culture: structural racism, intersectionality theory, and immigrant health. *Soc Sci Med*. 2012;75(12):2099–2106. https://doi.org/10.1016/j.socscimed.2011.12.037

Public Health Is Political: A Student's View on a Necessary Shift in Public Health Curricula

Sally P. Windisch, MPH, and Fitri Carrissa Wijaya, MPH, MSW

ABOUT THE AUTHORS

Sally P. Windisch and Fitri Carrissa Wijaya are with the Division of Health Promotion and Behavioral Science, School of Public Health, San Diego State University, San Diego, CA.

See also Watts Isley et al., p. 63, and the Student Perspectives on COVID-19 section, pp. 62–87.

The COVID-19 pandemic has exposed and exacerbated fundamental flaws in the ways Americans disseminate and consume public health information. As public health students, our formal training was shaped by the Council on Education for Public Health accreditation requirements, one of which requires schools to engage students in discussions on structural bias, social inequities, and racism in the context of health equity.[1] As a result, our university excelled in connecting students with opportunities to work with populations from diverse cultural, linguistic, and socioeconomic backgrounds. However, as efforts to contain the spread of COVID-19 continue to become increasingly politicized, it is evident that our public health training should also emphasize and build skills in engaging communities across political and ideological differences. In addition, public health training must prepare future public health professionals, scholars, and advocates to fight back against the threat of misinformation, conspiracy theories, and the politicization of evidence.

For example, since the start of the pandemic, mask wearing has consistently been a controversial topic across the nation despite evidence that it slows the spread of COVID-19.[2] However, we observe daily throughout San Diego, California (as in other parts of the country), community members who refuse to wear masks and believe that adhering to public health recommendations restricts their personal freedoms.[3] Current public health dissemination efforts have been unable to reach many such individuals. Public health efforts are further hampered by the Trump administration's circulation of misinformation—statements that are often at odds with state and federal public health officials or not grounded in evidence.

In our program, we were taught to use theories to serve as frameworks for rigorous interventions. We know from frameworks such as the transtheoretical model of behavior change and the community readiness model that some people may exhibit denial or resistance, yet we are encouraged to focus our efforts on those who are ready to commit to behavior change.[4,5] It may be helpful to also expose students to research and specific examples on how to engage communities where political and ideological divides can be a barrier to health interventions. Perhaps because of discomfort with disagreements and debates, public health classrooms shy away from discussing the role politics plays in affecting health behaviors.

The consequence is that the Trump administration and other entities are able to freely promulgate antimask rhetoric. The lack of standardization in public health curricula leaves many students, like us, with a narrow understanding of politics in public health. Our lack of training in engaging resistant groups has left us powerless to motivate behavior change in those with ideological differences. It is ineffective to solely disseminate evidence-based recommendations without also attempting to understand the thought processes of those who are in denial or exhibiting resistance.

Regardless of personal or political beliefs, COVID-19 affects people indiscriminately, and the future of public health lies in communities working collaboratively for the sake of public good. Health equity cannot be achieved without an understanding of how to work across political differences for the common good. To broaden the scope of politics in public health curricula, we need to move beyond solely focusing on health policies and government programs and move toward encouraging students to participate in political discussions. Engaging public health students in political processes should not be seen as radical but as a necessary shift in public health's approach to attain health equity. AJPH

CORRESPONDENCE

Correspondence should be sent to Sally P. Windisch, School of Public Health, San Diego State University, 5500 Campanile Dr, San Diego, CA 92182 (e-mail: swindisch3830@sdsu.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Windisch SP, Wijaya FC. Public health is political: a student's view on a necessary shift in public health curricula. *Am J Public Health*. 2021;111(1):69–70.

Acceptance Date: October 4, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306002

CONTRIBUTORS

The authors contributed equally to this comment.

ACKNOWLEDGMENTS

The authors are grateful to Jerel P. Calzo, PhD, MPH, for his feedback on earlier drafts of this comment.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

REFERENCES

1. Council on Education for Public Health. Accreditation criteria: schools of public health & public health programs. 2016. Available at: https://media.ceph.org/documents/2016.Criteria.pdf. Accessed August 10, 2020.
2. Centers for Disease Control and Prevention. How to protect yourself & others. 2020. Available at: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html. Accessed October 12, 2020.
3. Anderson E. San Diego protesters, angry about coronavirus restrictions, rally downtown. 2020. Available at: https://www.kpbs.org/news/2020/may/01/san-diego-protesters-are-angry-about-covid-19-rest. Accessed August 12, 2020.
4. Prochaska JO, DiClemente CC. Stages and processes of self-change of smoking: toward an integrative model of change. *J Consult Clin Psychol*. 1983;51(3):390–395. https://doi.org/10.1037//0022-006x.51.3.390
5. Tri-Ethnic Center for Prevention Research. Community readiness for community change. 2014. Available at: https://tec.colostate.edu/wp-content/uploads/2018/04/CR_Handbook_8-3-15.pdf. Accessed August 8, 2020.

Student Perspectives From a COVID-19 Epicenter: Bridging Educational Training and Public Health Practice

Joanne Michelle F. Ocampo, MS, Jessica A. Lavery, MS, Yongmei Huang, MD, MPH, Damemarie Paul, MPH, Alejandra Paniagua-Avila, MD, MPH, and Nahid Punjani, MD, MPH

ABOUT THE AUTHORS

Joanne Michelle F. Ocampo is a doctorate of public health student with the Department of Population and Family Health, Mailman School of Public Health, Columbia University, New York, NY. Jessica A. Lavery is with the Department of Biostatistics, Mailman School of Public Health. Yongmei Huang, Damemarie Paul, Alejandra Paniagua-Avila, and Nahid Punjani are with the Department of Epidemiology, Mailman School of Public Health. Nahid Punjani is also with the Department of Urology, Center for Male Reproductive Medicine and Microsurgery, Weill Cornell Medicine, New York, NY.

See also Watts Isley et al., p. 63, and the Student Perspectives on COVID-19 section, pp. 62–87.

Our impetus for returning to school after years in the workforce was to improve public health by improving ourselves. We chose to pursue the practice-oriented doctorate of public health (DrPH) degree because we knew that understanding theory does not necessarily translate into effective practice.[1] Technical expertise alone, although important, cannot move public health sufficiently forward without effective leadership, communication, organization, and management skills. Therefore, our goal in returning to academia was to bridge the gap in our experience between theory and practice.

Returning to the classroom allowed us to reflect on past failures and successes in public health practice. We sought to learn how to holistically manage public health issues, as linear solutions to complex problems often do not suffice.[2] We learned the importance of thinking about the entirety of health systems, what the role of effective leadership is, and the essentialness of collaboration in public health.

Then the worst pandemic of modern times unfolded in front of our eyes. Following the World Health Organization's declaration of coronavirus disease 2019 (COVID-19) as a public health emergency of international concern in March 2020,[3] our university made expedient and drastic changes to our learning environment. In a matter of days, our in-person classes stopped. We witnessed a complete paradigm shift in our social interactions. Our vibrant city streets emptied seemingly overnight, leaving an eerie silence for those of us who stayed behind. Abruptly, our otherwise highly social educational pathway turned into a distant and lonely journey, with no assurance of seeing our colleagues again. Although quality coursework is vital, it is the people that we learn with and from that make an education like ours worthwhile.

In the former COVID-19 epicenter, New York City, we desperately tried to keep our education intact while making split-second decisions about whether to leave the city before states or nations closed their borders, how to best support family and friends, and how to simultaneously retain our professions. Many of us became directly involved with the COVID-19 response, investing our personal, professional, and academic efforts into providing clinical services and supporting clinical research; engaging in epidemiological and contact-tracing efforts; assisting with food distribution; and coordinating donations of personal protective equipment.

OUR VISION AND VIEWPOINTS

COVID-19's abrupt and devastating impact on our lives shed light on the essential characteristics of a successful public health practitioner: the ability to adapt to sudden changes, the skills to manage uncertainty, and the resilience to meet high demands. COVID-19 brought academia to its knees. Machinery usually slow to turn its wheels, many academic institutions adapted usually rigid in-classroom structures to dynamic online learning environments in a matter of days. We wonder, must we wait for a crisis to emphasize the importance of flexibility and creativity in our training, or can we steer our education toward more adaptable practice without a crisis?

The speed at which COVID-19 infections spread globally highlighted the uncomfortable fact that public health issues are ruthless—they seldom affect people equally—and interventions can seem controversial. Public health issues also illustrate that no one is immune to clinical or socioeconomic consequences, not even world-renowned virologists or aspiring doctors of public health.[4]

With the firsthand experience of enduring and responding to the pandemic in one of the world's former epicenters, we offer our vision for and perspectives on the future of public health. Our vision is that public health education will emphasize interdisciplinary practice so that on completion of degree programs, public health practitioners will be better equipped to translate public health theory into effective practice by applying clear communication, efficient management, and intentional strategies, allowing adaptive leadership and the execution required for addressing dynamic public health issues.

STRENGTHEN OUR PUBLIC HEALTH WORKFORCE

We have been in a public health workforce crisis for quite some time. In 2008, the Association of Schools and Programs of Public Health predicted a shortfall of a quarter million people in the public health workforce.[5] COVID-19 validated this. Not only do we need more people, but our educational training needs an overhaul. During this pandemic, we witnessed numerous departures of public health officials. As we contemplate the requirements for these roles, we ask ourselves the following: How can our educational training better serve the public's health needs?[6] How can we enhance our skills to more efficiently work with peers and other non–public health stakeholders? How do we more effectively voice evidence-based opinions in volatile geopolitical contexts? How can we piece together the fragmented public health system? COVID-19 has demonstrated that public health practitioners require, in addition to discipline-specific schooling, concrete training in systems thinking, dynamic settings, political decision-making processes, business management, communications, and strategy.

INTERDISCIPLINARY COMMUNICATION AND LEADERSHIP

The challenges of the COVID-19 response highlight the importance of interdisciplinary practice. Obstacles prevent universities from teaching students to become highly integrated, communicative, and collaborative public health practitioners. While providing rigorous training in discipline-specific methodology, institutions should identify and make available basic toolkits for individuals to be more successful in practice.

As public health leaders, we must be versatile and adaptable. We must improve our communication with policymakers and at all levels of practice: the public, the media, and the business community. We need high-quality opportunities to train alongside experts in different professions to learn how to tackle interdisciplinary problems earlier in our careers. We must learn to think reflexively. Together, we will go beyond learning lessons to adequately acting on them.

REMEMBER WHO WE ARE SERVING

There remains an artificial divide between the public health community and the people we intend to serve. COVID-19 has disproportionately affected many, in our city and around the world, who were already facing public health and socioeconomic challenges. We should not take significant fear and stigma associated with public health measures lightly.[7] We need our academic training to include teaching us to better understand, assist, and, most importantly, collaborate with those we are trying to serve. We need guidance earlier in our careers on how to conduct more empathic and effective outreach. We must become active listeners and better at receiving feedback from our communities so that we can achieve more robust integration of our public health and academic efforts into the larger society. Without these criteria, we will not sufficiently reach the people we intend to serve.

THE FUTURE OF PUBLIC HEALTH

Although we are frustrated with the many missed opportunities to effectively curtail this global public health crisis, we remain committed to our careers, and we are inspired to take this as an opportunity to grow as individuals and to improve public health as our field of study. Our ability to adapt to sudden changes, skills to manage uncertainty, and resilience to meet high demands are intimately linked to our training. We believe that public health organizations can address these qualities by strengthening educational practices tied to preparing our workforce, practicing interdisciplinary communication and leadership, and working alongside our communities.

COVID-19 has pushed our academic and professional training to its limits. Most importantly, it has reminded us that our knowledge of public health is only as good as our ability to apply it. AJPH

CORRESPONDENCE

Correspondence should be sent to Joanne Michelle F. Ocampo, DrPH student with the Department of Population and Family Health, Mailman School of Public Health, Columbia University, 722 W 168th St, New York, NY 10032 (e-mail: joannemichelle.ocampo@columbia.edu). Reprints can be ordered at http://www.ajph.org by clicking the “Reprints” link.

PUBLICATION INFORMATION

Full Citation: Ocampo J, Lavery JA, Huang Y, Paul D, Paniagua-Avila A, Punjani N. Student perspectives from a COVID-19 epicenter: bridging educational training and public health practice. *Am J Public Health*. 2021;111(1):71–73.

Acceptance Date: October 4, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306003

CONTRIBUTORS

J. M. F. Ocampo and N. Punjani conceptualized and planned the editorial. All authors contributed to the design, development, writing, editing, and submission of the editorial.

ACKNOWLEDGMENTS

J. M. F. Ocampo is supported by the Norway–America Association and the American–Scandinavian Foundation. N. Punjani is supported by the Frederick J. and Theresa Dow Wallace Fund of the New York Community Trust.

We would like to thank our professor Helen de Pinho for leading by example, motivating and inspiring us, and showing us how reflective teaching, interdisciplinary collaboration and communication, and individual learning and action are interlinked with our public health practice.

CONFLICTS OF INTEREST

J. M. F. Ocampo was an employee of the Centers for Disease Control and Prevention (CDC) Foundation supporting the COVID-19 response but did not receive funding or contribute to this editorial in her CDC Foundation capacity.

REFERENCES

1. Declercq E, Caldwell K, Hobbs SH, Guyer B. The changing pattern of doctoral education in public health from 1985 to 2006 and the challenge of doctoral training for practice and leadership. *Am J Public Health*. 2008;98(9):1565–1569. https://doi.org/10.2105/AJPH.2007.117481
2. Leischow SJ, Best A, Trochim WM, et al. Systems thinking to improve the public’s health. *Am J Prev Med*. 2008;35(2 suppl):S196–S203. https://doi.org/10.1016/j.amepre.2008.05.014
3. Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. *Acta Biomed*. 2020;91(1):157–160. https://doi.org/10.23750/abm.v91i1.9397
4. Draulans, D. “Finally, a virus got me.” Scientist who fought Ebola and HIV reflects on facing death from COVID-19. 2020. Available at: https://www.sciencemag.org/news/2020/05/finally-virus-got-me-scientist-who-fought-ebola-and-hiv-reflects-facing-death-covid-19. Accessed October 12, 2020.
5. Rosenstock L, Silver GB, Helsing K, et al. Confronting the public health workforce crisis: ASPH statement on the public health workforce. *Public Health Rep*. 2008;123(3):395–398. https://doi.org/10.1177/003335490812300322
6. Nicola M, Sohrabi C, Mathew G, et al. Health policy and leadership models during the COVID-19 pandemic: a review. *Int J Surg*. 2020;81:122–129. https://doi.org/10.1016/j.ijsu.2020.07.026
7. Bruns DP, Kraguljac NV, Bruns TR. COVID-19: facts, cultural considerations, and risk of stigmatization. *J Transcult Nurs*. 2020;31(4):326–332. https://doi.org/10.1177/1043659620917724

Human Rights Advocacy and Us, the Next Generation of Public Health Leaders

Hanna E. Huffstetler, BA, Tamira Daniely, Meredith Dockery, Tsion Ghedamu, MSPH, Lenore Hango, BSPH, Ashley Huff, Victoria Matus, BA, Hannah Rice, BA, Sonam J. Shah, Sonam K. Shah, BA, Niharika Soni, and Caitlin R. Williams, MSPH

ABOUT THE AUTHORS

All authors are with the University of North Carolina at Chapel Hill.

See also Watts Isley et al., p. 63, and the Student Perspectives on COVID-19 section, pp. 62–87.

Health is a fundamental human right. As a collective of undergraduate and graduate students working to monitor human rights violations in public health responses to COVID-19, we have seen firsthand how vital human rights advocacy is to advancing the public's health. Through research and study, we have analyzed how human rights advocacy serves as a critical tool for documenting abuses, building coalitions, and mobilizing campaigns for action to prevent disease and promote health. In watching the pandemic exacerbate health inequities, restrict individual liberties, and threaten vulnerable populations, we believe it is essential to share what we have learned and call on others to join us in centering human rights in public health, both for this moment and beyond.

BUILDING ON THE WORK OF PAST GENERATIONS

Since the development of international declarations promoting human rights in the years following World War II, human rights have been implemented across the globe to advance claims for health justice. Although not all countries have signed and ratified all human rights treaties (notably, the United States has not signed the International Covenant on Economic, Social and Cultural Rights, which formally enshrines the right to health), human rights advocacy has served as a powerful force for advancing health-related human rights. Today's health and human rights movement was built on a foundation of advocacy laid by generations of activists, including students, who came before us. This movement recognizes respect for human dignity as a necessary precondition for realizing health and understands public health and human rights as complementary pathways for promoting human well-being. Yet before the birth of this movement, public health and human rights were seen to be in tension, leading to harms against both health and human rights.[1]

In the early years of the HIV/AIDS response, activists fought against public health policies that violated rights, including named reporting, travel restrictions, and coercive isolation and quarantine. This early advocacy pressed policymakers to adopt measures that balanced both public health and human rights imperatives, opposing health injustice and laying the groundwork to see health and human rights as inextricably linked. In the years since, human rights advocates have gone on to advance a wide range of health determinants—including the recognition of the human rights to water and sanitation, the protection of sexual and reproductive health and rights, and the furthering of a rights-based approach to development—resulting in efforts to realize health and human rights through the United Nations' Sustainable Development Goals.[2]

THE CHALLENGES OF TODAY AND TOMORROW

Despite these developments, the world continues to grapple with rapidly evolving health challenges, and in the process, some governments have neglected human rights. The current public health landscape is colored by human rights violations in responding to COVID-19, highlighting the health harms of populist nationalism and raising an imperative for human rights advocacy. Our systems were inadequate and unequal before the pandemic, with deeply rooted economic and social inequity and inequality. These inequities are being exacerbated amid the crisis, resulting in public health harms that disproportionately affect marginalized communities.

In responding to the pandemic, governments are implementing policies that fail to realize health-related human rights and, in some cases, inciting direct human rights harms.[3] For example, nationalist policies grounded in xenophobia have created a basis for discrimination against people of Asian descent, migrants, and refugees. Systemic racism has created an environment in which racial and ethnic minorities face barriers to care and are at greater risk for COVID-19 exposure and subsequent morbidity and mortality. Some governments have used the pandemic as a means to entrench discrimination through attacks on marginalized groups, such as sexual and gender minorities, or attacks on specific health services, such as contraception and abortion.

COVID-19 has further placed tremendous strain on health systems across the globe and is compelling governments to make urgent and challenging decisions about how to safely continue essential health programming.[4] Disruptions caused by the pandemic threaten to unravel years of progress at the intersection of public health and human rights, including work to address neglected tropical diseases[5]; efforts to combat the ongoing epidemics of HIV, tuberculosis, and malaria; and international policy negotiations to address climate change. As the next generation of public health leaders, today's students will play a vital role in catalyzing innovative solutions to existing problems while pressing ahead to face the future.

ADVOCACY AMID THE PANDEMIC

Because of the pandemic, health and human rights advocacy today looks different than before. Amid restrictions on physical organizing and outreach, many advocacy groups and organizations have adapted in unique and creative ways. In the absence of exclusionary physical spaces, it is easier than ever to become involved in public health policymaking. Getting and staying informed is a key first step. From there, documenting and reporting human rights abuses remains critical. For example, our team is monitoring human rights violations in domestic public health responses to COVID-19, with the goal of supporting future research and advocacy to mitigate human rights harms in the context of public health emergencies. Online advocacy and digital organizing are essential tools for translating such monitoring efforts into policy change as well as forming and mobilizing coalitions. Advocacy organizations also need financial and in-kind support to sustain the work they do in raising awareness and building support for health and human rights causes.

As engaged advocates, we can urge policymakers to act on key issues. Our team has done this by participating in social media campaigns, marching, signing petitions, and developing written communications directed at key political and university leaders. We urge advocates to continue to center the experiences of those most marginalized and affected while applying a trauma-informed approach.[6]

This advocacy can be mentally, emotionally, and physically demanding. It is critical that student advocates strike a balance between fighting for rights and attending to our own personal well-being. Burnout is a real and present threat, with unaddressed primary and secondary trauma contributing to hopelessness and depression.[7] Doing what we can to eat well, stay active, get enough rest, and maintain healthy relationships will help sustain us and support our long careers to realize justice in public health through human rights.

CONCLUSIONS

Building a brighter and healthier future will take all of us. Drawing from the efforts of those who came before us, our generation must become human rights advocates to achieve the promise of health for all. The COVID-19 pandemic has provided an important opportunity to cultivate a practice of human rights advocacy, but these skills will serve us beyond the current moment and remain important for the rest of our lives. Our advocacy may look different from that of previous generations, but these innovative methods provide powerful tools for effecting change in public health. We hope this editorial serves as an invitation to other students to join us in the struggle for justice in health. We need the fire of all the visionaries, revolutionaries, and radical dreamers to fuel this movement and realize a future for health and human rights. AJPH

CORRESPONDENCE

Correspondence should be sent to Hanna E. Huffstetler, Graduate Research Assistant, University of North Carolina at Chapel Hill, Gillings School of Global Public Health, 135 Dauer Dr, Chapel Hill, North Carolina 27514 (e-mail: hhuffste@live.unc.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Huffstetler HE, Daniely T, Dockery M, et al. Human rights advocacy and us, the next generation of public health leaders. *Am J Public Health*. 2021;111(1):74–76.

Acceptance Date: October 15, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306022

CONTRIBUTORS

H. E. Huffstetler conceptualized and led the drafting of the editorial. C. R. Williams critically reviewed the editorial. All authors contributed to the drafting of the editorial and reviewed and approved the final version.

ACKNOWLEDGMENTS

The authors are grateful to Benjamin Mason Meier, who provided thoughtful comments on early drafts of this editorial and whose teaching and mentorship have inspired us to pursue careers at the intersection of health and human rights.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

REFERENCES

1. Mann JM, Gostin LO, Gruskin S, Brennan T, Lazzarini Z, Fineberg HV. Health and human rights. *Health Hum Rights*.1994;1(1):6–23. https://doi.org/10.2307/4065260
2. Gostin LO, Meier BM, Thomas R, Magar V, Ghebreyesus TA. 70 years of human rights in global health: drawing on a contentious past to secure a hopeful future. *Lancet*. 2019;392(10165):2731–2735. https://doi.org/10.1016/S0140-6736(18)32997-0
3. Human Rights Watch. Human rights dimensions of COVID-19 response. 2020. Available at: https://www.hrw.org/news/2020/03/19/human-rights-dimensions-covid-19-response. Accessed October 29, 2020.
4. Krubiner C, Keller JM, Kaufman J. Balancing the COVID-19 response with wider health needs: key decision-making considerations for low- and middle-income countries. Available at: https://www.cgdev.org/publication/balancing-covid-19-response-wider-health-needs-key-decision-making-considerations-low. Accessed October 29, 2020.
5. Ehrenberg JP, Zhou X, Fontes G, Rocha E, Tanner M, Utzinger J. Strategies supporting the prevention and control of neglected tropical diseases during and beyond the COVID-19 pandemic. *Infect Dis Poverty*. 2020;9(1):86. https://doi.org/10.1186/s40249-020-00701-7
6. Bowen EA, Murshid NS. Trauma-informed social policy: a conceptual framework for policy analysis and advocacy. *Am J Public Health*. 2016;106(2):223–229. https://doi.org/10.2105/AJPH.2015.302970
7. Pai M. Burnout: a silent crisis in global health. 2020. Available at: https://www.forbes.com/sites/madhukarpai/2020/07/20/burnout-a-silent-crisis-in-global-health. Accessed October 29, 2020.

Reflections on the COVID-19 Pandemic From a Frontline Physician and Public Health Student

Charlotte M. Roy, MD

ABOUT THE AUTHOR

Charlotte M. Roy is a fellow in Global Emergency Medicine with the Department of Emergency Medicine, Columbia University Irving Medical Center, New York, NY, and a student in the Heilbrunn Department of Population and Family Health, Mailman School of Public Health, Columbia University, New York, NY.

See also Watts Isley et al., p. 63, and the Student Perspectives on COVID-19 section, pp. 62–87.

Everything is okay.

I've learned that I'm very good at telling myself this, especially in New York City in the middle of a pandemic. In my line of work, this is a skill. As a fellow in global emergency medicine, I work as a doctor in the emergency department (ED) in addition to being a public health student. In the ED, we exist in a state of chaos and, not infrequently, tragedy. There isn't much time to think about the world beyond the patients we're treating in that moment. By contrast, the public health classroom has offered a space to stop, reflect, and untangle what it means to work in health care.

When I began my first year in the master's in public health program, I quickly realized that residency had made me cynical. Public health is about big ideas and trying to change the world for the better. It was hard for me to believe that was possible after three years in residency, seeing gunshot wounds, drug overdoses, and the irreversible consequences of untreated metabolic disease. Public health taught me to see things at the population level and consider ways to prevent the devastating outcomes I saw in my patients. As a student and a doctor, I've come to appreciate both perspectives: the big picture of public health and the granular reality of clinical medicine.

These two fields were thrown into the spotlight in February, when it became clear that the novel coronavirus would not be contained by national borders. At the speed of light, the world shifted under our feet. Yet, for me, schoolwork continued unabated. At the same time, I was picking up extra shifts as COVID-19 arrived in New York, sneaking in patient by patient at first, then consuming the ED whole.

By day, I learned about epidemic curves and the pandemic's socioeconomic effects. By night and on weekends, I struggled to process the flood of new clinical pathways and patient care paradigms. Every day my inbox filled with e-mail after e-mail about testing policies, admission criteria, and palliative care guidelines. My clinical colleagues and I were mentally and emotionally overwhelmed. Yet, in the quiet of the virtual classroom, there was time to step back and process how COVID-19 was reshaping the world.

Having a clinical background in a public health context can be an advantage and a hindrance. On one hand, I brought a real-world perspective to my classes, sharing what I was seeing on the ground. There were days when I walked through the ED and whole stretches of rooms were filled with patients on ventilators. An elderly patient with dementia came in struggling to breathe. The prognosis was poor. I guided his family through the treatment options and helped them reach the decision to let him die peacefully.

On the other hand, I have often found that my viewpoint can be overly weighted by clinical knowledge to the point that I can't see the forest for the trees. For example, in the first months of the pandemic, a frequent subject of classroom conversation was the importance of scaling up testing for COVID-19. I could not square this imperative with my daily reality: ED shifts spent telling patients that the hospital was only testing people sick enough to be admitted. The dysfunctional nature of hospital systems teaches you to accept limitations, to believe that certain things are not possible. But when I said, "We can't. There aren't enough tests," my public health colleagues said, "We must, and here is the way."

I, like much of the American public, have come to realize how vital public health is to our well-being. It is not merely an adjunct to the field of medicine. It is the foundation and the frame. Living through the pandemic helped me remember why I pursued a fellowship in global emergency medicine in the first place. As a doctor, I diagnose and treat one individual at a time. This work is essential, but public health aims for a much larger goal: to transform the way that communities live and address the inequities that cause poor health outcomes at the source.

As COVID-19 continues to unveil and intensify social, economic, and structural inequalities, public health interventions that address these issues are more crucial than ever. In the United States, preexisting health inequities and decades of disparities in health care accessibility and quality have manifested in disproportionate rates of COVID-19 infection and mortality among people of color. National data from the Centers for Disease Control and Prevention show that Black and Hispanic Americans are nearly three times as likely to contract COVID-19 and twice as likely to die from it as White Americans.[1] In New York City, neighborhoods with a higher proportion of people of color have less access to testing, even though people in those neighborhoods are more likely to test positive.[2]

In the ED where I work, the majority of patients are people of color, many first-generation immigrants. During the pandemic, I have treated many patients who are essential workers, employed as grocery store clerks or home health aides. Their risk of COVID-19 is elevated, but working from home isn't an option. I also have seen patients who waited far too long to come to the hospital, an observation supported by a study from my hospital showing that Black and Hispanic or Latino patients presented later in the course of their illness than White patients.[3] Such delays in seeking care may be owing to lack of information, financial concerns, or, for patients who are undocumented, fears of being identified as a "public charge." Given these barriers and inequities, it's not hard to see why people of color are dying at disproportionate rates.

During the worst of the pandemic, telling myself that everything was fine was my coping mechanism. Now that we are on the other side of the surge, I can finally admit that everything is very much not okay. But in my newfound optimism as a public health student, I see that, although it remains a tragedy, the COVID-19 pandemic is also an opportunity for change.

Despite all the damage it has done, COVID-19 has the potential to bring communities together and remind us of our responsibility to one another as human beings. As public health professionals, we have the opportunity to use this moment to build an intersectional response to COVID-19 that is informed by disparities across race, gender, and sexuality. My professional goal is to create interventions that improve the lives of at-risk populations, particularly refugees and asylum seekers. The COVID-19 pandemic has revealed just how vulnerable these populations are and has made my sense of purpose stronger than ever. AJPH

CORRESPONDENCE

Correspondence should be sent to Charlotte M. Roy, Columbia University, Department of Emergency Medicine, 622 W 168th St, VC-260, New York, NY 10032 (e-mail: charlotteroy.md@gmail.com). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Roy CM. Reflections on the COVID-19 pandemic from a frontline physician and public health student. *Am J Public Health*. 2021;111(1): 77–78.

Acceptance Date: October 15, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306023

CONFLICTS OF INTEREST

The author has no conflicts of interest to declare.

REFERENCES

1. Artiga S, Corallo B, Pham O. Racial disparities in COVID-19: key findings from available data and analysis. 2020. Available at: https://www.kff.org/report-section/racial-disparities-in-covid-19-key-findings-from-available-data-and-analysis-issue-brief. Accessed October 8, 2020.
2. Lieberman-Cribbin W, Tuminello S, Flores RM, Taioli E. Disparities in COVID-19 testing and positivity in New York City. *Am J Prev Med*. 2020;59(3):326–332. https://doi.org/10.1016/j.amepre.2020.06.005
3. Cummings MJ, Baldwin MR, Abrams D, et al. Epidemiology, clinical course, and outcomes of critically ill adults with COVID-19 in New York City: a prospective cohort study. *Lancet*. 2020; 395(10239):1763–1770. https://doi.org/10.1016/S0140-6736(20)31189-2

The 1918 Influenza Pandemic Has Lessons for COVID-19: An Anthropology Student Perspective

Taylor P. van Doren, MA

ABOUT THE AUTHOR

Taylor P. van Doren is a PhD candidate in the Department of Anthropology, University of Missouri, Columbia.

See also Watts Isley et al., p. 63, and the Student Perspectives on COVID-19 section, pp. 62–87.

As an anthropologist and 1918 influenza pandemic scholar, 2020 was a strange year. As a result of the coronavirus disease 2019 (COVID-19) pandemic, there has been renewed interest in the century-old pandemic and an acknowledgment of the value of a comprehensive understanding of exactly what happened between the spring of 1918 and 1920. It has been written that the consequences of COVID-19 on the economy, socioeconomic structure, and health care systems will persist well beyond its completion,[1] and the same was said (and was true) of the 1918 influenza.[2] Anthropology and public health need not be mutually exclusive fields; an increased understanding of demographic processes, human behaviors, and human biology that the biocultural anthropological perspective can provide will prove to be highly valuable to public health in the coming years.

MORE THAN NUMBERS

Nothing puts a generation-defining public health crisis into perspective quite like the geographic and social proximity of the ultimate adverse health outcome: the loss of human life. Real-time mortality statistics from COVID-19 have forced me to reframe how similar mortality data from a century ago can be approached. The primary database used for my historical research consisting of about 41 300 death records includes the name, age, sex, and place of death. I know where these people were born, where they are buried, and sometimes what they did for a living.

Each line of this database was a whole person. Each one had an extremely complex, important life of which we know little, which is difficult to understand because of the propensity of the human mind to perceive its own life as the most complex and important. Furthermore, all of the 50 to 100 million people who died from 1918 through 1920 worldwide[3] had full lives with family, love, adversity, happiness, desires, intelligence, and curiosity. Population-level approaches and a century of temporal separation can have the unfortunate consequence of homogenizing the lived experiences of those who died.

One fragment of the monumental tragedy of the 1918 influenza pandemic was that young adults aged 20 to 44 years experienced the most unprecedented excess mortality, and these individuals likely would have gone on to live at least twice as long[4] and were robbed of the immense privilege of growing old. In addition, influenza pandemic morbidity and mortality were nonrandom; socioeconomic status was a strong predictor for who eventually succumbed to the infection, and those with lower income, more crowded housing, and weaker kin relationships had the highest burden of illness and mortality.[5] They deserve to be remembered as more than numbers.

SOCIOECONOMIC INEQUALITY IN HINDSIGHT

Epidemiological methods are dependent on data such as these, but from an anthropological perspective, it is essential to account for the human experience to best understand the true impact of both the 1918 and the COVID-19 pandemics. It was the temporal and geographic proximity of the COVID-19 threat or, more specifically, the moment when the United States reported its 100 000th lost life that prompted me to refocus the lens of my 1918 influenza pandemic research and rendered me unable to confront my dissertation for weeks.

This knowledge is important, however, and historical information can contribute to positive evolution of the field of public health in a couple of specific ways in the coming months and years. The most obvious connection between the epidemiological knowledge of the 1918 pandemic and that of the COVID-19 pandemic is that history provides ample insights into how current and future infectious epidemic threats will adversely affect some more than others. Even though proximate causes of infection and mortality (such as a specific pathogen) change often, ultimate causes such as poverty, crowding, and resource insecurity rarely do. Today we have a considerable advantage over (what existed of) public health departments and epidemiological knowledge in the early 20th century. Although the first epidemiological study of the 1918 pandemic was published in 1919,[6] it was not until decades later that extensive study of demographic and socioeconomic determinants of morbidity and mortality was underway.

Despite being armed with this information, a clear socioeconomic gradient remains in susceptibility to infection and eventually mortality from COVID-19. Whether this reality could have been prevented depends on unraveling many of the social institutions that sustain socioeconomic inequalities. The critical issue is that we should not have been surprised that the observed gradient of susceptibility is what it is—the same conglomerate of ultimate determinants that influenced differential 1918 influenza susceptibility. Knowledge of, and more importantly, action on these important variations in risk is fundamental for public health social services to target vulnerable subpopulations for benefits that mitigate the dangers of even a novel pathogen.

ANTHROPOLOGY'S FUTURE ROLE

Anthropological knowledge, specifically that of the 1918 influenza pandemic and its consequences, can therefore contribute to public health through the biocultural perspective on human biology, health, and culture. Biocultural anthropology is a special subfield of medical anthropology that emphasizes the simultaneous contribution of human biological plasticity and the cultural elements of anthropology such as social structure, political economy, and globalization to the holistic understanding of the human experience.[7] Recently, there has been a call for more consideration of historical context in how modern populations have come to embody culture as health and inequality; therefore, investigating the cultural and biological effects of the 1918 pandemic can give context for how modern inequalities have come to be embodied. This perspective clearly builds on the social determinants of health, for which public health is widely recognized, but also acknowledges that biology and culture are inextricable and forever coevolving. It can also illuminate reasons that ultimate causes of vulnerability and mortality are sustained over broad temporal depth.

Comprehensive, interdisciplinary education is the most effective starting place for sustainable transformations; to create needle-moving change, public health departments can begin to seek out anthropologists to contribute to their already diverse faculties so that anthropology becomes a formal component of the public health field. Furthermore, to supplement strong social determinants curricula, a required biocultural anthropology course would serve as the bridge to link knowledge of the social determinants of health, globalization, and political economy to how culture can manifest as susceptibility of the physical body over time.

Indeed, we are likely amid the defining moment of the 2020s and far beyond. There is no question that public health will experience transformations that otherwise would not have occurred without this moment. The experience of the COVID-19 pandemic may lay the groundwork for changes in the way the next generation of public health experts are educated holistically to better understand the totality of lived experiences of the vulnerable. Ultimately, public health, like anthropology, depends on centering the human experience and the value of life to determine how to make the next move. AJPH

CORRESPONDENCE

Correspondence should be sent to Taylor P. van Doren, MA, University of Missouri, Department of Anthropology, 112 Swallow Hall, Columbia, MO 65211 (e-mail: tmpwf4@mail.missouri.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: van Doren TP. The 1918 influenza pandemic has lessons for COVID-19: an anthropology student perspective. *Am J Public Health*. 2021; 111(1):79–80.

Acceptance Date: October 15, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306021

CONFLICTS OF INTEREST

The author has no conflicts of interest to disclose.

REFERENCES

1. Wojcik O, Miller CE, Plough AL. Aligning health and social systems to promote population health, well-being, and equity. *Am J Public Health*. 2020;110(S2):S176–S177. https://doi.org/10.2105/AJPH.2020.305831
2. Almond D. Is the 1918 influenza pandemic over? Long-term effects of *in utero* influenza exposure in the post-1940 US population. *J Polit Econ*. 2006; 114(4):672–712. https://doi.org/10.1086/507154
3. Johnson NPAS, Mueller J. Updating the accounts: global mortality of the 1918-1920 "Spanish" influenza pandemic. *Bull Hist Med*. 2002;76(1):105–115. https://doi.org/10.1353/bhm.2002.0022
4. Gagnon A, Miller MS, Hallman SA, et al. Age-specific mortality during the 1918 influenza pandemic: unravelling the mystery of high young adult mortality. *PLoS One*. 2013;8(8):e69586. https://doi.org/10.1371/journal.pone.0069586
5. Mamelund SE. A socially neutral disease? Individual social class, household wealth and mortality from Spanish influenza in two socially contrasting parishes in Kristiania 1918-19. *Soc Sci Med*. 2006;62(4):923–940. https://doi.org/10.1016/j.socscimed.2005.06.051
6. Frost WH. The epidemiology of influenza. *JAMA*. 1919;73(5):313–318. https://doi.org/10.1001/jama.1919.02610310007003
7. Hoke MK, Schell LM. Doing biocultural anthropology: continuity and change. *Am J Hum Biol*. 2020;32(4): e23471. https://doi.org/10.1002/ajhb.23471

How the COVID-19 Pandemic Has Affected Hospice Care: Perspective of a Student Volunteer

Theresa Ann Dickerson, BA

ABOUT THE AUTHOR

Theresa Ann Dickerson is a graduate of the University of Pittsburgh's nonfiction writing program, Pittsburgh, PA, and a current graduate student studying medical physiology at Case Western Reserve University, Cleveland, OH.

See also Watts Isley et al., p. 63, and the Student Perspectives on COVID-19 section, pp. 62–87.

Months before the world was filled with people in homemade patterned masks, stickers implementing social distancing on the floors of stores, and neighbors getting groceries delivered to their apartments every Tuesday, I would drive 45 minutes to sit with a patient who was told that she had six months or less to live.

Tuesdays used to be filled with singing Etta James songs along to Spotify playlists I would make days before and playing with primary paint colors on thick, white cardstock alongside my patients. All hospice volunteers were assigned two or three patients, and we monitored their decline until their death. Although we were watching movies or reading during each visit, we were responsible for taking notes on whether the patients were as attentive and engaged as they had been at the last visit. We became keen to whether their left hand shook a little more while holding a paintbrush or their lips started to show signs of dehydration, for example, blisters crusted over their mouth making words sparse.

Alma, one of my patients, didn't talk very much. She mumbled inaudibly at the very most. Nevertheless, I could always count on her eyes lighting up with the little life she had left in her when I began to sing her favorite Ella Fitzgerald song.

Alma was diagnosed as nonverbal before her assignment as my patient. On the day I first met her, she was holding on to what I later found out was the facility's daily newspaper. She folded this piece of paper over and over again until it couldn't be folded anymore. According to the newspaper, it was Burt Reynolds's birthday. Even after the fourth time I read the paper to her, she would look at me and give me her best attempt at a smile when she heard Burt's name.

For the most part, that's how we communicated. Instead of using words to acknowledge my presence, Alma would look at me with her heavy eyes and hold her gaze for at least two full seconds before getting distracted again with folding a random piece of paper she found or discovering a new texture on my sweater. Some days, the best days, she would squeeze my hand as if she was trying to tell me something after we listened to jazz music. At the end of every visit, I would thank her for letting me enter her space and ask if I could come back next time. She always figured out how to say yes, even if only through a hand squeeze. She did this until my last visit with her; she passed away a few days later.

Everything changed in March 2020, when the COVID-19 pandemic hit the United States. I went from seeing my assigned patients face-to-face every week to writing letters and designing oversized birthday cards in hopes of distracting them from their inevitable lack of social interaction. The letters were meant to remind the patients that others were thinking of them, although it was apparent that the patients struggled with this new change in their care plan. I went from knowing my patient's favorite songs or when they were too tired to play cards to now—not even knowing their stories, activities they loved, or their current condition. I went from sitting at the bedside of my dying patients to not knowing if or when they passed. Letters from them just stopped showing up.

No more communal activities
No more group dining
No more dancing
No more singing
No more playlists featuring
  Etta James
No more hand squeezing
No more being with them until the
  very last second

The COVID-19 pandemic changed hospice and end-of-life care. Hospice volunteers went from seeing patients weekly at long-term facilities to not seeing them at all. Although some volunteers were lucky enough to use technology to see their patients, there were still many challenges. My experience taught me that hospice patients typically do not use the conventions of verbal communication we learn in childhood and use as adults. This change in communication, rather than the lack thereof, is influenced by a number of factors, including the neurodegenerative diseases or physical restrictions that often accompany their condition.

For a volunteer, learning to communicate with a new patient struggling with dementia or any other neurodegenerative disease affecting cognition requires a humbling practice of trial and error that takes time and patience. Nevertheless, learning to communicate with patients makes visits, up until the very last, more meaningful and impactful to the patient, the patient's family, and the health care workers involved in the patient's care. The COVID-19 pandemic made communication with hospice patients more difficult than ever before.

Before the COVID-19 pandemic, patient care involved physicians, nurses, health aides, and the community. The COVID-19 pandemic exposed health disparities among those in hospice care. For many patients of marginalized groups who already lack access to services and resources, the inaccessibility of holistic, quality care was exacerbated. Facilities lacked critical personal protective equipment, shortages in staff pertinent to patient care skyrocketed, and the patients were the ones who suffered the consequences.

The COVID-19 pandemic took the human experience out of dying and socially stratified it. Those who could afford to take their loved ones out of long-term care facilities did. Those who didn't have the financial stability, time, or resources to take care of their loved ones at home didn't have the same opportunity to be beside their loved ones as they passed away. Dying surrounded by family became a privilege instead of what we previously considered an expected human experience.

When the COVID-19 pandemic hit the United States, health care specialties across the field of medicine adapted patient care plans as quickly and safely as possible to mitigate the impact of the disease. This adaptation included the implementation of innovative technologies and safety practices. However, for hospice patients, the lack of innovative care plans and effective technological interventions caused a dramatic shift in the way that care was administered. The COVID-19 pandemic has changed the way terminally ill patients are cared for at the end of their lives and ultimately has changed how they die—alone. AJPH

CORRESPONDENCE

Correspondence should be sent to Theresa Ann Dickerson, Department of Biophysics and Physiology, 10900 Euclid Ave, Cleveland, OH 44106-4970 (e-mail: Theresa.dickerson@case.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Dickerson TA. How the COVID-19 pandemic has affected hospice care: perspective of a student volunteer. *Am J Public Health*. 2021;111(1): 81–82.

Acceptance Date: October 16, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306024

CONFLICTS OF INTEREST

The author has no conflicts of interest to declare.

A New Normal Is Paramount for Public Health Research and Practice: A Student Perspective on COVID-19

Asari Offiong, MPH

ABOUT THE AUTHOR

Asari Offiong is with the Department of Population, Family and Reproductive Health, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD.

See also Watts Isley et al., p. 63, and the Student Perspectives on COVID-19 section, pp. 62–87.

My new normal started on March 20, 2020, when my mother, father, and youngest brother contracted coronavirus disease 2019 (COVID-19). I lost my youngest brother to the virus and watched my mother recover from critical complications. Despite the loss I experienced, it has been invigorating to see the field of public health rise to the forefront with the heavy reliance on information from Anthony S. Fauci, MD, a notable public health practitioner; the discussion around the negative effects of social isolation and mental wellness of youths; and the extensive work done with contact tracing and identification of hot spots. In every facet of life, we have seen the importance of the public health field and its relevance to every sector in society. In the same vein, it has been extremely frustrating to see a global health issue become political, dismissing the real human lives that have been deeply affected.

The COVID-19 pandemic has further exposed and reinforced the inequalities resulting from generations of systemic oppression in the United States. In my hometown of Detroit, Michigan, we were reminded that Black communities are often at the helm of every pandemic, war, and tragedy society has endured, a norm we have all become too comfortable with. Unfortunately, it is the Black communities that do not have access to sufficient personal protective equipment,[1] Black students who struggled and continue to struggle with access to online educational resources,[2] and Black parents who are more likely to work in jobs without paid leave or the privilege to work from home.[3] Some may have questioned the legitimacy of the pandemic, but it was very real for me and many other Black households who were more than twice as likely as our White counterparts to know someone who died from the coronavirus.[4] The pandemic magnified the perpetual racial disparities and inequities in the United States, calling for us as public health practitioners to collectively stand our ground in dismantling those systems. If we have learned anything, we are reminded that racism is a relevant public health issue.

The COVID-19 pandemic spurred the perfect storm: the polarizing sentiments of tragedy and opportunity. An opportunity to shift, reframe, and be creative in our strategic approaches to mitigate health disparities. Our institutional systems have been driven by a sense of complacency, which has normalized an inequitable society. In prioritizing the health of the public, we inherently prioritize the lives of the most vulnerable and disenfranchised. As Maya Angelou[5(p108)] beautifully stated,

> If it is true that a chain is only as strong as its weakest link, isn't it also true a society is only as healthy as its sickest citizen and only as wealthy as its most deprived?

Black communities deserve to be protected not only in the midst of a pandemic but also in everyday life. We must dismantle the current inequitable systems and consciously build and sustain systems of equality and equity that prevent communities from being undermined. The next generation of public health leaders are equipped to handle this challenge. Personally, I am committed to ensuring that my contributions to public health research and practice are person centered, intentionally amplifying the needs and lived experiences of the most vulnerable.

Life as we knew it before March 2020 no longer exists; thus, a new normal is paramount: a new normal that is focused on population-level change and impact; a new normal that prioritizes the well-being of the most vulnerable, intentionally building and advocating for policies, initiatives, and resources that level the playing field; a new normal in which Black lives, like my brother's life, have an equal chance of survival; and, simply stated, a new normal in which humanity is at the center of it all. AJPH

CORRESPONDENCE

Correspondence should be sent to Asari Offiong, MPH, Graduate Student, Johns Hopkins University, Department of Population, Family and Reproductive Health, 615 N Wolfe St, Baltimore, MD 21215 (e-mail: aoffion1@jhu.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Offiong A. A new normal is paramount for public health research and practice: a student perspective on COVID-19. *Am J Public Health*. 2021; 111(1):83–84.

Acceptance Date: October 15, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306020

ACKNOWLEDGMENTS

A special thank you to Terrinieka Powell, PhD, who encouraged me to share my personal reflections.

CONFLICTS OF INTEREST

The author has no conflicts of interest to disclose.

REFERENCES

1. Neavling S. Metro Detroit hospitals overwhelmed with crush of coronavirus patients, lack of supplies. *Metro Detroit Times*. April 1, 2020. Available at: https://www.metrotimes.com/detroit/metro-detroit-hospitals-become-overwhelmed-with-crush-of-coronavirus-patients-lack-of-supplies/Content?oid=24232667. Accessed August 3, 2020.
2. Abou-Sabe K, Romo C, McFadden C, Abdel-Baqui O. A tale of two ZIP codes: COVID-19 exposes deep disparities in US schools. *NBC News*. June 8, 2020. Available at: https://www.nbcnews.com/news/us-news/tale-two-zip-codes-covid-19-exposes-deep-disparities-u-n1227646. Accessed August 3, 2020.
3. Gould E, Wilson V. Black workers face two of the most lethal preexisting conditions for coronavirus—racism and economic inequality. Washington, DC: Economic Policy Institute; June 1, 2020. Available at: https://epi.org/193246. Accessed August 3, 2020.
4. Stafford K, Swanson E. AP-NORC poll: pandemic especially tough on people of color. *Associated Press*. May 6, 2020. Available at: https://apnews.com/12e1e155dd89c2c412b0a0d5371a1696. Accessed August 3, 2020.
5. Angelou M. *Even the Stars Look Lonesome*. New York, NY: Bantam; 1998.

Disability During a Pandemic: Student Reflections on Risk, Inequity, and Opportunity

Erica Twardzik, MS, Meredith Williams, MPH, and Hana Meshesha, MEd, MA

ABOUT THE AUTHORS

Erica Twardzik is with the Department of Epidemiology, School of Public Health and the School of Kinesiology, University of Michigan, Ann Arbor. Meredith Williams is with the Joseph J. Zilber School of Public Health, University of Wisconsin-Milwaukee. Hana Meshesha is with the Rural Institute for Inclusive Communities and the Department of Counseling, University of Montana, Missoula.

See also Watts Isley et al., p. 63, and the Student Perspectives on COVID-19 section, pp. 62–87.

As graduate students focusing on disability and public health, some of whom are living with disabilities ourselves, we have seen the COVID-19 pandemic pose great risk to people with disabilities. This is happening not only because of preexisting conditions but also because of the entrenched social inequities people with disabilities face. The initial exclusion of people with disabilities in the US public health response has led to widening disparities, shortcomings in engaging and equitably supporting individuals with disabilities, and practices that devalue the lives of those with disabilities.

For example, several states proposed rationing medical care if medical systems became overwhelmed.[1] Rooted in ableism (i.e., discrimination in favor of nondisabled people), these plans explicitly singled out people with disabilities and chronic health conditions as members of our community who would not receive health care in times of rationing.[1] We hear those without disabilities assure one another not to worry because only those with preexisting conditions are at risk for dying from COVID-19. Furthermore, we are concerned that premature institutionalization of people with disabilities to free hospital beds during the COVID-19 outbreaks has perpetuated disablist practices (i.e., discrimination and prejudice against people with disabilities) and placed the lives of those with disabilities, including our peers, friends, and family, in grave danger.[2] During the COVID-19 pandemic, when nursing homes and long-term care facilities are among the deadliest locations, people with disabilities who want to remain in their homes have the right to home- and community-based services.[2]

As student researchers, we struggle to understand the full impact of the COVID-19 pandemic on people with disabilities. For example, Centers for Disease Control and Prevention (CDC) COVID-19 surveillance does not currently show disability status despite requests from people with disabilities for comprehensive demographic information.[3,4] Tracking and surveillance on COVID-19 cases among individuals with disabilities is critical for designing and implementing public health strategies that consider our needs and priorities. Although the CDC places people with disabilities in the category of “other people who need extra precautions” during the pandemic,[4] we recognize that people with disabilities are diverse along every dimension and are overrepresented among other groups at increased risk for contracting and suffering severe consequences from COVID-19. These groups include the elderly, those in poverty, and those who are experiencing homelessness, incarcerated, or members of racial and ethnic minority communities.

The pandemic compounds the challenges faced by people with disabilities in minority and indigenous communities, as experienced by some of us directly. Barriers to accessible and culturally respectful information, limited health care services and facilities, and health disparities are public health issues that are amplified for people with disabilities in minority and indigenous groups during the COVID-19 pandemic.[4] For instance, the scarcity of personal protective equipment in indigenous community–controlled health care facilities limits care for people with disabilities.

Although the pandemic has heightened risks for people with disabilities, cast new light on entrenched structural inequalities, and exposed the ableist beliefs that undergird them, it has also presented new opportunities. People with disabilities have a wealth of experience, knowledge, and skills particularly well suited to the public health challenges at hand. Those of us with disabilities have a long track record of building community, working, and learning while physically isolated; coming up with creative solutions under major resource constraints; and preparing for, and surviving, serious health threats. For example, one of us lives with chronic illness and immune deficiency and has been preventing infection by wearing masks, practicing careful handwashing and sanitizing, strategically isolating, and advocating remote work and learning options for decades. History has taught us that changes promoting access and protecting the health of those with disabilities overwhelmingly benefit everyone, regardless of whether they currently have a disability. As we have seen under the constraints imposed by COVID-19, remote working options, long championed by people with disabilities, are now facilitating work and education for much of the general population.

When the COVID-19 outbreak required the able bodied to transition to remote working, infrastructures and facilities were rapidly put in place to accommodate the majority. This change has been bittersweet for those of us who have encountered long-standing challenges when advocating working and learning accommodations. Barriers to accommodations have resulted in only 33% of individuals with disabilities participating in the labor force compared with 76% among those without disability.[5] The sudden acceptance of telework provides hope for our future, opening doors to the possibility of conducting business as usual through technological devices and a working Internet. However, as schools quickly transition to online learning, students with disabilities at our universities voice new concerns. They worry whether their existing individualized accommodation plans will fit into the online learning system and whether new accommodations, not currently supported by our universities, will be required. We all share the concern that once the able bodied return to in-person work or school, those of us with disabilities will be, yet again, left behind as we lose access to the new, flexible arrangements that are finally making it possible for us to work and learn alongside our peers.

As students, it is our perspective that to better understand and meet the needs of people with disabilities, use the

Competency 1: Discuss disability models across the life span

1.1. Compare and contrast different models of disability
1.2. Define model(s) of disability for a particular scope of work or population served
1.3. Describe the social determinants of health and how they affect health disparities for people with disabilities

Competency 2: Discuss methods used to assess health issues for people with disabilities

2.1. Identify surveillance systems used to capture data that include people with disabilities
2.2. Recognize that disability can be used as a demographic variable

Competency 3: Identify how public health programs impact health outcomes for people with disabilities

3.1. Recognize health issues of people with disabilities and health promotion strategies that can be used to address them
3.2. Use laws as a tool to support people with disabilities
3.3. Recognize accessibility standards, universal design, and principles of built environment that affect the health and quality of life for people with disabilities
3.4. Explain how public health services, governmental programs and nongovermental/community-based organization interact with disability
3.5. Describe how communities (places where people live, work, and recreate) can adapt to be fully inclusive of disability populations

Competency 4: Implement and evaluate strategies to include people with disabilities in public health programs that promote health, prevent disease, and manage chronic and other health conditions

4.1. Describe factors that affect health care access for people with disabilities
4.2. Use strategies to integrate people with disabilities into health promotion programs
4.3. Identify emerging issues that impact people with disabilities
4.4. Define how environment can impact health outcomes for people with disabilities
4.5. Apply evaluation strategies (needs assessment, process evaluation, and program evaluation) that can be used to demonstrate impact for people with disabilities

FIGURE 1— Public Health Workforce Competencies Developed by the Association of University Centers on Disabilities (AUCD) and the Centers for Disease Control and Prevention (CDC) for Including People With Disabilities: United States, 2016

Source. Association of University Centers on Disabilities.[7]

strengths and expertise of those with disabilities, and save countless lives during future disasters, we must center disability in public health education. This will require ensuring that (1) public health curricula reflect the needs, perspectives, and rich intersectionality of people with disabilities; and (2) students with disabilities are better represented in public health programs. Few educational and training programs are available for those interested in disability-focused research and practice, and students with disabilities remain dramatically underrepresented. Although people with disabilities make up more than 25% of the US population, less than 7% of students in health-related graduate programs have disabilities.[6] Once in these programs, students with disabilities rarely see themselves and their experiences reflected in course content or represented among faculty and staff.

To shape a more inclusive and effective future for public health, we recommend that academic programs integrate the competencies found in *Including People with Disabilities: Public Health Workforce Competencies*[7] (Figure 1) when developing curricula and place particular focus on the health disparities experienced by people with disabilities who are members of multiple minority groups. Doing so will enable the next generation of students to identify the needs and priorities of people with disabilities, understand how they are affected by public health priority issues, and plan proactively to include them in all public health activities. To complement these competencies, we believe it is critically important to cultivate public health leaders who live with disabilities.

Given the numerous barriers to navigating higher education that students with disabilities face, academic and training programs should place greater focus on recruiting and retaining students with disabilities, particularly those with multiply marginalized identities. This entails listening to the concerns and priorities of students with disabilities, improving the accessibility of instruction (e.g., multiple modes, flexible learning arrangements), dedicating funding sources for inclusion, identifying program requirements that unintentionally exclude those with disabilities from succeeding in public health education, and providing skilled, culturally sensitive, and supportive mentorship. If the pandemic has taught us anything, it is that listening to people with disabilities is increasingly urgent. Our lives, and the social, medical, and economic well-being of our society, depend on it. AJPH

CORRESPONDENCE

Correspondence should be sent to Erica Twardzik, PhD Candidate, University of Michigan, 1402 Washington Heights, Ann Arbor, MI 48109-2013 (e-mail: etwardzi@umich.edu). Reprints can be ordered at http://www.ajph.org by clicking the “Reprints” link.

PUBLICATION INFORMATION

Full Citation: Twardzik E, Williams M, Meshesha H. Disability during a pandemic: student reflections on risk, inequity, and opportunity. *Am J Public Health*. 2021;111(1):85–87.

Acceptance Date: October 16, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306026

CONTRIBUTORS

All authors contributed equally to this editorial.

ACKNOWLEDGMENTS

Effort constructing this publication was supported by the Eunice Kennedy Shriver National Institute of Child Health & Human Development (NICHD), National Institutes of Health (NIH; grant F31HD098870 to E. T., principal investigator).

We thank Don Lollar, EdD, Philippa Clarke, PhD, Meg Traci, PhD, and Adriane Griffen, DrPH, for their critical review of our editorial.

Note. The content of this editorial is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the NICHD. Representatives from NIH and NICHD did not have any role in the preparation or approval of the editorial.

CONFLICTS OF INTEREST

The authors have no potential or actual conflicts of interest to disclose.

REFERENCES

1. Disability Rights Education & Defense Fund. Applying HHS’s guidance for states and health care providers on avoiding disability-based discrimination in treatment rationing. 2020. Available at: https://dredf.org/avoiding-disability-based-discrimination-in-treatment-rationing. Accessed October 24, 2020.
2. National Council on Disability. Preserving our freedom: ending institutionalization of people with disabilities during and after disasters. Available at: https://ncd.gov/sites/default/files/NCD_Preserving_Our_Freedom_508.pdf. Accessed October 24, 2020.
3. Boyle CA, Fox MH, Havercamp SM, Zubler J. The public health response to the COVID-19 pandemic for people with disabilities. *Disabil Health J*. 2020;13(3):100943. https://doi.org/10.1016/j.dhjo.2020.100943
4. Asian & Pacific Islander American Health Forum. COVID-19 demographic data sign on letter to congressional leaders. Available at: https://www.apiahf.org/resource/covid-19-demographic-data-sign-on-letter-to-congressional-leaders/2020. Accessed October 24, 2020.
5. Office of Disability Employment Policy. Disability employment statistics. Available at: https://www.dol.gov/agencies/odep/publications/statistics. Accessed October 24, 2020.
6. Meeks LM, Jain N. *Accessibility, Inclusion, and Action in Medical Education: Lived Experiences of Learners and Physicians With Disabilities*. Scotts Valley, CA: CreateSpace; 2018.
7. Association of University Centers on Disabilities. Including people with disabilities: public health workforce competencies. 2016. Available at: https://disabilityinpublichealth.files.wordpress.com/2016/06/competencies-pdf-final.pdf. Accessed October 24, 2020.

Evolving Intersectionality Within Public Health: From Analysis to Action

Lisa Bowleg, PhD, MA

ABOUT THE AUTHOR

Lisa Bowleg is an AJPH associate editor and is with the Department of Psychological and Brain Sciences, Intersectionality Training Institute, The George Washington University, Washington, DC.

See also the Intersectionality section, pp. 88–109.

Intersectionality, an indispensable critical theoretical framework for public health,[1,2] is ideally suited to address the current "deadly confluence of health, economic, and racial crises" (Poteat, p. 91). Aligned with my invocation of intersectionality to lambaste the "We're all in this together" tropes of the COVID-19 era,[3] this special section affirms an essential need for "an intersectional public health lens that . . . embrace[s] rather than obscure[s] the heterogeneity of people's lived experience" (Elnaiem, p. 93; quote p. 94) with new public health crises such as COVID-19, and ongoing ones such as police brutality and HIV/AIDS (Aguayo-Romero, p. 101; Elnaiem; Poteat). The section also ventures into uncharted terrains such as epigenetics (Zota and VanNoy, p. 104) and artificial intelligence (Bauer and Lizotte, p. 98), and highlights the conceptual and methodological challenges of intersectionality research from the perspective of a group of National Institutes of Health (NIH) extramural research administrators (Alvidrez et al., p. 95).

Informed by Collins's conceptualization of intersectionality as a "broad-based knowledge project"—a field of study, an analytical strategy, and critical praxis[4(p3)]—I characterize intersectionality's inroads into public health and its potential for addressing public health crises as a series of overlapping waves. Wave 1 was and is definitional, focused on intersectionality's history, core tenets, and relevance to public health. Wave 2 reflects the mainstreaming and flattening of intersectionality as it travels through traditional research organizations such as the National Academy of Sciences (NAS) and NIH. Wave 3 is analytical, reflecting the theoretical application of intersectionality to current public health crises. In this editorial, I highlight how this special section spans these waves and preview a fourth wave essential to addressing and resolving the current spate of multiple and interlocking public health crises.

WAVE 1: ON DEFINITIONS AND HISTORY

If the initial phase of intersectionality's first wave was definitional, then the current phase is definitively about what intersectionality is not and the need to remoor intersectionality back to its historic Black feminist vision to effectively address current crises. To this end, Aguayo-Romero, Elnaiem, and Poteat all stress that intersectionality is not simply about "multiple identities" and urge greater fidelity to intersectionality's historic focus on power and interlocking structural inequality. This emphasis underscores that, despite its growing popularity, intersectionality is still nascent within public health and also flattening as it travels. Intersectionality scholars typically use the term "flattening" to describe how intersectionality as it becomes mainstream is being depoliticized and stripped of its attention to power, social justice, and praxis.[5,6]

Consider, for example, the NAS (formerly the Institute of Medicine), one of the first national research organizations to embrace intersectionality as a cross-cutting perspective for lesbian, gay, bisexual, and transgender (LGBT) health research in 2011.[7] The NAS report's glossary defined intersectionality as "a theory used to analyze how social and cultural categories intertwine"[7(p318)] and attributed the definition to a White Swedish professor's conference presentation. The issue is not simply pedantic. Work that seeks to flatten intersectionality or ignore its Black feminist activist history not only erases Black women's foundational epistemic contributions to intersectionality[5,8] but also fundamentally undermines the framework's transformative potential to address the structural inequities that undergird the contemporary public health crises.

WAVE 2: MAINSTREAM RESEARCH TRAVELS

In "Intersectionality as Buzzword," an insightful article about intersectionality's success and longevity as a feminist theory, Davis[9] draws on the sociology of science to discuss the four characteristics of a successful theory. As for intersectionality's successful inroads into public health, I would add a fifth: research funding. In May 2018, the Division of AIDS Research at NIH's National Institute of Mental Health concretized its interest in the topic of intersectional stigma (https://bit.ly/31IKzTr), prompting requests for proposals (https://bit.ly/34uU36D) that applied intersectionality to HIV prevention and LGBT health research. As the article by Alvidrez et al. affirms, NIH has had an uptick in intersectionality-focused grant proposals. Yet, many proposals lack clarity about what makes the research questions, designs, or data analysis intersectional. In illustrating these gaps, Alvidrez et al. pinpoint the fundamental challenge that researchers face in attempting to apply a framework initially developed for critical analysis, activism, and praxis—not research—to research.

WAVE 3: INTERSECTIONALITY AS ANALYTICAL TOOL

In line with advocacy from intersectionality scholars and activists to demonstrate what intersectionality can do, not just what it is,[6] Elnaiem and Poteat highlight how an intersectional lens could improve the collection of public health surveillance COVID-19 data at multiple intersections (e.g., race and gender) instead of solely by a single axis (i.e., race or gender). An intersectional perspective, as Poteat notes, is also vital to "conceptualize, document, and explicitly articulate" (p. 92) the structures that explain the racialized and economic inequality of COVID-19.

Bauer and Lizotte, and Zota and VanNoy, show that intersectionality is also a suitable analytic tool for newer domains such as epigenetics and artificial intelligence. Bauer and Lizotte use an intersectional lens to show how the growing use of artificial intelligence algorithms, such as recidivism systems in criminal justice, and screening tools for risks, such as suicide, reproduce and intensify biases against intersectionally marginalized groups. Zota and VanNoy lay the groundwork for integrating intersectionality within environmental health's emphasis on the exposome, a paradigm focused on the totality of people's exposure to environmental factors that increase chronic disease risk across the life span. Using their work on racial inequities in uterine fibroids as a case study, Zota and VanNoy highlight how greater attention to intersectional inequalities such as racism and sexism determine environmental exposures for Black women, a group disproportionately affected by fibroids.

TOWARD WAVE 4: INTERSECTIONALITY PRAXIS

Intersectionality praxis, the practical application of intersectionality to facilitate equitable health policy and practice for intersectionally marginalized groups, is the fourth and arguably most essential wave to address the public health crises of our time. Several articles provide glimpses of what an intersectional praxis response to COVID-19 would look like. Elnaiem, recounting his experiences doing COVID-19 contact tracing in one of the poorest counties in Massachusetts, highlights the need to prioritize and build upon health promotion initiatives led by grassroots and community-based organizations. Poteat argues that it has been community-based organizations and policy think tanks, not traditional public health agencies or public health surveillance systems, that have provided the most "sophisticated intersectional analyses" (p. 91) about the disproportionate and structural toll of COVID-19 on US racial/ethnic minority communities. This time of crisis would also benefit from intersectionality equity metrics to assess the extent to which health equity goals for practice (e.g., coronavirus testing, contact tracing, vaccine distribution), policy (e.g., allocation of personal protective equipment), and research (e.g., COVID-19 surveillance) have been achieved for the groups at the most vulnerable or marginalized intersections.

A concluding word about intersectionality research is warranted here. You likely noticed the absence of research articles in this special section, a reflection that the quantitative intersectionality research field is inchoate. Nonetheless, it bears noting that although intersectionality research is an important step on the journey to health equity in this time of crisis, it is not the destination. Intersectionality is fundamentally a resistance project. It does not assume that "knowledge for knowledge's sake"[10(p118)] will resolve our current public health crises, but instead demands a "radical reimagin[ing] of intersectional praxis" (Elnaiem, p. 94) to solve them. AJPH

CORRESPONDENCE

Correspondence should be sent to Professor Lisa Bowleg, Department of Psychological and Brain Sciences, The George Washington University, 2125 G St NW, Washington, DC 20052 (e-mail: lbowleg@gwu.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Bowleg L. Evolving intersectionality within public health: from analysis to action. *Am J Public Health*. 2021;111(1):88–90.

Acceptance Date: October 16, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306031

CONFLICTS OF INTEREST

The author has no conflicts of interest to declare.

REFERENCES

1. Bowleg L. The problem with the phrase “women and minorities”: intersectionality, an important theoretical framework for public health. *Am J Public Health*. 2012;102(7):1267–1273. https://doi.org/10.2105/AJPH.2012.300750
2. Bowleg L. Perspectives from the social sciences: critically engage public health. *Am J Public Health*. 2019;109(1):15–16. https://doi.org/10.2105/AJPH.2018.304825
3. Bowleg L. We’re not all in this together: on COVID-19, intersectionality, and structural inequality. *Am J Public Health*. 2020;110(7):917. https://doi.org/10.2105/AJPH.2020.305766
4. Collins PH. Intersectionality’s definitional dilemmas. *Annu Rev Sociol*. 2015;41(1):1–20. https://doi.org/10.1146/annurev-soc-073014-112142
5. May VM. *Pursuing Intersectionality, Unsettling Dominant Imaginaries*. New York, NY: Routledge; 2015. https://doi.org/10.4324/9780203141991
6. Cho S, Crenshaw KW, McCall L. Toward a field of intersectionality studies: theory, applications, and praxis. *Signs (Chic Ill)*. 2013;38(4):785–810. https://doi.org/10.1086/669608
7. Institute of Medicine. *The Health of Lesbian, Gay, Bisexual and Transgender People: Building a Foundation for Better Understanding*. Washington, DC: The National Academies Press; 2011.
8. Edmonds BM. The professional is political: on citational practice and the persistent problem of academic plunder. *J Fem Scholarsh*. 2019;16:74–77. https://doi.org/10.23860/jfs.2019.16.08
9. Davis K. Intersectionality as buzzword: a sociology of science perspective on what makes a feminist theory successful. *Fem Theory*. 2008;9(1):67–85. https://doi.org/10.1177/1464700108086364
10. Collins PH. *Intersectionality as Critical Social Theory*. Durham, NC: Duke University; 2019. https://doi.org/10.1215/9781478007098

Navigating the Storm: How to Apply Intersectionality to Public Health in Times of Crisis

Tonia Poteat, PhD, MPH, PA-C

ABOUT THE AUTHOR

Tonia Poteat is with the Department of Social Medicine, University of North Carolina, Chapel Hill.

See also the Intersectionality section, pp. 88–109.

> *"We are in the same storm, but not in the same boat."*
>
> —Author unknown

The United States is facing a deadly confluence of health, economic, and racial crises. As of this writing, COVID-19 cases are approaching 9 million and more than 225 000 American lives have been lost to this disease. As a result of efforts to curb the spread of coronavirus through stay-at-home orders and business closures, more than 40 million Americans have lost their jobs. In the wake of increasingly visible extrajudicial killing of Black Americans at the hands of law enforcement—notably the death of George Floyd after a police officer knelt on his neck for nearly nine minutes on May 25, 2020—mass protests have erupted in more than 2000 cities across the country. Many of these protests have been met with a militarized response, including tear gas and rubber bullets, injuring protestors, reporters, and bystanders.

In the face of such crises, what does an intersectionality framework offer public health researchers and practitioners committed to creating and maintaining conditions in which all people can be healthy? Originally articulated by Black feminists and coined by Kimberlé Crenshaw,[1] intersectionality provides a critical framework for understanding interlocking systems of oppression. Intersectionality explicates how mutually constituted positions in racial, gender, sexual orientation, ability, and other social hierarchies interact with legal, political, economic, and other structures of power in ways that generate interdependent forms of privilege and disadvantage.[2] Incorporating an intersectional framework into public health provides essential context for the aforementioned crises and makes clear the link between the systemic conditions driving social unrest and the inequitable distribution of COVID-19 physical and financial harms. Without an intersectional approach, public health researchers often simply disaggregate outcomes by multiple identities, such as gender and race, to highlight differences between groups (i.e., disparities), and they fail to make explicit the unjust social–structural context at the root of these differences (i.e., inequities).

For example, *Preventive Medicine* published a survey of women in the general population of four US cities, documenting that Latina and Black women had eight and four times the odds, respectively, of experiencing physical police violence than White women had.[3] Although documenting the excess exposure to police violence that Latina and Black women experience is important, the article never addressed the legacy of structural racism and sexism in the United States that could explain the differences they identified. Moreover, the authors called for "community centered solutions to police violence that strengthen police–citizen relations."[3(p155)] The proposed solution does not consider the historical role of slave patrols,[4] present-day immigration enforcement activities of police, or the obvious power differentials between these women and armed agents of the state who act with qualified immunity. In short, simply describing disparities based on gender and race falls short of the tenets of intersectionality by failing to identify the power structures at the root of health inequities.

By contrast, many policy think tanks and community-based organizations have presented clear and sophisticated intersectional analyses of the economic, psychosocial, and physical toll of the COVID-19 pandemic on multiply marginalized communities. For example, the Center for Public Integrity published a recent report that describes the impact of COVID-19 on Latina women. They explained how their vulnerability is created by institutional barriers (e.g., xenophobia, racism, nativism, sexism), which limit many Latinas to the lowest paid service jobs that require close contact with people; provide little, if any, access to health insurance; and are most likely to be eliminated during economic downturns.[5]

At minimum, public health surveillance data should be able to demonstrate the disparate health outcomes linked to social inequities. However, state public health agencies have been slow to collect COVID-19 data on race and ethnicity. As of August 17, 2020, three states still did not report COVID-19 deaths by race, two states did not report confirmed cases by race, and only six states report testing data by race.[6] Although the Centers for Disease Control and Prevention's COVID-19 Web site presents the number of cases and deaths disaggregated by race and ethnicity as well as by sex, they do not present these data disaggregated by both race and sex, rendering basic information on the prevalence of COVID-19 cases and deaths among Latina and Black women invisible. Similarly, data on gender identity and sexual orientation are unavailable. Without these data, it is impossible to identify the inequities wrought by unjust systems of power.

Although the collection and reporting of disaggregated data to document inequities is a central role of public health, it is insufficient for an intersectional analysis. We must also conceptualize, document, and explicitly articulate why identified disparities exist. Failure to do so implies that the source of health inequities lies within the specific individuals or groups who bear their burden and suggests that poor health is an innate quality of certain groups rather than created and maintained by systemic oppression. This limited understanding of health inequities leads to the development of interventions that target so-called risk groups for behavior change, leaving untouched the power structures that increase risk for some and provide protection for others. A true intersectionality lens demands that we both understand health inequities associated with intersecting social positions and, most importantly, engage with the historical and present-day contexts of power at the root of these inequities.

We must be crystal clear that the social categories we assess are not simply demographics. Rather, they represent interdependent and differential access to power and privilege. Therefore, our data collection systems, research questions, analytic approaches, data interpretation, and intervention designs should lend themselves to addressing intersecting systems of oppression. As eloquently stated by Lokot and Avakyan:

> An intersectional analysis places power at the center, analyzing not what makes people vulnerable but . . . conceptualizing how power hierarchies and systemic inequalities shape their life experiences.[7(p3)]

As we look at the current storm from the vantage point of our vastly different boats, our ability to identify and mitigate this tempest will depend on our willingness to confront its source and use intersectional public health responses to drive lasting change. To do so, public health must consistently collect data that allow the identification of health inequities across multiple axes of oppression, conduct intersectional analyses that situate these inequities within the historical and current multidimensional power structures that shape them, and be led by the people most affected by intersecting oppressions in the development of interventions to address them. AJPH

CORRESPONDENCE

Correspondence should be sent to Tonia Poteat, Assistant Professor, Department of Social Medicine, University of North Carolina, 333 South Columbia St, CB #7240, Chapel Hill, NC 27599 (e-mail: tonia_poteat@med.unc.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Poteat T. Navigating the storm: how to apply intersectionality to public health in times of crisis. *Am J Public Health*. 2021;111(1):91–92.

Acceptance Date: August 22, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305944

CONFLICTS OF INTEREST

The author has no conflicts of interest to declare.

REFERENCES

1. Crenshaw K. Mapping the margins: intersectionality, identity politics, and violence against women of color. *Stanford Law Rev*. 1991;43(6):1241–1299. https://doi.org/10.2307/1229039
2. Bowleg L. The problem with the phrase women and minorities: intersectionality—an important theoretical framework for public health. *Am J Public Health*. 2012;102(7):1267–1273. https://doi.org/10.2105/AJPH.2012.300750
3. Fedina L, Backes BL, Jun HJ, et al. Police violence among women in four US cities. *Prev Med*. 2018;106:150–156. https://doi.org/10.1016/j.ypmed.2017.10.037
4. Potter G. The history of policing in the United States. Available at: https://plsonline.eku.edu/sites/plsonline.eku.edu/files/the-history-of-policing-in-us.pdf. Accessed June 29, 2020.
5. Campell AF. Even with positive jobs report, Latinas still hardest hit by COVID-19 slowdown. Here's why. 2020. Available at: https://publicintegrity.org/health/coronavirus-and-inequality/even-with-positive-jobs-report-latinas-still-hardest-hit-by-covid-slowdown-heres-why. Accessed June 28, 2020.
6. Johns Hopkins University. State COVID-19 data by race. Available at: https://coronavirus.jhu.edu/data/racial-data-transparency. Accessed August 17, 2020.
7. Lokot M, Avakyan Y. Intersectionality as a lens to the COVID-19 pandemic: implications for sexual and reproductive health in development and humanitarian contexts. *Sex Reprod Health Matters*. 2020;28(1):1764748. https://doi.org/10.1080/26410397.2020.1764748

Intersectionality in the Time of COVID-19: Dispatches From a Contact Tracer

Ahmed D. Elnaiem, BS

ABOUT THE AUTHOR

Ahmed D. Elnaiem is a fourth-year medical student at Harvard Medical School, Boston, MA.

See also Watts Isley et al., p. 63, and the Intersectionality section, pp. 88–109.

The United States faces two entangled crises. One is the global COVID-19 pandemic. As of November, the pandemic has claimed more than 1.2 million lives and infected more than 48 million people worldwide.[1] The other is that not only have we had to contend with the highest case count of any nation—now more than 7 million—but we have also been forced to reckon with our nation's brutal history of institutional racism in the wake of George Floyd's death at the hands of police. Against the backdrop of COVID-19's disproportionate impact on Blacks, Hispanics, and Native Americans, the Movement for Black Lives—a coalition of more than 50 organizations, including Black Lives Matter—has mobilized tens of millions in protest to demand justice for the victims of police violence and the end of racism toward Black individuals.

In my final year of medical school, I have had a window into this pivotal moment ushered in by COVID-19 as both a student and a contact tracer. After my clinical studies came to an abrupt end, I accepted an offer from my mentor, an infectious disease specialist with expertise in community-based health care delivery, to support the city of Holyoke, Massachusetts, with its pandemic response. Holyoke is one of the poorest cities in the Commonwealth of Massachusetts and is home to the largest Puerto Rican population per capita of any US city outside Puerto Rico.[2] When I accepted this challenge, Holyoke contained the third-highest number of cases in the state. In Holyoke, my conviction in the need for a truly intersectional approach to public health evolved as I witnessed the pandemic's impact on the everyday lives of working families. I came to know, firsthand, that an approach to public health unconcerned with intersectionality and interlocking oppressions is not an adequate approach at all.

In 1974, the Combahee River Collective—a radical Black feminist lesbian organization named after Harriet Tubman's 1853 raid on the Combahee River in South Carolina—put forth the first statement to use such terms as "interlocking oppression" and "identity politics."[3] The organization and statement were born of the inability of White feminist organizations to fully engage in antiracist issues and the civil rights movement's failure to address the needs of Black women. Grappling with the intimate relationship between race, class, and gender, they described oppressions as interlocking and reinforcing, thereby generating new forms of oppression and inequality. Their plight could not be quantified only in terms of sexism or racism or homophobia; rather, it was entangled in numerous disparate and related forces.

The term "intersectionality"—the understanding that multiple oppressions reinforce each other to create new categories of suffering—was coined in a similar spirit. In 1989, US lawyer and critical race theorist Kimberlé Crenshaw recognized the inability of the law to bring justice to people, particularly Black women, who weathered oppression on multiple fronts. A similar and sincere reckoning is needed in public health as well. Too many public health initiatives fail to adopt an intersectional approach even though, today, in the thralls of SARS-CoV-2, the stark inequities and systems of oppression that undergird our society have been laid bare.

In my role as a liaison between Massachusetts General Hospital and the City of Holyoke Board of Health, I assessed the city's contact-tracing capacity and workflow, assembled a "data dashboard" to analyze week-to-week case numbers, and aided in coordinating the design and implementation of a household serological survey in Holyoke.

This was no straightforward task. After completing training as a contact tracer, I quickly appreciated the challenges hidden in a seemingly simple process. People split time between homes, work several jobs, share complex child-rearing obligations, and sometimes maintain relationships they do not wish to disclose. At each juncture, one finds the interlocking levels of risk that determine who gets sick and who does not.

Each case investigation exposed a labyrinth of complexity. In one instance, a multigenerational family living across four homes became entangled in a web of exposures after the father contracted the virus while working in a city municipal services office. As the complexity compounded with each additional residence, it required a roughly sketched hand-drawn map to make sense of the ties. Ultimately, this revealed that the father's illness overlapped with an opioid overdose at his daughter's house that required active resuscitation by first responders, further exposing three individuals who performed CPR (cardiopulmonary resuscitation) at the scene.

I was left with more questions than answers. What role did the social isolation imposed by the quarantine play in the overdose? Were any of our statewide efforts accounting for or attempting to target vulnerable individuals hit by both COVID-19 and the ongoing opioid epidemic? How did structural barriers—such as racial prejudice, cultural norms, and socioeconomic inequality—affect the victim's access to recovery treatment? How have the present forms of oppression responsible for structural inequality morphed and formed anew in barriers to social distancing and titles such as "essential worker"?

Any attempt to answer these questions necessitates an intersectional public health lens that balances systems of race, class, and gender without showing preference for any one social category. Public health must embrace rather than obscure the heterogeneity of people's lived experience.

In many respects, public health has the potential to become truly intersectional. As a field, it is versatile enough to draw on a range of disciplines from the quantitative and social–behavioral sciences, and it is as much rooted in engineering and environmental sciences as in biology. Yet, despite this potential, many have pointed to the present failure of public health officials to account for structural inequalities at the intersections of racial/ethnic minority status, class, and occupation.[4,5] My own experiences affirm a crucial point aptly summarized by the social psychologist Lisa Bowleg: in promoting the idea that "we are all in this together," practitioners around the country have pushed color- and class-blind messaging that fails to "center and equitably address the health, economic, and social needs of those who bear the intersectional brunt of structural inequality."[4(p117)] This approach could not work in Holyoke. And it does not have to be that way.

As a Black Muslim immigrant and proud descendent of historically oppressed people, I see it as a moral imperative that we do not let this pandemic pass as merely another tragedy that deepens our nation's racial and class divides. As public health practitioners, it's incumbent on us to radically reimagine an intersectional praxis. To start, we must recognize racism, not race or ethnicity, as risk factors and disperse with false gender binaries in data collection.[6] Likewise, our interventions need to sow trust in marginalized and racialized communities by building on preexisting ties and networks (e.g., engaging grassroots organizations and community health workers in contact tracing)[7] and affirm autonomy by granting communities collective oversight.

Although the events that have transpired to date portend an ominous forecast, the women of the Combahee River Collective serve as my beacon of hope. Facing tangible threats to their lives, they spoke truth to power and refused to compromise their experiential truth. We must marshal similar courage and center the complex reality of those on the bottom, at the peripheries, and on the margins, who shoulder the greatest burden of illness in our society today. AJPH

CORRESPONDENCE

Correspondence should be sent to Ahmed D. Elnaiem, Harvard Medical School, 527 Meadow Hall Dr, Rockville, MD 20851 (e-mail: ahmed_elnaiem@hms.harvard.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Elnaiem AD. Intersectionality in the time of COVID-19: dispatches from a contact tracer. *Am J Public Health*. 2021;111(1):93–94.

Acceptance Date: October 15, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306027

ACKNOWLEDGMENTS

The author expresses his sincere thanks to Louise C. Ivers, MD, MPH, DTM&H, and Mohammed Elnaiem, MPhil, for their thoughtful critiques and input.

CONFLICTS OF INTEREST

The author has no conflicts of interest to declare.

REFERENCES

1. Dong E, Du H, Gardner L. An interactive Web-based dashboard to track COVID-19 in real time. *Lancet Infect Dis*. 2020;20(5):533–534. https://doi.org/10.1016/S1473-3099(20)30120-1
2. City University of New York, Center for Puerto Rican Studies. Puerto Ricans in Massachusetts, the United States, and Puerto Rico, 2014. 2016. Available at: https://centropr.hunter.cuny.edu/sites/default/files/PDF/STATE%20REPORTS/2.%20MA-PR-2016-CentroReport.pdf. Accessed November 4, 2020.
3. Combahee River Collective. A Black feminist statement. *WSQ: Women's Stud Q*. 2014;42(3–4):271–280. https://doi.org/10.1353/wsq.2014.0052
4. Bowleg L. We're not all in this together: on COVID-19, intersectionality, and structural inequality. *Am J Public Health*. 2020;110(7):917. https://doi.org/10.2105/AJPH.2020.305766
5. Lokot M, Avakyan Y. Intersectionality as a lens to the COVID-19 pandemic: implications for sexual and reproductive health in development and humanitarian contexts. *Sex Reprod Health Matters*. 2020;28(1):1764748. https://doi.org/10.1080/26410397.2020.1764748
6. D'Ignazio C, Klein LF. Seven intersectional feminist principles for equitable and actionable COVID-19 data. *Big Data Soc*. 2020;7(2):2053951720942544. https://doi.org/10.1177/2053951720942544
7. Peretz PJ, Islam N, Matiz LA. Community health workers and COVID-19—addressing social determinants of health in times of crisis and beyond. *N Engl J Med*. 2020; Epub ahead of print. https://doi.org/10.1056/NEJMp2022641

Intersectionality in Public Health Research: A View From the National Institutes of Health

Jennifer Alvidrez, PhD, Gregory L. Greenwood, PhD, MPH, Tamara Lewis Johnson, MPH, MBA, and Karen L. Parker, PhD, MSW

ABOUT THE AUTHORS

Jennifer Alvidrez is with the Division of Extramural Scientific Programs, National Institute on Minority Health and Health Disparities, National Institutes of Health, Bethesda, MD. Gregory L. Greenwood is with the Division of AIDS Research, National Institute of Mental Health, National Institutes of Health. Tamara Lewis Johnson is with the Office of Disparities Research and Workforce Diversity, National Institute of Mental Health, National Institutes of Health. Karen L. Parker is with the Sexual & Gender Minority Research Office, Office of the Director, National Institutes of Health.

See also the Intersectionality section, pp. 88–109.

The mission of the National Institutes of Health (NIH) is to seek fundamental knowledge about the nature and behavior of living systems and to apply that knowledge to enhance health and reduce illness and disability. As new tools such as big data analytics, computational biology, and high throughput processes have emerged, the NIH has integrated these tools to fuel scientific advances. One tool that has become more commonly used is the theoretical framework of intersectionality, defined as how multiple marginalized or disadvantaged social statuses interact at the micro level of individuals' lived experience to reflect interlocking systems of privilege and oppression at the macro social structural level (e.g., racism, classism, colonialism, sexism, heterosexism, ableism).[1,2] Intersectionality theory, long used in other disciplines, is a relative newcomer to health research. This theory can foster a greater understanding of human health by moving beyond the biomedical model and individual-level determinants to examine the health effects resulting from the intersection of structural power dynamics, such as systemic sexism and racism.

In our roles in extramural research administration at NIH, we have seen a growth in research addressing intersectionality, as well as a lack of consensus about best practices for studying this complex construct. In this editorial, we share our views on important areas for research development that we believe will help to advance the science of intersectionality. These views were shaped in part by the numerous grant applications we have seen submitted to the NIH, where we have a first-hand opportunity to view the latest innovations and cutting-edge science, as well as gaps and limitations.

Qualitative research has shown the salience of intersectionality for populations belonging to multiple disadvantaged groups, but the experience and health effects of intersectionality have not been captured as often or as well as in quantitative studies. As such, given the necessity of this empirical work to inform policy change and intervention development, we focus here primarily on quantitative research. We also argue that although viewing research and research findings from an intersectional lens is critical, this conceptual lens must be reflected in appropriate research questions, designs, and data analysis.

The three important areas for research development that we believe will help to advance the science of intersectionality are

1. Comparative studies to empirically assess the effect of intersectional status on health,
2. Research that includes potential explanatory variables to illuminate the relationship between intersectional status and health outcomes and to identify modifiable factors to inform interventions, and
3. Research that examines intersectionality with methods, measures, and analytic approaches that can accommodate rather than reduce complexity.

COMPARATIVE STUDIES OF INTERSECTIONALITY

Many grant applications have an explicit focus on intersectionality but lack variability in the specific intersectional statuses being studied. For example, if a study seeking to understand the physical health effects of being African American and homeless included only participants with both of these two statuses, it would be difficult to know whether or why their health status was different from that of others experiencing homelessness (e.g., other racial/ethnic minorities) or African Americans with stable housing. Also important is the examination of within-group differences that reflect additional intersectionality (e.g., in the previous example, examination of health status of African American individuals experiencing homelessness according to gender identity, sexual orientation, or disability status).

Targeted population studies remain an important component of health and health disparities research. However, when done to the exclusion of studies that allow for identification of similarities and differences across and within populations, the true effect of intersectionality remains unknown. In addition, whether intersectional populations or subgroups require different intervention strategies from other populations will be unclear.

RESEARCH WITH EXPLANATORY VARIABLES

Kilbourne et al.[3] identified three phases of health disparities research: (1) identifying disparities, (2) understanding disparities, and (3) addressing disparities.[3] Many studies that have the capacity to examine intersectionality stop at the first phase, documenting that intersectional status is associated with worse health outcomes and then speculating about the reasons afterward, without directly measuring the mechanisms or pathways that may lead to those outcomes.[4]

Documentation of health patterns and disparities related to intersectionality is still needed, particularly for understudied populations. However, researchers conducting more explanatory or mechanistic studies must directly measure hypothesized determinants or pathways, including individual-, interpersonal-, community-, and societal-level factors.[2] Obvious candidates relevant to many health topics include interpersonal and structural discrimination—such as racism, sexism, classism, homophobia, and transphobia—community-level social capital and disadvantage, educational and occupational opportunity, social support or rejection, and identity management related to expression or concealment of identities that are concealable. It is also important to understand resilience in the face of intersectional stigma and discrimination. The inclusion of modifiable risk and protective factors in such models is important to inform interventions.[5]

RESEARCH METHODS THAT ACCOMMODATE COMPLEXITY

There is increasing recognition that human health and behavior are complex and multidetermined. However, many studies on intersectionality still use a reductionistic approach to isolate the influence or association of specific factors on health outcomes (e.g., controlling for socioeconomic status and education when examining intersections between race/ethnicity and gender).[5] This runs counter to the basic tenet of intersectionality characterized by interwoven and interacting systems of oppression, which are better captured through dynamic, interactive models than by reductionistic models. However, a lack of consensus currently exists about which analytic models are the most appropriate to accommodate this complexity.[6] At a minimum, multilevel modeling approaches are needed to capture interactions of macro levels of oppression and disadvantage as well as individual-level experiences (e.g., psychosocial responses to discrimination).[6]

The interactive nature of intersectionality also may not be captured in current measurement or analysis, because intersectionality may be operationalized as merely a greater accumulation of disadvantage. Many grant applications make a compelling case for the need to study intersectionality in a nuanced way but then propose study designs and analyses that revert back to simple additive hypotheses (i.e., intersectional populations will have poorer health because they experience more discrimination). More work is needed to understand how different marginalized statuses interact. For example, among existing methods to assess for intersectional stigma,[7] contextual information is generally lacking, such as the situation or setting where stigmatization occurs and by whom (or by what structures or systems). As a result, important questions remain unanswered. For example, is it more damaging to an individual's health to experience rejection from those who share a marginalized status (e.g., a person of color experiencing homophobia in one's family or community)? Research is needed to better understand how individuals and populations experience and navigate intersecting identities in different contexts, how they seek or create social support networks, and how they cope with intersectional stigma and discrimination. Mixed-methods studies may be particularly useful to answer these types of questions.

CONCLUSIONS

Many questions about intersectionality remain unanswered, not just about its effect on health but also about how best to conduct health research in this area. We believe that it would be premature for us as NIH representatives to prescribe specific approaches, because we believe that different methods need to be discussed, debated, and tested by researchers. Thus, it is imperative that health researchers embrace an intersectional lens and strive to identify appropriate ways to capture this phenomenon in quantitative research, to better quantify social inequalities that lead to health disparities, and to identify strategies to eliminate them. AJPH

CORRESPONDENCE

Correspondence should be sent to Jennifer Alvidrez, PhD, Division of Extramural Scientific Programs, National Institute on Minority Health and Health Disparities, National Institutes of Health, 6707 Democracy Blvd, Suite 800, Bethesda, MD 20892 (e-mail: jennifer.alvidrez@nih.gov). Reprints can be ordered at http://www.ajph.org by clicking the “Reprints” link.

PUBLICATION INFORMATION

Full Citation: Alvidrez J, Greenwood GL, Johnson TL, Parker KL. Intersectionality in public health research: a view from the national institutes of health. *Am J Public Health*. 2021;111(1):95–97.

Acceptance Date: September 21, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305986

CONTRIBUTORS

All authors contributed equally to this editorial.

ACKNOWLEDGMENTS

This work was supported by the National Institutes of Health.

Note. The final content represents the views of the authors and does not necessarily represent the perspective of the National Institutes of Health.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

REFERENCES

1. Crenshaw K. Mapping the margins: intersectionality, identity politics, and violence against women of color. *Stanford Law Rev*. 1991;43(6):1241–1299. https://doi.org/10.2307/1229039
2. Bowleg L. The problem with the phrase women and minorities: intersectionality—an important theoretical framework for public health. *Am J Public Health*. 2012;102(7):1267–1273. https://doi.org/10.2105/AJPH.2012.300750
3. Kilbourne AM, Switzer G, Hyman K, Crowley-Matoka M, Fine MJ. Advancing health disparities research within the health care system: a conceptual framework. *Am J Public Health*. 2006;96(12):2113–2121. https://doi.org/10.2105/AJPH.2005.077628
4. Agénor M. Future directions for incorporating intersectionality into quantitative population health research. *Am J Public Health*. 2020;110(6):803–806. https://doi.org/10.2105/AJPH.2020.305610
5. Mena E, Bolte G, ADVANCE GENDER Study Group. Intersectionality-based quantitative health research and sex/gender sensitivity: a scoping review. *Int J Equity Health*. 2019;18(1):199. https://doi.org/10.1186/s12939-019-1098-8
6. Turan JM, Elafros MA, Logie CH, et al. Challenges and opportunities in examining and addressing intersectional stigma and health. *BMC Med*. 2019;17(1):7. https://doi.org/10.1186/s12916-018-1246-9
7. Scheim AI, Bauer GR. The Intersectional Discrimination Index: development and validation of measures of self-reported enacted and anticipated discrimination for intercategorical analysis. *Soc Sci Med*. 2019;226:225–235. https://doi.org/10.1016/j.socscimed.2018.12.016

Artificial Intelligence, Intersectionality, and the Future of Public Health

Greta R. Bauer, PhD, MPH, and Daniel J. Lizotte, PhD

ABOUT THE AUTHORS

Greta R. Bauer is with the departments of Epidemiology and Biostatistics and Gender, Sexuality and Women's Studies, Western University, London, ON, Canada. Daniel J. Lizotte is with the departments of Epidemiology and Biostatistics and Computer Science, and the Schulich Interfaculty Program in Public Health, Western University.

See also the Intersectionality section, pp. 88–109.

AJPH January 2021, Vol 111, No. 1

Artificial intelligence (AI) encompasses a broad collection of algorithms that increasingly affect public health both positively and negatively through applications in health promotion, health care, criminal justice, finance, social networks, employment, and other social determinants of health. Although fairness, accountability, transparency, and ethics (FATE) have been recognized in the AI research community as principles for evaluating algorithms, an intersectional approach is needed to ensure that negative impacts of AI on marginalized groups are understood and avoided and that AI reaches its full potential to support public health. Emerging from Black feminist legal and sociological scholarship, intersectionality makes explicit the shaping of experiences by social power in specific ways for those at different intersections of social identities or positions.[1]

The potential for bias in AI algorithms is illustrated by high-profile examples, such as Microsoft's short-lived racist, antisemitic, and misogynistic chatbot Tay and the face depixelizer application that "reconstructed" a high-resolution facial image of a White Barack Obama. When individuals and organizations in positions of power use AI applications for decision-making, they can directly affect social determinants of health for individuals subject to that power. For example, recidivism prediction systems are used to inform judicial decision-making on bail, parole, and sentencing,[2] and Amazon's abandoned resume review system penalized applicants whose resumes contained the word "women's."

Underlying reasons for biases are often complex and technical, but because AI applications "learn" from data produced in biased societies, they are shaped by both information biases and societal biases. The observed reproduction and intensification of societal biases is therefore unsurprising.[3] Algorithmic bias against a particular group can exist even if that group's social identity or position is not provided to the algorithm directly, because AI methods readily identify latent constructs reflected in combinations of other variables.[3] Moreover, algorithmic bias may apply not only across single social identities or positions (e.g., race, gender) but across their intersections. For example, image recognition applications identify gender particularly poorly for dark-skinned women.[4]

If bias can be mitigated, the potential for AI to improve public health is broad, with applications in outbreak identification, screening and diagnosis, health promotion, and management of chronic conditions. Many health-related AI applications involve supervised machine-learning techniques, which use data to learn the relationship between human-specified inputs (features or covariates) and outputs (labels or outcomes). These are analogous to techniques such as logistic regression but have the ability to accommodate complex inputs (e.g., images, voice recordings, text data, medical histories) and to learn complex relationships between inputs and outputs. For example, such techniques were used to identify social media posts indicating suicidality.[5] Level of concern was hand coded for 2000 tweets; using this training set, AI algorithms were able to assess new tweets comparably to human coders. An AI application such as this has clear public health potential as a screening tool.

Such a tool would need to be designed and assessed to ensure it does not harm or exclude marginalized groups. Appropriate design, evaluation, and implementation processes are crucial for maximizing benefit and preventing harm by ensuring accountability of the developers and transparency of the processes and the tools themselves. Inclusion of perspectives across intersections of gender, race, age, and culture in all stages (conceptualization, design, development, evaluation) enables creative and targeted applications and averts the failure of imagination that has resulted in embarrassingly biased applications.

Fairness is a central objective of this process, and tools must be evaluated for differential performance or impact among marginalized groups. Fair AI systems could—potentially—be less biased than humans or could supplement human decision-making in ways that mitigate bias. Fairness in AI is operationalized as performance measurement considered across subgroups, often conceptualized around racial or gender bias. Intersectional approaches to quantitative public health research can, however, strengthen this approach by considering social identities or positions as multiple and intersecting and by demanding attention to process and power as well as product.[1,6] Intersectionality frameworks are now appearing in data science, where they are a needed correction, given the demonstrated inadequacy of nonintersectional approaches. This correction will need to be supported by training developers, and potentially users, in intersectionality and FATE.

Operationalizing fairness requires ethical and logical design decisions on competing definitions of fairness, reflecting differing perspectives and priorities. Fortunately, public health epidemiologists know how to evaluate predictive performance using sensitivity and specificity, predictive values, agreement, and performance curves. These same criteria are used by the AI community to evaluate tools, and they represent important common ground that is ripe for the development of new validation standards. In public health, we have long been aware that different types of decision-making call for the prioritization of different measures, designs, and tradeoffs; hence, epidemiologists have much to add to fairness evaluation—drawing on methods such as sequential testing and causal models.

Entangled with the choice of population-level fairness criterion is the choice of subpopulations to consider when evaluating fairness; the many definitions of fairness in AI research place performance constraints on different subpopulations. Intersectionality teaches us that it is not safe to assume that something fair for multiple single axes individually will also be fair at specific social intersections, and this learning has much to offer the framing of fairness in AI. It is often mathematically impossible to simultaneously meet criteria for different fairness definitions, and a predictive algorithm can be fair by some criteria despite disparate impact.[2] Intersectionality's emphasis on social power reminds us that maximizing algorithmic fairness does not substitute for addressing historical injustice or protecting the most marginalized. Fairness is only a first step toward justice.

Intersectionality, heterogeneity, and public health ethics go hand in hand. That many marginalized statuses represent numeric minorities relegates the experiences of the multiply marginalized to having little weight in summary evaluations. However, both intersectionality and ethics require that we pay attention to the most marginalized to improve well-being or at least ensure we are not exacerbating marginalization.[1] Overall fairness approaches may be utilitarian, generating the greatest good (health and other moral goods) or the least bias on average across a population, but be inconsistent with human rights approaches or violate core ethical principles such as nonmaleficence or justice. Thus, an intersectional approach to AI has the potential not only to add scientific rigor through a focus on heterogeneity but to promote ethical evaluation in performance and impact.

Moving forward, deep engagement with issues of AI governance and ethics is imperative to avoid a superficial "ethics theater," wherein checked boxes substitute for a genuine focus on beneficence, nonmaleficence, and justice.[7] Greater implementation of AI, regardless of whether explicitly for public health purposes, requires the attention and expertise of public health ethicists, epidemiologists, and other public health professionals, including those across the full range of social intersections. Given the demonstrated risks of propagating societal biases and inequities, algorithmic bias should be assumed until demonstrated otherwise. Moreover, ensuring fairness is impossible without transparency, both to enable ongoing evaluation and to build community trust and accountability. Fortunately, the surge in interest in FATE in the AI research community presents a timely opportunity for meaningful collaboration. Together, intersectionality and public health have the potential to bring new perspectives and processes to conceptualization, design, implementation, and evaluation of AI to ultimately harness its power to improve the public's health for those at all social intersections. AJPH

CORRESPONDENCE

Correspondence should be sent to Greta R. Bauer, Professor, Epidemiology and Biostatistics, Western University, London, ON N6A 5C1 Canada (e-mail: gbauer@uwo.ca). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Bauer GR, Lizotte DJ. Artificial intelligence, intersectionality, and the future of public health. *Am J Public Health*. 2021;111(1):98–100.

Acceptance Date: October 9, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306006

CONTRIBUTORS

G. R. Bauer conceptualized the editorial and wrote the first draft. D. J. Lizotte revised it for substantive content. Both authors edited the editorial and approved the final version.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

REFERENCES

1. Bowleg L. The problem with the phrase *women and minorities*: intersectionality—an important theoretical framework for public health. *Am J Public Health*. 2012;102(7):1267–1273. https://doi.org/10.2105/AJPH.2012.300750
2. Chouldechova A. Fair prediction with disparate impact: a study of bias in recidivism prediction instruments. *Big Data*. 2017;5(2):153–163. https://doi.org/10.1089/big.2016.0047
3. Caliskan A, Bryson JJ, Narayanan A. Semantics derived automatically from language corpora contain human-like biases. *Science*. 2017;356(6334):183–186. https://doi.org/10.1126/science.aal4230
4. Buolamwini J, Gebru T. Gender shades: intersectional accuracy disparities in commercial gender classification. *Proc Mach Learn Res*. 2018;81:1–15.
5. O'Dea B, Wan S, Batterham PJ, Calear AL, Paris C, Christensen H. Detecting suicidality on Twitter. *Internet Interv*. 2015;2(2):183–188. https://doi.org/10.1016/j.invent.2015.03.005
6. Bauer GR. Incorporating intersectionality theory into population health research methodology: challenges and the potential to advance health equity. *Soc Sci Med*. 2014;110:10–17. https://doi.org/10.1016/j.socscimed.2014.03.022
7. Parson EA, Fyshe A, Lizotte D. Artificial intelligence's societal impacts, governance, and ethics: introduction to the 2019 Summer Institute on AI and Society and Its Rapid Outputs. 2019. Available at: https://escholarship.org/uc/item/2gp9314r. Accessed October 18, 2020.

(Re)centering Black Feminism Into Intersectionality Research

Rodrigo A. Aguayo-Romero, PhD

ABOUT THE AUTHOR

Rodrigo A. Aguayo-Romero is with Brigham and Women's Hospital, Harvard Medical School, The Fenway Institute, Boston, MA.

See also the Intersectionality section, pp. 88–109.

The current national awakening and acknowledgment that White supremacy, patriarchy, and capitalism are responsible for the disproportionate effect of coronavirus disease 2019 and of police brutality on Black or Indigenous people and other people of color, people with disabilities, and sexual and gender minorities have ignited a call to action for public health leaders. As public health researchers, we must go beyond merely acknowledging the presence of structural racism and explicitly assess the effect of interconnected systems of oppression on health outcomes. Intersectionality is an analytic framework that can be used to describe how people marginalized by structural inequities interact with these oppressive systems but only if implemented in the way it was envisioned by Black and Black lesbian feminists.[1,2]

INTERSECTIONALITY ORIGINS

In recent years, many researchers have limited their implementation of intersectionality solely to the examination of multiple intersecting social identities without being attentive to intersectionality's core emphasis on theory and praxis.[1] Intersectionality was designed to analyze interlocking systems of privilege and oppression and to develop strategies that challenge those systems, with an emphasis on racism, sexism, heterosexism, and classism.[1–3] The distinction that intersectionality focuses on intersecting systems of privilege and oppression rather than on intersecting social identities is key; everyone has intersecting social identities, but not everyone belongs to historically marginalized groups or experiences intersecting systemic oppression.

SOCIAL IDENTITIES LIMITATIONS

Possessing multiple social identities of groups historically marginalized by structural inequities does not automatically mean that a person will experience oppression at all or all the time. What makes people vulnerable to oppression is how others perceive them based on one's societal norms, political realities, and legal landscapes. For instance, I am a multiracial Latinx, queer, nonbinary, able-bodied immigrant who has lived in two countries, both of which uphold anti-Indigenous, anti-Black, classist, heterosexist, and colonial thinking. My positionality makes me vulnerable to experiencing oppression under the aforementioned systems; however, simply knowing my intersecting identities does not inform whether and to what extent I experienced oppression. That is the main limitation of using social identities as markers of oppression and power in intersectionality research.[4] For instance, race is often presented as a determinant of health when, in reality, racism is.

SOCIAL PROCESSES

Researchers must shift their practices and analyze social processes when conducting intersectional research. Social processes, such as experiences of discrimination, allow us to assess the effect of intersecting systems of privilege and oppression at the individual level and also to advance our understanding at the population level (e.g., structural discrimination).[1] Selecting the systems and the number of systems to be included should be dictated by the methodology and research question; however, anchoring the analysis through one main axis can facilitate the process. Most intersectionality scholarship has examined racism and sexism. We must expand the complexity of intersectional analysis to include classism and heterosexism as initially envisioned[2] and other often-neglected oppression systems that also critically affect health outcomes, such as ableism, cisgenderism, colorism, ethnocentrism, colonialism, and nationalism.

APPLYING INTERSECTIONALITY

Although not a traditional testable theory,[3] findings from emerging quantitative intersectional research[4,5] indicate that identifying multiple intersecting systems of privilege and oppression is not necessarily associated with worse health outcomes and in some cases can be associated with protective outcomes. For instance, I conducted a study on transgender women of color and HIV testing patterns, looking at the intersections of transmisogyny, racism, and classism.[4] The results showed that the transgender women of color who reported intersecting experiences of transmisogyny, racism, and classism had higher probabilities of being tested for HIV within the last year, indicating an association between experiencing intersectional discrimination and engaging in resilient behaviors such as HIV testing. However, the transgender women of color who reported only experiences of racism had a disproportionately higher probability of never having been tested for HIV than others in the study. If I had focused on only one axis, such as transmisogyny, I would not have identified the nuances of how racism negatively affected HIV testing behaviors but—when intersecting with other oppressions—was associated with an increase in HIV testing.

Applying intersectionality allows researchers to identify more accurately how intersecting processes result in both detrimental and protective health outcomes. As a result, clinicians can prioritize the most vulnerable when allocating prevention and treatment services that are commensurate with the needs of the communities of interest.

SOCIOCULTURAL CONTEXT

Assessing the structural-level effect of intersecting systems of privilege and oppression is central to intersectionality but more difficult to capture by assessing individual experiences. Although individuals can identify social processes, they might not necessarily identify the structures and institutions upholding those processes. For that reason, the analysis and discussion of individual-level results must address the structural level by providing the sociocultural context (laws, policies, norms, and interpersonal practices) of structural inequality on the research population.[3,6,7] Understanding the historic and geopolitical context in which the experiences of discrimination are taking place is essential. In taking an interdisciplinary approach, researchers can gain an in-depth understanding of how multiple intersecting systems of privilege and oppression operate.[6] Researchers must explicitly connect findings to the current sociocultural context, even if it is a complex and intricate task in quantitative research and easier to achieve with qualitative or mixed-methods approaches.

CENTERING MARGINALIZED PEOPLE

Shifting the focus to social processes does not mean that researchers completely ignore social identities and the critical roles they play. Another key aspect of intersectionality is that the analysis should be centered on those with intersecting marginalized identities and not on those belonging to only dominant groups. This does not mean that the participants involved should have only marginalized social identities; it means that the discussions should prioritize the systems of oppression affecting them. Intersectionality calls on researchers to ensure that they are working with historically marginalized people from start to finish in the development, implementation, analysis, and dissemination of research. Thus, researchers must move away from the practice of using dominant groups as a reference point so that research truly focuses on the experiences of populations living at the margins.[4] Ideally, beyond being just research participants, the community of interest should be part of the research process by using methodologies, such as participatory action research, an approach aligned with intersectionality's emphasis on praxis. Furthermore, the literature review must not only cite but also critically engage with the contributions of authors belonging to the marginalized groups of interest as well as the Black and queer feminist scholars who developed and continue to expand intersectionality theory and praxis.[1–3,6,7] Similarly, research teams should ideally include members who share marginalized identities with the research population because those members also bring lived experience to every aspect of the research process. When team members do not reflect the marginalized identities of the research population, researchers should acknowledge and examine their positionality to assess the strengths and limitations of understanding the communities of interest.

CONCLUSIONS

When we design and implement research around social processes rather than social identities and ensure that every aspect of our research is focused on people marginalized by structural inequities, the spirit of intersectionality is alive and well in our work. Public health researchers have the responsibility to use research to advance the theory and to inform praxis by contributing to larger social justice efforts that promote health equity. AJPH

CORRESPONDENCE

Correspondence should be sent to Rodrigo A. Aguayo-Romero, PhD, Research Fellow, Brigham and Women's Hospital, 221 Longwood Ave, 5th Floor, Boston, MA 02115 (e-mail: raguayoromero@bwh.harvard.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Aguayo-Romero RA. (Re)centering Black feminism into intersectionality research. *Am J Public Health*. 2021;111(1):101–103.

Acceptance Date: October 12, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.306005

ACKNOWLEDGMENTS

The author would like to acknowledge Emmett Patterson, BA, Ana Maria del Río-González, PhD, and Skyler D. Jackson, PhD, for providing feedback and suggestions for the editorial.

CONFLICTS OF INTEREST

The author has no conflicts of interest to disclose.

REFERENCES

1. Crenshaw K. Demarginalizing the intersection of race and sex: a Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist policies. *Univ Chic Leg Forum*. 1989;1989(1):139–167. Available at: https://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8. Accessed April 5, 2020.
2. Combahee River Collective. The Combahee River Collective Statement. In: Smith B, ed. *Home Girls: A Black Feminist Anthology*. New York, NY: Kitchen Table: Women of Color Press Inc; 1983:264–274.
3. Bowleg L. The problem with the phrase women and minorities: intersectionality—an important theoretical framework for public health. *Am J Public Health*. 2012;102(7):1267–1273. https://doi.org/10.2105/AJPH.2012.300750
4. Aguayo-Romero RA. *Intersection of Transmisogyny, Racism, and Classism, and HIV Testing Patterns Among Transgender Women of Color* [dissertation]. Washington, DC: George Washington University; 2019.
5. Earnshaw VA, Rosenthal L, Gilstad-Hayden K, et al. Intersectional experiences of discrimination in a low-resource urban community: an exploratory latent class analysis. *J Community Appl Soc Psychol*. 2018;28(2):80–93. https://doi.org/10.1002/casp.2342
6. Agénor M. Future directions for incorporating intersectionality into quantitative population health research. *Am J Public Health*. 2020;110(6):803–806. https://doi.org/10.2105/AJPH.2020.305610
7. Curiel O. Género, raza, sexualidad: debates contemporáneos. *Intervenciones en Estudios Culturales*. 2017;3(4):41–61. Available at: http://portal.amelica.org/ameli/jatsRepo/53/5312003/html/index.html. Accessed April 5, 2020.

Integrating Intersectionality Into the Exposome Paradigm: A Novel Approach to Racial Inequities in Uterine Fibroids

Ami R. Zota, ScD, MS, and Brianna N. VanNoy, MPH

See also the Intersectionality section, pp. 88–109.

Intersectionality is a critical theoretical framework that emphasizes the influence of intersecting systems of oppression on the lived experiences of people marginalized by inequity. Although applications of intersectionality are increasing in public health, this framework is absent in environmental health, which has instead focused on the exposome, a paradigm that considers the totality of an individual's environmental exposures across the life course.

Despite advancements in the biological complexity of exposome models, they continue to fall short in addressing health inequities. Therefore, we highlight the need for integrating intersectionality into the exposome. We introduce key concepts and tools for environmental health scientists interested in operationalizing intersectionality in exposome studies and discuss examples of this innovative approach from our work on racial inequities in uterine fibroids.

Our case studies illustrate how interlocking systems of racism and sexism may affect Black women's exposure to environmental chemicals, their epigenetic regulation of uterine fibroids, and their clinical care. Because health relies on biological and social–structural determinants and varies across different intersectional positions, our proposed framework may be a promising approach for understanding environmental health inequities and furthering social justice. (*Am J Public Health*. 2021;111:104–109. https://doi.org/10.2105/AJPH.2020.305979)

AJPH January 2021, Vol 111, No. 1

As communities across the United States struggle with the devastating consequences of COVID-19, we are once again faced with our nation's glaring social and economic inequities and the consequent disproportionate impacts of the pandemic on Black and Brown communities marginalized by inequity. As we debate the best approaches for rebuilding our fractured public health system, we must also reexamine our approach to health research and consider new frameworks to better understand and intervene in health inequities.

We highlight the need for integrating intersectionality into the exposome. We discuss the application of this novel approach using examples from the Fibroids, Observational Research on Genes and the Environment (FORGE) study, a transdisciplinary effort that uses expertise from environmental health (EH), epidemiology, gynecology, epigenetics, social psychology, and bioinformatics to address racial inequities in uterine leiomyomas (fibroids). We describe benefits of our proposed approach, challenges we have encountered, and recommendations for future work.

The exposome is a contextual model of chronic disease risk that considers the totality of an individual's environmental exposures across the life course.[1] This paradigm differs from traditional epidemiologic approaches in three major ways: expanded and dynamic exposure assessment, the integration of data on exposure and response over time and space, and the use of high-dimensional "big data" for the data-driven discovery of unexpected exposure–disease associations and the generation of new hypotheses.[2] Common external measures of exposure include chemical and physical environmental hazards in food, consumer products, water, air, soil, and the built environment. The internal environmental exposures, or biomarkers of response, are often measured on "-omics" technologies, which use the power of genomics, epigenomics, transcriptomics, proteomics, and metabolomics to provide information about mechanisms of disease. In the United

States, federal funding agencies (e.g., National Institute of Environmental Health Sciences) have advanced efforts to implement the exposome within EH by supporting capacity and infrastructure development.[2]

Most exposome models mention the importance of an individual's social position (e.g., educational attainment) and psychosocial stress in shaping health. The public health exposome[3] and socioexposome[4] go further and call for the integration of political processes (e.g., civic governance) and social–structural factors (e.g., residential segregation) into the exposome. However, none of the previous models explicitly mentions intersectionality.

First coined by Kimberle Crenshaw to address the synergistic experiences of Black women who endure multiple forms of oppression as both Black and female,[5] intersectionality is a critical theoretical framework that has been expanded to examine how multiple social identities such as race, gender, sexual orientation, and socioeconomic status intersect at the microlevel of individual experience to reflect interlocking systems of privilege and oppression (i.e., racism, sexism, heterosexism, classism) at the macro-social–structural level.[6] The integration of intersectionality into the exposome (Figure A [available as a supplement to the online version of this article at http://www.ajph.org]) has the potential to enrich EH through greater attention to causal processes producing health inequities[7] and the development of more effective interventions and public policy.

THE ENVIRONMENTAL INJUSTICE OF BEAUTY

Although environmental chemicals in cosmetics and other consumer products are commonly included in the exposome, the social context of these exposures is rarely considered. Zota and Shamasunder[8] were the first to frame racial/ethnic inequalities in beauty product–related chemical exposures as an environmental justice concern. We posited that elevated exposures to beauty product chemicals in women of color are, in part, attributable to the "environmental injustice of beauty"—a framework that links intersectional systems of oppression (i.e., racism, sexism, classism) to racialized beauty practices, which, in turn, leads to unequal environmental exposures and poor health.[8]

Because of historical and ongoing racial discrimination and cultural imperialism, there is a hierarchy of global beauty norms that prioritizes whiteness and White femininity. For example, racism, sexism, and classism intersect in Black hair discrimination, which penalizes Black people, especially Black women, for wearing their hair in natural styles. Black hair discrimination often operates in the workplace: some employers discourage, or even prohibit, Black women from wearing natural hairstyles.[8,9] This form of intersectional discrimination can negatively affect professional opportunities for Black women and consequently their long-term wealth.[9] To comply with racialized beauty norms, Black women may feel pressure to straighten their hair using beauty products that contain harmful endocrine-disrupting chemicals, which can affect reproductive health.[8] Indeed, hair relaxer use is associated with an increased risk of fibroids among Black women.[10]

We encourage EH scientists to move beyond individual risk factors and examine intersections of racism and sexism as determinants of environmental exposures, especially for hazards that are shaped by social inequity. This type of research would increase the understanding of EH risks and help secure environmental justice by moving interventions further upstream. Analyses should jointly consider distal sources of pollution (e.g., racist housing policies such as redlining), exposure pathways (e.g., lead dust, air pollution), and biomarkers of exposure and response (e.g., blood lead, epigenetic modifications). This work would benefit from transdisciplinary collaborations that include experts from the social sciences and humanities. For example, our environmental injustice of beauty framework integrates theory and data from the social sciences, humanities, marketing, medicine, and public health.

RACE, ENVIRONMENT, AND THE FIBROID EPIGENOME

Fibroids are the most common tumor in women. Seventy percent of White women and more than 80% of Black women will have fibroids; severe symptoms develop in 15% to 30% of these women.[11] These noncancerous tumors of the uterus can substantially burden the millions of women they affect by contributing to pelvic pain, heavy bleeding, pregnancy complications, and infertility. Hysterectomy, the only permanent intervention, compromises women's ability to preserve fertility during their reproductive prime.[11]

Black women are disproportionately burdened by fibroids. They experience a higher risk of fibroids, an earlier age of onset, and more severe symptoms than do non-Black women.[12] Drivers of these racial inequalities are poorly understood. Most scientists in the field have conceptualized race as a biological factor and have focused on identifying molecular and genetic mechanisms responsible for racial disparities. Although isolated studies have found some biological differences in fibroids between Black and White women,[11] a recent study concluded that genetic and molecular differences do not explain the increased fibroid burden for Black women.[13] Therefore, there is a need to identify modifiable risk factors of fibroids and specifically examine how intersectional discrimination can become biologically embedded in Black women.

Because ovarian steroid hormones are crucial to the fibroid life cycle, we developed the FORGE study to evaluate the contribution of endocrine-disrupting chemical exposures to fibroid outcomes. Our study population included 57 premenopausal women undergoing surgery for fibroid management; participants were predominately Black, college educated, and privately insured. In our initial study, we observed positive associations between multiple phthalate metabolites and uterine volume, a clinically relevant measure of fibroid burden.[14] To examine mechanistic pathways linking phthalate exposures to fibroid biology, we quantified the expression of 754 microRNAs (miRNAs) in participants' fibroid tumors. We focused on miRNAs, noncoding RNA molecules that regulate posttranscriptional gene expression, because these epigenetic alterations are common internal measures of environmental exposures and miRNAs help regulate mechanisms important to fibroid development.[15]

We found that the expression of certain miRNAs in fibroid tissue was associated with phthalate biomarkers. We also observed that eight phthalate–miRNA associations significantly varied between Black women and Latina or White women.[15] We reject the premise that differences in phthalate–miRNA associations by race/ethnicity are attributable to biological differences between racial/ethnic groups. There were no significant differences in miRNA expression by race/ethnicity. Furthermore, a recent study that characterized the fibroid epigenome, exome, and transcriptome reported no differences in molecular subtypes of fibroids between Black and White women.[16] Rather, we conceptualize race as a social category. Racism and other social–structural stressors associated with race can influence a wide range of physical and psychosocial exposures.[17] Thus, our data support the idea that the epigenome may have the potential to act as a biological sensor of cumulative exposure to chemical and nonchemical stressors related to inequity.

There are substantial limitations to our preliminary analysis, including the small sample size, the cross-sectional study design, the inclusion of only one self-identified Latina participant, and the lack of data on racism, sexism, and intersectional discrimination. However, these compelling findings open the door to new hypotheses, which can be tested in future studies through an intersectional framework. We encourage researchers to use validated measures of gendered racism such as the Gendered Racial Microaggressions Scale, which captures the experience of racism and sexism simultaneously.[18] We also recommend that researchers differentiate between the social influence of race and the biological influence of genetic ancestry, which can differ between racial groups. Researchers typically account for the latter by genotyping blood samples for validated markers of continental ancestry and estimating admixture proportions.[17]

CENTERING GROUPS MARGINALIZED BY INEQUITY

A key tenet of intersectionality is that the experiences of people marginalized by inequity must always be the focal point—a concept that challenges the inherent biases of biomedical research.[6] For example, sexual and gender minorities at different intersections of race and class are often excluded from gynecologic research, which generally prioritizes the health issues of White, middle-class, cisgender, heterosexual women. Indeed, there are no published fibroid studies that include sexual and gender minorities, rendering these populations and their experiences empirically invisible.[19]

In an effort to recognize the intersectional realities of patients' lived experiences and address early challenges in recruitment, we expanded the FORGE study to include transgender men across intersections of race and class seeking gynecologic care as a unique control group because we aimed to recruit patients undergoing hysterectomies without fibroids. Some experts have questioned the appropriateness of transmen in fibroid research because hormonal therapy can affect biological mechanisms of gynecologic disease or complicate the traditional, epidemiologic definition of a "control." However, we argue that hormonal therapy should not be a reason to exclude transmen because ciswomen who use hormonal therapy for various reasons (e.g., birth control) are still included in fibroid studies.

If we maintain the status quo, our field will remain complicit in the omission of sexual and gender minorities in health research and help to perpetuate the marginalization of sexual and gender minorities. Because multiply marginalized populations may not be readily accessible using traditional sampling approaches, Bowleg and Bauer recommend respondent-driven sampling or time–space sampling as useful tools for intersectionality researchers.[19] Greater efforts to engage people at different intersectional positions in exposome studies will help ensure that scientific findings are more inclusive.

“Centering” marginalized groups also means ensuring that the research reflects the experiences of the population under study. As part of this effort, we conducted a qualitative study of Black women in the FORGE study to learn more about their health care experiences (VanNoy et al., unpublished) because fibroid treatments vary for women at different intersections of race, class, and gender. Black women are more likely to undergo hysterectomy than are White women, even after adjusting for socioeconomic status and fibroid characteristics.[12] Moreover, compared with non-Black women with private insurance, Black women with public health insurance are more likely to undergo open, abdominal surgeries than minimally invasive procedures.[12] These inequities underscore the historical and contemporary impacts of intersectional discrimination against Black women in obstetric and gynecologic settings (e.g., medical experimentation of enslaved Black women, forced sterilization, Black maternal mortality rates).[20] Indeed, poor patient–doctor interactions, including delayed diagnoses, limited treatment options offered, and feelings of mistrust and devaluation, were featured in many Black women’s treatment-seeking experiences (VanNoy et al., unpublished).

Compatible with intersectionality, the structural competency framework posits that patients’ health care experiences extend beyond interpersonal interactions with clinicians and are also shaped by macro-social–structural factors (e.g., infrastructure, institutional discrimination) that drive health inequities.[21] Our qualitative findings reinforce this concept by shedding important insight into how upstream factors, such as discrimination in health care settings and community norms about reproductive health, can influence fibroid treatment decisions (VanNoy et al., unpublished). Clinicians and researchers must be trained to not only address their own biases but also recognize and address the historical and social–structural context within which Black women seek clinical care. In practice, this means prioritizing the unique perspectives and experiences of Black women, offering a range of management options, and partnering with communities to disseminate culturally relevant information on fibroids that minimizes structural barriers to medical care. These efforts can increase structurally competent clinical care for Black women and help reduce racial inequities in fibroid outcomes and treatment.

METHODOLOGIC AND STATISTICAL CONSIDERATIONS

Although researchers have primarily relied on qualitative methods to investigate intersectionality, applications of intersectionality in quantitative research are emerging.[7,22] Else-Quest and Hyde assert that intersectionality can be applied to multiple aspects of the quantitative research process, including theory, study design, sampling techniques, measurements, data analysis, and data interpretation.[23] Because of space constraints, we focus our discussion on data analytic strategies for advancing intersectionality in exposome research.

Epidemiologic measures of statistical interaction, such as multiplicative product terms in regression models, are commonly used to evaluate the health impacts of multiple social identities. Jackson et al. have proposed the “joint disparity” measure to describe the excess intersectional disparity that pertains to dually marginalized groups.[24] However cross-product terms and joint disparity measures focus mostly on social identities and not systems of oppression. Multilevel modeling is one approach that allows for explicit examination of the interplay between individual factors (e.g., personal identity) and group-level processes (e.g., structural discrimination).[22]

Mediation analysis can be a useful tool to estimate the extent to which racial inequalities in health outcomes are mediated by environmental exposures. These methods can be modified to examine environmental mediators of intersectional health inequities. Lastly, some of the methods employed to analyze complex environmental mixtures in exposome studies may be relevant. For example, unsupervised methods such as principal components analysis and latent class analysis organize a population into mutually exclusive and exhaustive classes or subgroups on the basis of exposures or other characteristics. In exposome studies with high-dimensional exposure data, these techniques can help to identify subgroups with similar environmental exposures. In intersectionality research, these techniques have been used to identify subgroups with similar experiences of disadvantage or privilege.[23,25] Because many of our traditional statistical tools are directly challenged by intersectionality, which examines inequity across multiple (nonadditive) social and structural dimensions, method development for quantifying intersectionality is an area of ongoing research.[7]

CONCLUSIONS

Despite advancements in the biological complexity of exposome models, they continue to fall short in advancing health equity and securing environmental justice. Because health relies on the confluence of biological and social–structural determinants across the life course and is affected by dynamic intersectional positions, integrating intersectionality into the exposome may be a promising approach for addressing these shortcomings.

Integrating intersectionality may seem like a daunting task. To increase feasibility, we have introduced key concepts and tools for EH scientists interested in operationalizing intersectionality and discussed applications of our proposed approach from the FORGE study on racial inequities in fibroids. Furthermore, as Agenor[22] explains, population health scientists interested in intersectionality can design interrelated studies that together provide an intersectional analysis on a health issue. However, the integration of intersectionality into the exposome is not simple, and innovation in theory, study design, sampling, measurement, and analytic methodologies is required to realize the power of the proposed framework. We hope the benefits, challenges, and recommendations discussed will inform the next generation of exposome studies.

ABOUT THE AUTHORS

Ami R. Zota and Brianna N. VanNoy are affiliated with the Department of Environmental and Occupational Health, Milken Institute School of Public Health, The George Washington University, Washington, DC.

CORRESPONDENCE

Correspondence should be sent to Ami R. Zota, ScD, MS, Department of Environmental and Occupational Health, Milken Institute School of Public Health, The George Washington University, 950 New Hampshire Ave NW, Washington, DC 20052 (e-mail: azota@gwu.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Zota AR, VanNoy BN. Integrating intersectionality into the exposome paradigm: a novel approach to racial inequities in uterine fibroids. *Am J Public Health*. 2021;111(1):104–109.

Acceptance Date: September 15, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305979

CONTRIBUTORS

A. R. Zota led the conceptual development, writing, and editing of the article. B. N. VanNoy led the figure development and writing of the third case study and provided critical feedback and edits on all other aspects of the article.

ACKNOWLEDGMENTS

This work was supported by the Eunice Kennedy Shriver National Institute of Child Health and Development (grant R21HD096248), the National Institute of Environmental Health Sciences (R00ES019881), the National Center for Advancing Translational Sciences (grants UL1TR001876, KL2TR001877), The George Washington University Milken Institute School of Public Health (Research Innovations Award Program, Springboard Program), and The George Washington University Office of the Vice President for Research (Cross-disciplinary Research Fund).

We thank Lisa Bowleg, PhD, for providing thoughtful feedback on earlier drafts of the commentary.

Note. The content of this article is solely the responsibility of the authors and does not necessarily represent the official views of any of the funding agencies.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

HUMAN PARTICIPANT PROTECTION

The George Washington University institutional review board approved the research activities described in this commentary.

REFERENCES

1. Wild CP. The exposome: from concept to utility. *Int J Epidemiol*. 2012;41(1):24–32. https://doi.org/10.1093/ije/dyr236
2. Stingone JA, Buck Louis GM, Nakayama SF, et al. Toward greater implementation of the exposome research paradigm within environmental epidemiology. *Annu Rev Public Health*. 2017;38:315–327. https://doi.org/10.1146/annurev-publhealth-082516-012750
3. Juarez PD, Matthews-Juarez P, Hood DB, et al. The public health exposome: a population-based, exposure science approach to health disparities research. *Int J Environ Res Public Health*. 2014;11(12):12866–12895. https://doi.org/10.3390/ijerph111212866
4. Senier L, Brown P, Shostak S, Hanna B. The socio-exposome: advancing exposure science and environmental justice in a postgenomic era. *Environ Sociol*. 2017;3(2):107–121. https://doi.org/10.1080/23251042.2016.1220848
5. Crenshaw K. Mapping the margins: intersectionality, identity politics, and violence against women of color. *Stanford Law Review*. 1991;43(6):1241–1299.
6. Bowleg L. The problem with the phrase *women and minorities*: intersectionality—an important theoretical framework for public health. *Am J Public Health*. 2012;102(7):1267–1273. https://doi.org/10.2105/AJPH.2012.300750
7. Bauer GR. Incorporating intersectionality theory into population health research methodology: challenges and the potential to advance health equity. *Soc Sci Med*. 2014;110:10–17. https://doi.org/10.1016/j.socscimed.2014.03.022
8. Zota AR, Shamasunder B. The environmental injustice of beauty: framing chemical exposures from beauty products as a health disparities concern. *Am J Obstet Gynecol*. 2017;217(4):418e1–418e6. https://doi.org/10.1016/j.ajog.2017.07.020
9. Caldwell PM. A hair piece: perspectives on the intersection of race and gender. *Duke Law Journal*. 1991:365–396.
10. Wise LA, Palmer JR, Reich D, Cozier YC, Rosenberg L. Hair relaxer use and risk of uterine leiomyomata in African-American women. *Am J Epidemiol*. 2012;175(5):432–440. https://doi.org/10.1093/aje/kwr351
11. Bulun SE. Uterine fibroids. *N Engl J Med*. 2013;369(14):1344–1355. https://doi.org/10.1056/NEJMra1209993
12. Eltoukhi HM, Modi MN, Weston M, Armstrong AY, Stewart EA. The health disparities of uterine fibroid tumors for African American women: a public health issue. *Am J Obstet Gynecol*. 2014;210(3):194–199. https://doi.org/10.1016/j.ajog.2013.08.008
13. Hayden MA, Ordulu Z, Gallagher CS, et al. Clinical, pathologic, cytogenetic, and molecular profiling in self-identified Black women with uterine leiomyomata. *Cancer Genet*. 2018;222–223:1–8. https://doi.org/10.1016/j.cancergen.2018.01.001
14. Zota AR, Geller RJ, Calafat AM, Marfori CQ, Baccarelli AA, Moawad GN. Phthalates exposure and uterine fibroid burden among women undergoing surgical

treatment for fibroids: a preliminary study. *Fertil Steril*. 2019;111(1):112–121. https://doi.org/10.1016/j.fertnstert.2018.09.009

15. Zota AR, Geller RJ, VanNoy BN, et al. Phthalate exposures and MicroRNA expression in uterine fibroids: the FORGE study. *Epigenet Insights*. 2020;13:2516865720904057. https://doi.org/10.1177/2516865720904057
16. George JW, Fan H, Johnson B, et al. Integrated epigenome, exome, and transcriptome analyses reveal molecular subtypes and homeotic transformation in uterine fibroids. *Cell Rep*. 2019;29(12):4069–4085.e6. https://doi.org/10.1016/j.celrep.2019.11.077
17. Rehkopf DH, Needham BL. The impact of race and ethnicity in the social epigenomic regulation of disease. In: Ferguson BS, ed. *Nutritional Epigenomics*. London, England: Academic Press; 2019;51–65. https://doi.org/10.1016/B978-0-12-816843-1.00004-7
18. Lewis JA, Neville HA. Construction and initial validation of the Gendered Racial Microaggressions Scale for Black women. *J Couns Psychol*. 2015;62(2):289–302. https://doi.org/10.1037/cou0000062
19. Bowleg L, Bauer G. Invited reflection: quantifying intersectionality. *Psychol Women Q*. 2016;40(3):337–341. https://doi.org/10.1177/0361684316654282
20. Prather C, Fuller TR, Jeffries WL IV, et al. Racism, African American women, and their sexual and reproductive health: a review of historical and contemporary evidence and implications for health equity. *Health Equity*. 2018;2(1):249–259. https://doi.org/10.1089/heq.2017.0045
21. Metzl JM, Hansen H. Structural competency: theorizing a new medical engagement with stigma and inequality. *Soc Sci Med*. 2014;103:126–133. https://doi.org/10.1016/j.socscimed.2013.06.032
22. Agénor M. Future directions for incorporating intersectionality into quantitative population health research. *Am J Public Health*. 2020;110(6):803–806. https://doi.org/10.2105/AJPH.2020.305610
23. Else-Quest NM, Hyde JS. Intersectionality in quantitative psychological research: II. Methods and techniques. *Psychol Women Q*. 2016;40(3):319–336. https://doi.org/10.1177/0361684316647953
24. Jackson JW, Williams DR, VanderWeele TJ. Disparities at the intersection of marginalized groups. *Soc Psychiatry Psychiatr Epidemiol*. 2016;51(10):1349–1359. https://doi.org/10.1007/s00127-016-1276-6
25. Gibson EA, Nunez Y, Abuawad A, et al. An overview of methods to address distinct research questions on environmental mixtures: an application to persistent organic pollutants and leukocyte telomere length. *Environ Health*. 2019;18(1):76. https://doi.org/10.1186/s12940-019-0515-1

Preventing the Spread of COVID-19 in Immigration Detention Centers Requires the Release of Detainees

William D. Lopez, PhD, MPH, Nolan Kline, PhD, MPH, CPH, Alana M. W. LeBrón, PhD, MS, Nicole L. Novak, PhD, MSc, Maria-Elena De Trinidad Young, PhD, MPH, Gregg Gonsalves, PhD, Ranit Mishori, MD, MHS, FAAFP, Basil A. Safi, MPH, PE, and Ian M. Kysel, JD, LLM

Immigration detention centers are densely populated facilities in which restrictive conditions limit detainees' abilities to engage in social distancing or hygiene practices designed to prevent the spread of COVID-19. With tens of thousands of adults and children in more than 200 immigration detention centers across the United States, immigration detention centers are likely to experience COVID-19 outbreaks and add substantially to the population of those infected.

Despite compelling evidence indicating a heightened risk of infection among detainees, state and federal governments have done little to protect the health of detained im-migrants. An evidence-based public health framework must guide the COVID-19 response in immigration detention centers.

We draw on the hierarchy of controls framework to demonstrate how immigration detention centers are failing to implement even the least effective control strategies. Drawing on this framework and recent legal and medical advocacy efforts, we argue that safely releasing detainees from immigration detention centers into their communities is the most effective way to prevent COVID-19 outbreaks in immigration detention settings. Failure to do so will result in infection and death among those detained and deepen existing health and social inequities. (*Am J Public Health*. 2021;111:110–115. https://doi.org/10.2105/AJPH.2020.305968)

AJPH January 2021, Vol 111, No. 1

As of September 3, 2020, the Centers for Disease Control and Prevention (CDC) has reported 185 092 deaths and over six million infections in the United States due to the novel coronavirus, SARS-CoV-2.[1] Both the CDC and the World Health Organization declared COVID-19, the disease caused by SARS-CoV-2, a pandemic.[2] The patchwork of US national, state, and local responses to the pandemic has left vulnerable populations unprotected and highly susceptible to the virus and to developing COVID-19. Not surprisingly, COVID-19 cases and deaths are concentrated in low-income communities of color,[3] reflecting the powerful influences of the social determinants of health and the enduring structural inequities that are exacerbated by the pandemic. There are several types of settings—including prisons, meatpacking plants, and nursing homes—in which population density and unsanitary conditions have led to large, concentrated outbreaks of infection.[4]

In the United States, tens of thousands of adults and children held in over 200 immigration detention centers are uniquely vulnerable to coronavirus outbreaks. The most recent data from Immigration and Customs Enforcement (ICE) show that in 2019, the average length of stay in ICE detention centers was 46 days.[5] Most people in immigration detention centers are held in facilities operated by private companies, often in decommissioned jails or prisons.[6] Conditions in many detention centers have historically been found to be quite poor—with overcrowding, subpar medical care, and the presence of environmental hazards—according to investigations by the media, watchdog organizations, and the Department of Homeland Security (DHS) Office of Inspector General.[7] In addition, infectious disease outbreaks in these facilities are common.[8] The prevalent conditions of overcrowding and medical neglect are directly relevant to attempts to control outbreaks of COVID-19. An evidence-based public health framework must guide the COVID-19 response in immigration detention centers.

In this commentary, we draw on the hierarchy of controls framework to argue that safely releasing detainees from immigration detention centers into their communities is the most effective way to prevent the spread of COVID-19 in these settings. Failure to do so will result in infection and death from a novel communicable disease and deepen inequities for a population group that already experiences many structural and systemic threats to health and well-being.[9]

EVIDENCE-BASED FRAMEWORK TO CONTROL COVID-19

The hierarchy of controls framework,[10] often used in occupational safety, is a useful framework for classifying different approaches to controlling hazard exposures, including infectious pathogens. The framework has previously been used to discuss infection control for staff and inmates in carceral settings.[11] The framework guides attention and focus for mitigating risk when unrelated individuals are sharing spaces and engaging in group activities by identifying multiple levels of strategies for controlling hazards. These strategies include the use of personal protective equipment (PPE), administrative controls that change the day-to-day workflow of the environment, engineering controls that isolate people from the hazard, and elimination or removal of the hazard from the physical environment (Figure 1). The controls on the bottom of the pyramid, such as the use of PPE, are least effective, whereas the controls at the top of the pyramid are most effective.

COVID-19 as a Hazard in Detention Centers

The virus that causes COVID-19 is highly contagious. A recent meta-analysis found an R0 (the basic reproduction number of a virus) of 2.79 for novel coronavirus, meaning that one infected person—in a completely susceptible population in a community setting—would infect nearly three people.[12] A separate study estimated a median R0 of 5.7.[13] Seasonal influenza, by contrast, has an average R0 of 1.3,[14] suggesting that SARS-CoV-2 is multiple times more contagious than seasonal influenza. The context in which the transmission occurs affects the basic reproduction number, leading to more secondary infections in densely populated settings. One study that modeled R0 after the outbreak on the Diamond Princess, a densely populated cruise ship, estimated R0 to be an astonishingly high 14.8.[15]

Immigration detention centers—the largest of which are repurposed jails or prisons now run by private contractors[6]—have space and population densities similar to those of cruise ships, but have poor conditions of confinement alongside frequently documented detainee neglect.[6,7] Often overcrowded, generally with shared communal living, eating, and lavatory spaces, little capacity for hygienic practices, and frequent interaction between guards, staff, and detainees, detention center conditions aggravate the risk of SARS-CoV-2 infection. One study[16] modeled the growth of SARS-CoV-2 cases in immigration detention centers, finding that optimistically assuming an R0 of 2.5, between 72% and 80% of detainees could become infected within 90 days. As of September 2,′ 2020 at 2:15 PM, ICE reported that 5416 individuals currently or formerly in ICE custody and 45 ICE employees working in immigration detention centers had tested positive for COVID-19 (employee infection rate updated as of June 18, 2020). Six detainees have died after testing positive for SAR-CoV-2.[17]

Stopping the Spread of COVID-19

Viewed through the hierarchy of controls framework, COVID-19 control measures thus far applied—such as separating groups of detainees, limiting visitors, providing PPEs, and changing cleaning practices—have focused on administrative controls, which are located at the lower, less effective end of the control pyramid.[10] These measures have been central to the broader public health approach to containing the spread of SARS-CoV-2; when properly implemented in other settings, they have significantly reduced the risk of virus spread from both symptomatic and asymptomatic carriers. However, they are extremely challenging to implement in the densely populated infrastructure of immigration detention centers specifically designed to decrease distance between detainees to facilitate surveillance. Further, even if these measures were feasible, ICE's previous track record of failing to implement hygiene practices casts doubt on its ability to effectively implement even the most basic PPE and administrative controls. Prior to the COVID-19 pandemic, the DHS Office of Inspector General reported numerous health standards violations in ICE detention centers, including spoiled food, inadequate medical facilities, dilapidated bathrooms, and lack of clothing and hygiene items.[7] If this is any indication of ICE's ability to effectively implement the most basic controls—already the least effective methods of infection control—infection rates in immigration detention centers are likely to increase rapidly among the detained population.

Finally, in places with vulnerable populations under space constraints, such as immigration detention centers,

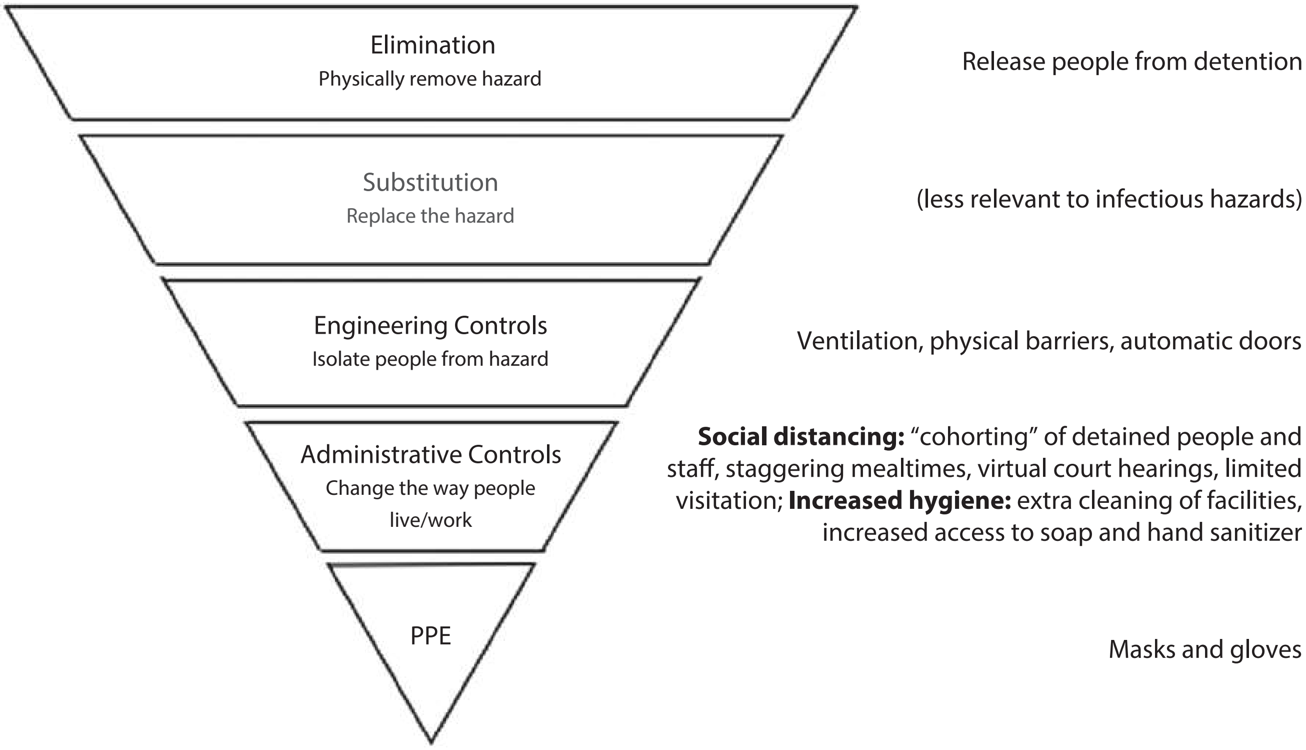


FIGURE 1— Effectiveness of COVID-19 Controls in Immigration Detention Settings

Note. PPE = personal protective equipment. Figure presents a hierarchy of controls as applied to COVID-19 control in immigration detention. The width of the pyramid corresponds to the effectiveness of the control strategy.
Source. Adapted from the National Institute of Occupational Safety and Health (https://www.cdc.gov/niosh/topics/hierarchy/default.html).

regular, frequent testing for SARS-CoV-2 can provide early warning of an outbreak and is a crucial part of disease control.[18] This is particularly important because a spike in coronavirus infections among detainees would likely overwhelm immigration detention centers' medical facilities, which lack the capacity and necessary supplies to handle such outbreaks. Immigration detention centers would thus be forced to rely on community hospitals and health care facilities, contributing to the mounting stress on nearby medical institutions. This could be especially catastrophic in rural and remote areas, where many immigration detention centers are located. One study found that outbreaks in only 7% of ICE facilities would overwhelm intensive care unit beds within a 50-mile radius of those facilities over a 90-day period.[16]

Release Detainees Into Safe Environments

Given the barriers to effective implementation of PPE and administrative controls to prevent the spread of SARS-CoV-2 in immigration detention centers, an evidence-based public health approach suggests moving up the hierarchy of controls to more effective measures. Engineering controls, such as added ventilation, negative pressure rooms, building additional cells that house only one person, or the use of alternative spaces such as trailers and automatic doors, are expensive, difficult to implement quickly, and highly unlikely because of the profit-maximization missions of the corporations that operate many immigration detention centers. Thus, the public health response to the pandemic must include COVID-19 controls in the "elimination" level of the hierarchy of controls. Specifically, we advocate for the release of detainees from immigration detention centers, as this strategy will reduce the likelihood of person-to-person infection and enhance the possibility of engaging in meaningful social distancing and hygienic practices as directed by the CDC. In other similar settings, such as prisons and jails, corrections officials have suggested the release of incarcerated individuals as a critical step in preventing the spread of SARS-CoV-2, and several states have released thousands of prisoners over the past few months.[19] Immigration detention centers should follow suit to prevent and reduce the scale of outbreaks of COVID-19.

We do not advocate for selective release or mass deportation of detainees as infection control measures. Selective release can be inconsistent, arbitrary, and discriminatory. Additionally, selective release would be insufficient to prevent outbreaks, as detention centers are specifically designed to cluster populations in spaces that allow for efficient surveillance and control. Similarly, mass deportation to prevent outbreaks of COVID-19 is not only inhumane, potentially accelerating the spread of SAR-CoV-2 to vulnerable communities abroad, but is also not permissible under the legal protections afforded to immigrants in deportation proceedings: deportation is generally the result of an administrative determination regarding a detainee's status in the United States, and immigration enforcement officials cannot simply subvert this process. Accordingly, our recommendation for the release of detainees not only comports with established, evidence-based public health practice but is also consistent with current law.

There are concerns that the conditions into which detainees would be released would not eliminate the risk of SARS-CoV-2 exposure in their communities. Although it is true that moving from detention to a community setting would not eliminate risk of infection entirely, individuals can more safely isolate and engage in social distancing and hygiene practices in community settings, and could seek diagnostic testing or––should they become infected––health care from nonprofit organizations, charitable clinics, or community health centers that are better resourced than immigration detention centers.

Others have warned about "spillover" infections from immigration detention centers to receiving communities.[20] But this spillover risk is already occurring: first, as guards and staff commute from immigration detention centers to home communities, and secondly, during transfers of detainees from one detention center to another. ICE has reported[21] that they do not test detainees prior to transfer unless detainees present symptoms of SARS-CoV-2 infection (although, reportedly, the symptom screening practiced by ICE is not comprehensive and may miss individuals presenting with less common coronavirus symptoms). This has resulted in the transfer of asymptomatic individuals to other facilities, or of those with less common symptoms, resulting in more outbreaks. In Broward County, Florida, for example, of 33 detainees recently transferred from detention in Miami–Dade County, 16 later tested positive.[21] In one recent study,[20] researchers highlighted the benefits of prison release for low-risk offenders, and further considered the relationship between "jail cycling"—or arrest and subsequent cycling in and then out of jails while awaiting hearings and trial—and community infection rates of SARS-CoV-2 at the zip code level in Chicago. The authors found that this jail cycling is associated with nearly 16% of all documented COVID-19 cases in Illinois. These findings are relevant to the current commentary for two reasons. First, the authors do not interpret these data as illustrative of the risks posed by the release of those incarcerated, but rather of the community risk created by the incarceration system: "[A]s arrested individuals are exposed to high-risk spaces for infection in jails and then later released to their communities, the criminal justice system is turning them into potential disease vectors for their families, neighbors, and, ultimately, the general public."[20(p1417)] In the current case, immigration detention is not only creating "potential disease vectors" for communities in the United States, but also transporting these infections abroad by continuing to deport immigrants without protective measures in place.[22] Secondly, DHS has discretion to release many immigration detainees while the administrative proceedings regarding their civil immigration status are pending; immigration proceedings are not a direct analog to criminal proceedings and operate independently of any state or federal criminal proceedings.

Yet it is certainly possible for infections to move from immigration detention centers to communities upon release. Thus, releasing detainees must be done safely and with appropriate public health guidelines in place. Although a full description of efforts to increase the safety of detainee release is beyond the scope of this commentary, guidelines from the Women's Refugee Commission, in collaboration with Physicians for Human Rights and Freedom for Immigrants, has been publicly available.[23] The guidelines—written for both ICE and receiving communities—consider preparation of medical documentation, health and treatment summaries, communication with lawyers and sponsors about symptoms, suggestions for appropriate preventive measures prior to release, safe transportation from detention to community settings, and risk mitigation strategies at the final destination. Notably, the recommendations argue that "Release should not be halted if the individual is showing symptoms, because release will facilitate isolation and prevent further spread within the detention center and the community."[23]

Release Detainees for Public Health

Detainees and their advocates have taken social and legal action to promote release from detention centers; yet although apprehensions and detention numbers have declined, relatively few immigrants have been released as a result of these efforts. These efforts have included encouraging congressional committees with jurisdiction over the DHS to engage in oversight that protects detainees, as well as filing complaints with the DHS Office for Civil Rights and Civil Liberties and the DHS Office of Inspector General. Advocates and detainees have also made requests for bond redetermination or parole in the cases of those who might be eligible for discretionary release. In federal courts, litigation efforts range from individual petitions challenging the legality of continued detention in light of the COVID-19 pandemic to complex class action cases seeking broader release or reform. At the state and local level, advocacy efforts have also included pressure on state policymakers and local law enforcement to stop all transfers to ICE during the pandemic. Further, there are readily available evidence-based alternatives to detention through which community-based organizations provide support and guidance to immigrants as they navigate court appointments and other aspects of their immigration case while living in their communities. Regardless of such programs, data show high rates of hearing attendance generally; a recent review of immigration court data from 2008 to 2018 found that 83% of immigrants who were not detained attended all their hearings.[24]

In the current political climate, the COVID-19 pandemic has exacerbated immigrant communities' existing vulnerabilities. The federal government has leveraged the pandemic to enforce increasingly restrictive immigration policies, including the deportation of migrant children, effectively closing the US land borders, suspending visa processing, and attempting to bar international students from using student visas if their course instruction moved online. These efforts subordinate public health–focused interventions to address the pandemic. Accordingly, reducing the detained population is not only a logical, public health–oriented, and humane next step necessary to save lives,[25] but it also combats political efforts to use the pandemic as a mechanism for expanding aggressive immigration enforcement efforts. Releasing detainees is a public health imperative. AJPH

ABOUT THE AUTHORS

William D. Lopez is with the University of Michigan School of Public Health, Ann Arbor. Nolan Kline is with the Department of Anthropology, Rollins College, Winter Park, FL. Alana M. W. LeBrón is with the Department of Health, Society, and Behavior and Department of Chicano/Latino Studies, University of California, Irvine. Nicole L. Novak is with the Department of Community and Behavioral Health, University of Iowa College of Public Health, Iowa City. Maria-Elena De Trinidad Young is with the Department of Public Health, School of Social Sciences, Humanities, and Arts, University of California, Merced. Gregg Gonsalves is with Public Health Modeling Unit, Department of Epidemiology of Microbial Diseases, Yale School of Public Health, New Haven, CT. Ranit Mishori is with Physicians for Human Rights, Washington, DC. Basil A. Safi is with the Office of Engagement Initiatives, Cornell University, Ithaca, NY. Ian M. Kysel is with the Cornell Law School, Ithaca, NY.

CORRESPONDENCE

Correspondence should be sent to Maria-Elena De Trinidad Young, PhD, MPH, Department of Public Health, Social Sciences, Humanities and Arts, University of California, Merced, 5200 N Lake Road, Merced, CA 95343 (e-mail: mariaelena@ucmerced.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Lopez WD, Kline N, LeBrón A, et al. Preventing the spread of COVID-19 in immigration detention centers requires the release of detainees. *Am J Public Health*. 2021;111(1):110–115.

Acceptance Date: September 6, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305968

CONTRIBUTORS

W. D. Lopez, N. Kline, A. M. W. LeBrón, N. L. Novak, and M.-E. Young conceptualized the commentary, and all authors contributed to the writing.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

REFERENCES

1. Centers for Disease Control and Prevention. Cases in the US. September 3, 2020. Available at: https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html. Accessed September 4, 2020.
2. World Health Organization. Preparedness, prevention and control of COVID-19 in prisons and other places of detention. March 15, 2020. Available at: http://www.euro.who.int/__data/assets/pdf_file/0019/434026/Preparedness-prevention-and-control-of-COVID-19-in-prisons.pdf?ua=1. Accessed July 10, 2020.
3. Garg S, Kim L, Whitaker M, et al. Hospitalization rates and characteristics of patients hospitalized with laboratory-confirmed coronavirus disease 2019—COVID-NET, 14 states, March 1–30, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(15):458–464. https://doi.org/10.15585/mmwr.mm6915e3
4. Frieden TR, Lee CT. Identifying and interrupting superspreading events—implications for control of severe acute respiratory syndrome coronavirus 2. *Emerg Infect Dis*. 2020;26(6):1059–1066. https://doi.org/10.3201/eid2606.200495
5. Dias I. ICE is detaining more people than ever—and for longer. Pacific Standard. August 1, 2019. Available at: https://psmag.com/news/ice-is-detaining-more-people-than-ever-and-for-longer. Accessed July 10, 2020.
6. Cho EH, Tidwell Cullen T, Long C. Justice-free zones: US immigration detention under Trump. ACLU Research Report. 2020. Available at: https://www.hrw.org/sites/default/files/supporting_resources/justice_free_zones_immigrant_detention.pdf. Accessed September 4, 2020.
7. Office of the Inspector General. Concerns about ICE detainee treatment and care at four detention facilities. June 3, 2019. Available at: https://www.oig.dhs.gov/sites/default/files/assets/2019-06/OIG-19-47-Jun19.pdf. Accessed September 4, 2020.
8. Leung J, Elson D, Cloud B, et al. Mumps in detention facilities that house detained migrants—United States, September 2018–April 2019. *Open Forum Infect Dis*. 2019;6(suppl 2):S589–S590. https://doi.org/10.1093/ofid/ofz360.1481
9. Ornelas IJ, Yamanis TJ, Ruiz RA. The health of undocumented Latinx immigrants: what we know and future directions. *Annu Rev Public Health*. 2020;41(1):289–308. https://doi.org/10.1146/annurev-publhealth-040119-094211

10. The National Institute for Occupational Safety and Health. Hierarchy of controls: overview. January 13, 2015. Available at: https://www.cdc.gov/niosh/topics/hierarchy/default.html. Accessed July 10, 2020.
11. Francis J. Curry National Tuberculosis Center and California Dept of Health Services. Tuberculosis infection control plan template for jails. 2002. Available at: http://www.tb-ipcp.co.za/downloads/training/files/buildingDesign_2012/References/FJCurry_2002_TBICPlanTemplateforJails.pdf. Accessed September 4, 2020.
12. Liu Y, Gayle AA, Wilder-Smith A, Rocklöv J. The reproductive number of COVID-19 is higher compared to SARS coronavirus. *J Travel Med*. 2020;27(2):taaa021. https://doi.org/10.1093/jtm/taaa021
13. Sanche S, Lin YT, Xu C, Romero-Severson E, Hengartner N, Ke R. High contagiousness and rapid spread of severe acute respiratory syndrome coronavirus 2. *Emerg Infect Dis*. 2020;26(7):1470–1477. https://doi.org/10.3201/eid2607.200282
14. Biggerstaff M, Cauchemez S, Reed C, Gambhir M, Finelli L. Estimates of the reproduction number for seasonal, pandemic, and zoonotic influenza: a systematic review of the literature. *BMC Infect Dis*. 2014;14:480. https://doi.org/10.1186/1471-2334-14-480
15. Rocklöv J, Sjödin H, Wilder-Smith A. COVID-19 outbreak on the Diamond Princess cruise ship: estimating the epidemic potential and effectiveness of public health countermeasures. *J Travel Med*. 2020;27(3):taaa030. https://doi.org/10.1093/jtm/taaa030
16. Irvine M, Coombs D, Skarha J, et al. Modeling COVID-19 and impacts on US Immigration and Enforcement (ICE) detention facilities, 2020. *J Urban Health*. 2020;97(4):439–447.
17. US Immigration and Customs Enforcement. ICE guidance on COVID-19. September 2, 2020. Available at: https://www.ice.gov/coronavirus. Accessed September 4, 2020.
18. Malloy GSP, Puglisi L, Brandeau, ML, Harvey, TD, Wang EA. The effectiveness of interventions to reduce COVID-19 transmission in a large urban jail. *medRxiv*. June 18, 2020. https://doi.org/10.1101/2020.06.16.20133280
19. Prison Policy Initiative. Responses to the COVID-19 pandemic. May 12, 2020. Available at: https://www.prisonpolicy.org/virus/virusresponse.html. Accessed May 12, 2020.
20. Reinhard E, Chen D. Incarceration and its disseminations: COVID-19 pandemic lessons from Chicago's Cook County Jail. *Health Aff*. 2020;Epub ahead of print June 4, 2020. https://doi.org/10.1377/hlthaff.2020.00652
21. Madan MO. ICE admits to transferring detainees with COVID-19, says it can't test everybody. *Miami Herald*. May 27, 2020. Available at: https://www.miamiherald.com/news/local/immigration/article243031176.html. Accessed July 20, 2020.
22. Blitzer J. The Trump administration's deportation policy is spreading the coronavirus. *The New Yorker*. May 13, 2020. Available at: https://www.newyorker.com/news/daily-comment/the-trump-administrations-deportation-policy-is-spreading-the-coronavirus. Accessed July 20, 2020.
23. Women's Refugee Commission. Recommendations for safe release procedures from immigration detention during the COVID-19 pandemic. May 28, 2020. Available at: https://www.womensrefugeecommission.org/research-resources/recommendations-safe-release-procedures-immigration-detention-covid-19. Accessed July 20, 2020.
24. Eagly I, Shafer S. Measuring in absentia removal in immigration court. *U Penn Law Rev*. 2020;168(4):817–876. Available at: https://www.pennlawreview.com/wp-content/uploads/2020/06/Eagly-Shafer_Final.pdf. Accessed November 4, 2020.
25. Ferrer B. Immigrant health: anchoring public health practice in a justice framework. *Am J Public Health*. 2019;109(9):1156–1157. https://doi.org/10.2105/AJPH.2019.305235

A Safety Net Unraveling: Feeding Young Children During COVID-19

Katherine W. Bauer, PhD, Jamie F. Chriqui, PhD, MHS, Tatiana Andreyeva, PhD, Erica L. Kenney, ScD, Virginia C. Stage, RDN, LDN, Dipti Dev, PhD, Laura Lessard, PhD, MPH, Caree J. Cotwright, RDN, LDN, PhD, and Alison Tovar, PhD, MPH

The emergence of COVID-19 in the United States led most states to close or severely limit the capacity of their early child-care and education (ECE) programs. This loss affected millions of young children, including many of the 4.6 million low-income children who are provided free meals and snacks by their ECE programs through support from the federal Child and Adult Care Food Program (CACFP).

Although Congress swiftly authorized waivers that would allow CACFP-participating ECE programs to continue distributing food to children, early evidence suggests that most ECE programs did not have the capacity to do so, leaving a fragmented system of federal, state, and local food programs to fill the gaps created by this loss.

Critical steps are needed to repair our nation's fragile ECE system, including greater investment in CACFP, to ensure the nutrition, health, and development of young children during the COVID-19 pandemic and beyond. (*Am J Public Health*. 2021;111:116–120. https://doi.org/10.2105/AJPH.2020.305980)

As COVID-19 took hold across the United States, most states ordered early child-care and education (ECE) programs closed or severely limited their enrollment.[1] This loss affected millions of families.[2] ECE allows parents to participate in the workforce[3] and supports children's academic readiness and social and emotional development.[4] However, an additional and often forgotten role of ECE is that many child-care centers and family child-care homes provide healthy meals and snacks to children for free or at a reduced cost to families. The federal Child and Adult Care Food Program (CACFP) is the primary source of funds for this food.[5]

In 2019, CACFP reimbursed more than 150 000 centers and homes for meals and snacks fed to approximately 4.6 million children.[6] Notably, because CACFP eligibility is determined at the ECE site level instead of the child level, CACFP serves both low-income children and other nutritionally vulnerable children whose household incomes are too high to qualify them for other forms of federal food assistance.

CACFP clearly benefits young children. CACFP-participating ECE programs provide healthier meals and snacks than those served by nonparticipating programs[7–9] and in children's own homes.[10] CACFP meals and snacks also save families money and reduce food insecurity.[11] CACFP reimburses child-care providers in the contiguous United States up to $6.36 per child per day in food costs,[12] allowing families to use the money that would have been spent on these meals and snacks on other essential expenses. The loss of CACFP-supported meals, compounded by loss of income during COVID-19, is likely devastating for many families.

Recognizing the potential for harm resulting from the loss of ECE-provided meals, the Families First Coronavirus Response Act,[13] signed into law on March 18, 2020, authorized the US Department of Agriculture to offer several waivers for CACFP implementation that will continue through the 2020–2021 school year. These waivers enable CACFP-participating programs to distribute meals directly to families through "grab and go" programs and provide flexibility in monitoring compliance and claiming reimbursements.

This rapid action allowed some ECE programs to continue providing food to children who had reduced their attendance or stopped attending. However, many ECE programs were already closed or had limited operational capacity by the time the waivers were provided. Nationwide, there was a dramatic drop in meals served once shelter-in-place orders spread across the country, with 35% fewer CACFP-reimbursed meals served in child-care centers and family child-care homes in April 2020 than in April 2019.[14]

For example, in Illinois, only approximately 60% of homes and 15% of centers continued to provide CACFP-reimbursable food to children during the state-mandated shelter-in-place order. In Connecticut, approximately 80% of CACFP-participating centers closed in spring 2020, and only a small fraction of those that closed (15%) continued to provide CACFP-reimbursable food. Finally, in Rhode Island, all ECE programs were ordered closed and only two centers continued to provide CACFP-reimbursable meals. Nationwide reimbursement data and state-specific examples such as these can provide some insight into the extent of the loss of the CACFP benefit. However, because there is a lack of consistent infrastructure across states to monitor program or child enrollment in CACFP, the full impact of the loss of CACFP-sponsored food on children and families may never be known.

ECE programs' limited ability to feed young children during COVID-19 is a result of a cascade of vulnerabilities in our nation's ECE system. First, most ECE programs are privately funded and operate on razor-thin margins. COVID-19 led to not only ECE closures or dramatically reduced enrollment limits but also unprecedented unemployment among parents and fear of sending children to group child care even if available. The resulting loss of tuition for ECE programs meant that many programs had to lay off employees,[15] leaving little or no staff to assist with food distribution.

Second, the demographic makeup of our nation's child-care workforce, particularly individuals who own family child-care homes, substantially overlaps with populations at high risk for COVID-19. Child-care workers are more likely than the general population to be Black and of older age, and the prevalence of underlying chronic health conditions is higher among these individuals.[16,17] Some providers, therefore, closed or limited enrollment beyond state restrictions to protect their own health and the health of their employees.[18]

Third, CACFP reimbursements do not fully cover food costs,[19] and unlike school food programs the reimbursements do not cover administrative expenses such as compliance paperwork, staff training, menu planning, food procurement, and meal preparation and disbursement. Without tuition revenue, many ECE programs simply do not have the financial or human resources to obtain food and distribute it to families, even with the promise of eventual reimbursement.

Federal, state, and local initiatives have filled some of the gaps in food access that resulted from scaling back ECE programs, but by no means completely. In many communities, families with young children are being directed to school district–operated food distribution programs. There are many advantages to relying on school districts to distribute food; for instance, unlike most ECE programs, school food service operations typically can purchase and safely distribute grab-and-go meals to large numbers of families. However, challenges with relying on school districts to feed young children also exist.

As an example, families with young children who are not yet in school may be unaware of such services or uncomfortable receiving food from schools. Recent estimates indicate that only between 11% and 36% of low-income school-aged children participated in school meal distribution programs during spring 2020[20]; participation among families with younger children is likely even lower.

In addition, schools provide meals through the National School Lunch Program (NSLP) and the School Breakfast Program (SBP). The nutritional requirements for these programs align with the needs of school-aged children, not infants and toddlers. CACFP reimburses providers for infant formula and infant and toddler food, whereas the NSLP and SBP do not offer reimbursement for distributing these more expensive items.

Finally, and perhaps most important, it is financially unsustainable for school districts to be the primary source of food for all children in their communities. School districts providing families food under the NSLP and SBP are not reimbursed for meals provided to young children. As COVID-19 spread, many districts transitioned to working under the Summer Food Service Program and the NSLP Seamless Summer Option, which do reimburse districts for meals for young children; however, the expense of providing families meals safely still far exceeds reimbursement rates. As a result, school districts that have worked to ensure that food is available and accessible for all who need it have amassed millions of dollars of debt.[21]

Outside of school food distribution, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), which provides supplemental foods for pregnant women and children 5 years or younger who meet income eligibility requirements, can partially fill the gap left by the loss of CACFP-supported program closures or enrollment restrictions. However, WIC's monthly benefits are limited, valued at less than the replacement value of CACFP for children 1 year or older.[22] In addition, families who participated in WIC before COVID-19 already account for the benefit in their food budgets. Families newly eligible may not be familiar with the program and, in particular, may not realize that this federal food program does not assess immigration status. Finally, families served by CACFP may not be eligible for WIC benefits if their household income is above 185% of the federal poverty line or their children are older than 4 years.

In short, COVID-19 has caused an unraveling of the nation's ECE programs and access to CACFP-funded food, both of which are critical to young children's nutrition and families' economic stability. The effects of this unraveling will continue beyond the present, as states navigate reopening and continued high rates of COVID-19, and will be disproportionate among our nation's most vulnerable families who do not have the resources to compensate for these losses. To begin to repair the safety net and help families with young children avoid food insecurity, we recommend the steps outlined subsequently.

IMPROVE EMERGENCY FOOD ACCESS

Although many communities acted quickly to increase food access among families with young children, soaring food insecurity rates[23] suggest that these efforts may have been insufficient. Given the fragility of the ECE market system and the workforce, expecting ECE programs to be a significant source of food support for young low-income children during a pandemic is untenable. New, creative models are needed to ensure that families with young children who have lost access to CACFP have sufficient food now and as we move forward toward a "new normal" of unprecedented unemployment and limited ECE opportunities. These solutions must provide families with age-appropriate food of high nutritional quality for their children.

One approach to ensuring access to nutritious meals during ECE closures is to expand the Pandemic Electronic Benefits Transfer (P-EBT) program to consistently serve children 5 years or younger. Motivated by the rapid, nationwide closures of schools owing to COVID-19, the Families First Coronavirus Response Act[13] authorized the disbursal of financial assistance via P-EBT to families whose children were no longer receiving free or reduced-price meals at school. A very limited number of children enrolled in ECE programs received P-EBT despite no longer receiving federal nutrition assistance through CACFP either because of state-specific implementation of the law or because their ECE program had been reimbursing their meals through the NSLP, not CACFP. However, early evidence suggests that the vast majority of young children did not receive this benefit. Future uses of P-EBT for the COVID-19 pandemic or other emergencies should make explicit that P-EBT will serve all children participating in federal nutrition assistance programs in school (NSLP or SBP) and ECE (CACFP) settings alike.

IMPROVE ACCESS TO THE PROGRAM

Despite the essential role that CACFP plays in feeding young children and the financial stability it provides to ECE programs and families, the program is underused. Barriers to ECE programs' participation in CACFP are well known. Programs report that the CACFP administrative requirements are too burdensome and reimbursements too low to warrant participation.[24] Administrative conveniences that exist for school meal programs, such as the community eligibility provision that eliminates the burden of collecting eligibility applications from low-income families, do not apply to CACFP. Eligible programs may also not know about CACFP or their eligibility. For example, 52% of non-CACFP child-care centers in Connecticut are not aware of CACFP even though state licensing regulations require them to adhere to the program's nutrition standards.[25]

As we rebuild our economy and food systems within the United States, funding for CACFP must be prioritized. Efforts are needed to support outreach and expansion grants, reduce administrative burdens, extend eligibility to unlicensed programs, and increase reimbursement rates to fill the gap between food preparation costs and reimbursements.

One potential positive outcome of COVID-19 is that new flexibilities in administering and implementing CACFP were tested through US Department of Agriculture waivers, such as reducing reporting requirements and increasing the use of technology for program monitoring. Research exploring how states, CACFP sponsors, and ECE programs have made use of the federal waivers, and the extent to which the waivers have eased administrative burdens while still ensuring program integrity, is necessary to inform modifications that could improve program uptake and implementation.

IMPROVE THE PROGRAM'S DATA SYSTEMS

Relative to most other federal food programs, data regarding CACFP are severely lacking, limiting the ability to easily monitor program participation, conduct needs assessments, and identify effects. Although aggregated state-level data (e.g., number of meals and snacks served) are disseminated to the US Department of Agriculture, no single source has comprehensive data on CACFP providers nationwide, their characteristics, or the children they serve. Provider-level information is also not readily available in most states and data collection systems vary widely state to state, making it challenging to assess CACFP across states or nationally. Knowing to what extent CACFP is reaching vulnerable populations, including Black and Latinx families, immigrants, and families living in rural areas, is critical to distributing needed resources, ensuring families' food security, and advancing health equity, especially during emergencies such as COVID-19.

SUPPORT EARLY CHILD CARE AND EDUCATION

Any efforts to address food insecurity and improve nutrition among children through ECE settings must begin with ensuring that all children have access to high-quality ECE. Without significant investment, such as the $50 billion in emergency funding for ECE programs proposed in the Child Care is Essential Act (HR 7027), our country's ECE infrastructure will be irrevocably weakened by COVID-19. Beyond this initial step, ongoing support for the ECE workforce is needed to increase pay and access to benefits for providers, who for too long have been essential workers providing one of our country's most important services for barely minimum wage.[17] Child Care Aware of America, a national organization supporting the ECE field, suggests several policy levers that could improve the quality and stability of the ECE system long term. For example, expanding child-care tax credits would help address the financial burden of care for families, and income tax credits for providers could help address the shortage of ECE professionals by incentivizing them to enter and remain in the ECE workforce.[17]

CONCLUSION

ECE in the United States is both fragmented and fragile. For too long, we have ignored the critical role of child-care programs in promoting the health and development of young children. COVID-19 and its devastating impact on the child-care infrastructure in the United States have brought our reluctance to prioritize young children into sharp relief. Taking steps to repair our previous underinvestment in these areas is essential during the nation's pandemic recovery and beyond.

ABOUT THE AUTHORS

Katherine W. Bauer is with the Department of Nutritional Sciences, University of Michigan School of Public Health, Ann Arbor. Jamie F. Chriqui is with the Division of Health Policy and Administration, School of Public Health, University of Illinois, Chicago. Tatiana Andreyeva is with the Department of Agricultural and Resource Economics, Rudd Center for Food Policy & Obesity, University of Connecticut, Hartford. Erica L. Kenney is with the Departments of Nutrition and Social and Behavioral Sciences, Harvard T. H. Chan School of Public Health, Boston, MA. Virginia C. Stage is with the Department of Nutrition Science, College of Allied Health Sciences, East Carolina University, Greenville, NC. Dipti Dev is with the Department of Child, Youth and Family Studies, College of Education and Human Sciences, University of Nebraska, Lincoln. Laura Lessard is with the Department of Behavioral Health & Nutrition, University of Delaware, Newark. Caree J. Cotwright is with the Department of Foods and Nutrition, University of Georgia, Athens. Alison Tovar is with the Department of Nutrition and Food Sciences, University of Rhode Island, Kingston.

CORRESPONDENCE

Correspondence should be sent to Katherine W. Bauer, PhD, Department of Nutritional Sciences, University of Michigan School of Public Health, 1415 Washington Heights, Ann Arbor, MI 48109 (e-mail: kwbauer@umich.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Bauer KW, Chriqui JF, Andreyeva T, et al. A safety net unraveling: feeding young children during COVID-19. *Am J Public Health*. 2021;111(1): 116–120.

Acceptance Date: September 15, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305980

CONTRIBUTORS

K. W. Bauer drafted the article and finalized the submission. All of the authors contributed to the conceptualization of the article and data collection in addition to critically editing the article.

ACKNOWLEDGMENTS

All of the authors are members of the Nutrition and Obesity Policy Research and Evaluation Network (NOPREN) COVID-19 Early Childcare and Education Working Group.

We thank the Centers for Disease Control and Prevention and the Robert Wood Johnson Foundation's Healthy Eating Research Program for their support of NOPREN.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

REFERENCES

1. Hunt Institute. COVID-19 resources and policy considerations: child care state actions. Available at: http://www.hunt-institute.org/covid-19-resources/state-child-care-actions-covid-19. Accessed June 11, 2020.
2. US Department of Education, National Center for Education Statistics. Young children's care and education before kindergarten. Available at: https://nces.ed.gov/nhes/young_children.asp. Accessed June 11, 2020.
3. Malik R. The effects of universal preschool in Washington, D.C. Available at: https://www.americanprogress.org/issues/early-childhood/reports/2018/09/26/458208/effects-universal-preschool-washington-d-c. Accessed June 20, 2020.
4. Phillips DA, Lipsey MW, Dodge KA, et al. Puzzling it out: the current state of scientific knowledge on pre-kindergarten effects. Available at: https://www.brookings.edu/research/puzzling-it-out-the-current-state-of-scientific-knowledge-on-pre-kindergarten-effects. Accessed June 20, 2020.
5. US Department of Agriculture. Report to Congress: reducing paperwork in the Child and Adult Care Food Program. Available at: https://www.cacfp.org/files/8814/5838/6076/CACFP_Paperwork_Report.pdf. Accessed June 20, 2020.
6. Lee DL, Gurzo K, Nhan L, Homel Vitale E, Yoshida S, Ritchie LD. Nutrition provided to infants in licensed childcare centers and homes: a descriptive study. *Matern Child Health J*. 2020;24(7):932–942. https://doi.org/10.1007/s10995-020-02929-z
7. Andreyeva T, Kenney EL, O'Connell M, Sun X, Henderson KE. Predictors of nutrition quality in early child education settings in Connecticut. *J Nutr Educ Behav*. 2018;50(5):458–467. https://doi.org/10.1016/j.jneb.2017.12.016
8. Zaltz DA, Hecht AA, Pate RR, Neelon B, O'Neill JR, Benjamin-Neelon SE. Participation in the Child and Adult Care Food Program is associated with fewer barriers to serving healthier foods in early

care and education. *BMC Public Health*. 2020;20(1):856. https://doi.org/10.1186/s12889-020-08712-7

9. Korenman S, Abner KS, Kaestner R, Gordon RA. The Child and Adult Care Food Program and the nutrition of preschoolers. *Early Child Res Q*. 2013;28(2):325–336. https://doi.org/10.1016/j.ecresq.2012.07.007
10. Sisson SB, Kiger AC, Anundson KC, et al. Differences in preschool-age children's dietary intake between meals consumed at childcare and at home. *Prev Med Rep*. 2017;6:33–37. https://doi.org/10.1016/j.pmedr.2017.02.003
11. Heflin C, Arteaga I, Gable S. The Child and Adult Care Food Program and food insecurity. *Soc Serv Rev*. 2015;89(1):77–98. https://doi.org/10.1086/679760
12. US Department of Agriculture, Food and Nutrition Service. Child and Adult Care Food Program: national average payment rates, day care home food service payment rates, and administrative reimbursement rates for sponsoring organizations of day care homes for the period July 1, 2020 through June 30, 2021. *Fed Regist*. 2020;85(141):44268–44269.
13. Families First Coronavirus Response Act, Pub L No. 116-27.
14. US Department of Agriculture, Food and Nutrition Service. June nutrition assistance programs report: US summary. Available at: https://www.fns.usda.gov/data/june-performance-report-april-2020-data. Accessed August 31, 2020.
15. National Association for the Education of Young Children. A state-by-state look at the ongoing effects of the pandemic on child care. Available at: https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/resources/topics/ongoing_effect_of_pandemic.naeyc_state_by_state.pdf. Accessed May 20, 2020.
16. Lessard LM, Wilkins K, Rose-Malm J, Mazzocchi MC. The health status of the early care and education workforce in the USA: a scoping review of the evidence and current practice. *Public Health Rev*. 2020;41(1):2. https://doi.org/10.1186/s40985-019-0117-z
17. The US and the high price of child care: an examination of a broken system. Available at: https://info.childcareaware.org/hubfs/2019%20Price%20of%20Care%20State%20Sheets/Final-TheUSandtheHighPriceofChildCare-AnExaminationofaBrokenSystem.pdf. Accessed June 20, 2020.
18. Sonnier-Netto L, Cope H, Oakey-Frost R, Lewis R. The ongoing impact of COVID-19 on Louisiana child care providers. Available at: https://0cd902dd-9de1-4dae-8781-4a355ebda8df.filesusr.com/ugd/43cca3_fe42cbcb974649e7a93ccc1d9985d17b.pdf. Accessed June 28, 2020.
19. Poole MK, Cradock AL, Kenney EL. Implementing the new Child and Adult Care Food Program's nutrition standards in Boston. *Prev Chronic Dis*. 2020;17:E44. https://doi.org/10.5888/pcd17.190426
20. DeParle J. Hunger program's slow start leaves millions of children waiting. Available at: https://www.nytimes.com/2020/05/26/us/politics/child-hunger-coronavirus.html. Accessed June 20, 2020.
21. School Nutrition Association. Impact of COVID-19 on school nutrition programs: part 2. Available at: https://schoolnutrition.org/uploadedFiles/11COVID-19/3_Webinar_Series_and_Other_Resources/COVID-19-Impact-on-School-Nutrition-Programs-Part2.pdf. Accessed June 28, 2020.
22. National Academies of Sciences, Engineering, and Medicine, Health and Medicine Division, Food and Nutrition Board, Committee to Review WIC Food Packages. *Review of WIC Food Packages: Improving Balance and Choice, Final Report*. Washington, DC: National Academies Press; 2017.
23. Bauer L. The COVID-19 crisis has already left too many children hungry in America. Available at: https://www.brookings.edu/blog/up-front/2020/05/06/the-covid-19-crisis-has-already-left-too-many-children-hungry-in-america. Accessed June 20, 2020.
24. Gordon RA, Kaestner R, Korenman S, Abner K. The Child and Adult Care Food Program: who is served and why? *Soc Serv Rev*. 2011;85(3):359–400. https://doi.org/10.1086/662607
25. Andreyeva T, Henderson KE. Center-reported adherence to nutrition standards of the Child and Adult Care Food Program. *Child Obes*. 2018;14(6):421–428. https://doi.org/10.1089/chi.2018.0076

Calculating Age-Standardized Death Rates Among People With HIV Comparable Across Jurisdictions and Over Time

Qiang Xia, MD, MPH, Ying Sun, PhD, Chitra Ramaswamy, MBBS, MPH, Lucia V. Torian, PhD, and Wenhui Li, PhD

The Centers for Disease Control and Prevention (CDC) and local health jurisdictions have been using HIV surveillance data to monitor mortality among people with HIV in the United States with age-standardized death rates, but the principles of age standardization have not been consistently followed, making age standardization lose its purpose—comparison over time, across jurisdictions, or by other characteristics.

We review the current practices of age standardization in calculating death rates among people with HIV in the United States, discuss the principles of age standardization including those specific to the HIV population whose age distribution differs markedly from that of the US 2000 standard population, make recommendations, and report age-standardized death rates among people with HIV in New York City.

When we restricted the analysis population to adults aged between 18 and 84 years in New York City, the age-standardized death rate among people with HIV decreased from 20.8 per 1000 (95% confidence interval [CI] = 19.2, 22.3) in 2013 to 17.1 per 1000 (95% CI = 15.8, 18.3) in 2017, and the age-standardized death rate among people without HIV decreased from 5.8 per 1000 in 2013 to 5.5 per 1000 in 2017. (*Am J Public Health*. 2021;111:121–126. https://doi.org/10.2105/AJPH.2020.305954)

AJPH January 2021, Vol 111, No. 1

Antiretroviral therapy (ART) has significantly reduced mortality among people diagnosed with HIV infection.[1–3] Because of the availability and uptake of ART, HIV infection has become a treatable chronic disease, and people with HIV live longer, healthier lives. It is estimated that about 1 million people live with diagnosed HIV in the United States.[4,5] To monitor mortality in this population, the age-standardized death rate has been used by the Centers for Disease Control and Prevention (CDC) and local health jurisdictions.

The purpose of age standardization is to make death rates comparable across jurisdictions and over time. Certain principles, such as the selection of the standard population and the size of the numerator and denominator, must be followed when performing age standardization.[6] When they are not, or when age standardization is not done in a consistent manner across jurisdictions, it loses its purpose, and the age-standardized death rates are not comparable. For example, CDC limited their analysis population to those aged 13 years or older and reported that the age-standardized death rate among people with HIV in the United States in 2016 was 14.2 per 1000[7]; Hanna et al. limited their analysis population to those aged 15 years or older and reported that the age-standardized death rate in 37 US states was 20.6 per 1000 in 2001 to 2007[8]; and the New York City (NYC) Department of Health and Mental Hygiene (DOHMH) included all ages and reported that the age-standardized death rate in NYC in 2016 was 9.8 per 1000.[9] Because different age groups were included in the analyses, these age-standardized death rates cannot be compared.

In this article, we discuss the principles of age standardization that should be followed to calculate age-standardized death rates among people with HIV, make recommendations, and calculate the age-standardized death rate among people with HIV in NYC.

SELECTION OF THE STANDARD POPULATION

Selection of the standard population is crucial to make the age-standardized death rates comparable.[10] When calculating the age-standardized death rate

TABLE 1— Age Distributions of the 2000 US Standard Population and Two 2017 New York City Analysis Populations, All Ages

Age, Years	2000 US Standard Population, No. (%)	2017 NYC Analysis Populations: People With HIV,[a] No.[b] (%)	2017 NYC Analysis Populations: People Without HIV,[c] No. (%)
0–4	18 986 520 (6.9)	9 (0.0)	545 289 (6.5)
5–9	19 919 840 (7.3)	26 (0.0)	486 432 (5.8)
10–14	20 056 779 (7.3)	78 (0.1)	454 486 (5.4)
15–19	19 819 518 (7.2)	324 (0.4)	448 286 (5.4)
20–24	18 257 225 (6.6)	1 908 (2.4)	548 259 (6.6)
25–29	17 722 067 (6.5)	5 186 (6.5)	782 950 (9.4)
30–34	19 511 370 (7.1)	6 367 (8.0)	713 589 (8.5)
35–39	22 179 956 (8.1)	6 652 (8.4)	607 767 (7.3)
40–44	22 479 229 (8.2)	7 006 (8.8)	529 312 (6.3)
45–49	19 805 793 (7.2)	10 112 (12.7)	529 774 (6.3)
50–54	17 224 359 (6.3)	13 404 (16.9)	525 458 (6.3)
55–59	13 307 234 (4.8)	12 030 (15.1)	511 642 (6.1)
60–64	10 654 272 (3.9)	8 357 (10.5)	463 175 (5.5)
65–69	9 409 940 (3.4)	4 680 (5.9)	388 311 (4.6)
70–74	8 725 574 (3.2)	2 077 (2.6)	290 032 (3.5)
75–79	7 414 559 (2.7)	878 (1.1)	211 511 (2.5)
80–84	4 900 234 (1.8)	335 (0.4)	148 640 (1.8)
≥ 85	4 259 173 (1.6)	109 (0.1)	173 822 (2.1)
Total	274 633 642 (100.0)	79 535 (100.0)	8 358 736 (100.0)

Note. NYC = New York City.

[a] Only people with diagnosed HIV are included.

[b] Sum may not equal total because of rounding of weights.

[c] A small number of people with undiagnosed HIV are included.

among people with HIV, different standard populations have been used by the CDC and local health jurisdictions: the US 2000 standard population by CDC, the NYC census 2010 population by NYC DOHMH, the California population estimates from the Department of Finance by the San Francisco Department of Public Health, and the American Community Survey estimate of the Washington State population by the Washington State Department of Health and the Public Health–Seattle and King County.[7,9,11,12] If all had used the same standard population (e.g., the US 2000 standard population), the age-standardized death rates would have been comparable.

In addition to the use of the same standard population, the Australia Institute of Health and Welfare recommends a standard population with an age distribution similar to that of the analysis populations.[6] This would be a challenge for the population with HIV in the United States. In Table 1, we show that the age distribution of the US 2000 standard population differs markedly from that of the analysis population, which in our case is the midyear population of those with HIV in NYC. Overall, the US standard population is significantly younger than the population of persons with HIV in NYC—those aged younger than 20 years account for 28.7% of the US 2000 standard population, but only 0.5% of people with HIV in NYC. Selecting a standard population with higher proportions in the younger age groups would weight deaths at these ages disproportionately. If there had been 1 death in the 10- to 14-year age group among people with HIV in NYC in 2017, the crude death rate would have remained at 16.6 per 1000, but the age-standardized death rate would have increased from 14.8 per 1000 to 15.8 per 1000 (Table 2).

When the differences in age distributions between the standard and

TABLE 2— Number of Deaths and Crude, Age-Specific, and Age-Standardized Death Rates Among People With HIV in New York City in 2017, All Ages

		People With HIV in NYC[a]		
	2000 US Standard Population Weight	Deaths	Population[b]	Death Rate (1/1000)
Age, y				
0–4	0.069135	0	9	0.0
5–9	0.072532	0	26	0.0
10–14	0.073032	0	78	0.0
15–19	0.072168	0	324	0.0
20–24	0.066478	3	1 908	1.6
25–29	0.064530	18	5 186	3.5
30–34	0.071044	42	6 367	6.6
35–39	0.080762	48	6 652	7.2
40–44	0.081851	54	7 006	7.7
45–49	0.072118	108	10 112	10.7
50–54	0.062716	191	13 404	14.3
55–59	0.048454	242	12 030	20.1
60–64	0.038793	240	8 357	28.7
65–69	0.034264	162	4 680	34.6
70–74	0.031773	97	2 077	46.7
75–79	0.027000	59	878	67.2
80–84	0.017842	38	335	113.3
≥ 85	0.015508	18	109	165.6
Total	1.000000	1 320	79 535	16.6
Age-standardized death rate				14.8

Note. NYC = New York City.

[a] Only people with diagnosed HIV are included.

[b] Sum may not equal total because of rounding of weights.

analysis populations are this wide, and there are few people with HIV in the younger age groups, it would not be appropriate to include all ages in the analysis and calculate the age-standardized death rates. One solution could be restricting the population to particular age groups mostly affected by HIV (e.g., those aged 18–84 years).

SIZE OF THE NUMERATOR AND DENOMINATOR

The US National Center for Health Statistics recommends that there should be at least 25 total deaths over all age groups before attempting to calculate age-standardized death rates.[13] When this principle is not followed, the estimates can be unstable. When the total number of deaths among people with HIV is fewer than 25, multiple years of data should be combined to obtain a stable estimate.

The Australia Institute of Health and Welfare recommends that there should be at least 30 people in any age group in the denominator before attempting to calculate the age-standardized death rate.[6] Table 2 shows that in NYC, 2 age groups—those aged 0 to 4 years and 5 to 9 years—had fewer than 30 people in the denominator. In this jurisdiction, simply following the first principle by restricting the population to the age groups most affected by HIV (e.g., those aged 18–84 years) would solve the denominator issue. In other areas with a small or differently distributed HIV epidemic, collapsing age groups or combining multiple years of data may be needed.

AGE-STANDARDIZED DEATH RATE IN NEW YORK CITY

Applying these principles, we estimated the age-standardized death rates

TABLE 3— Age Distributions of the 2000 US Standard Population, Two 2017 New York City Analysis Populations and Deaths by HIV Status, Among Those Aged 18–84 Years

		2017 NYC People With HIV[a]		2017 NYC People Without HIV[b]	
Age, Years	**2000 US Standard Population, No. (%)**	**Population, No.[c] (%)**	**Deaths, No. (%)**	**Population, No. (%)**	**Deaths, No. (%)**
18–24	18 257 225 (9.5)	2 117 (2.7)	3 (0.2)	739 015 (11.5)	411 (1.2)
25–34	37 233 437 (19.4)	11 553 (14.6)	60 (4.6)	1 496 539 (23.2)	1 041 (3.0)
35–44	44 659 185 (23.3)	13 657 (17.2)	102 (7.8)	1 137 080 (17.7)	1 476 (4.2)
45–54	37 030 152 (19.3)	23 515 (29.7)	299 (23.0)	1 055 233 (16.4)	3 371 (9.6)
55–64	23 961 506 (12.5)	20 387 (25.7)	482 (37.0)	974 817 (15.1)	6 880 (19.7)
65–74	18 135 514 (9.5)	6 757 (8.5)	259 (19.9)	678 343 (10.5)	9 692 (27.7)
75–84	12 314 793 (6.4)	1 214 (1.5)	97 (7.5)	360 150 (5.6)	12 136 (34.7)
Total	191 591 812 (100.0)	79 200 (100.0)	1 302 (100.0)	6 441 177 (100.0)	35 007 (100.0)

Note. NYC = New York City.

[a] Only people with diagnosed HIV are included.
[b] A small number of people with undiagnosed HIV are included.
[c] Sum may not equal total because of rounding of weights.

among people with HIV in NYC. Table 3 shows the age distributions of the US 2000 standard population and 2 NYC 2017 analysis populations—people with HIV and people without HIV—by restricting the populations to those aged 18 to 84 years. Because (1) the number of people with undiagnosed HIV account for a small proportion (7%) of people with HIV in NYC; (2) the number of people with undiagnosed HIV account for an even smaller proportion (< 0.1%) of people living in NYC; (3) people with undiagnosed HIV tend to be young, asymptomatic, and have a lower death rate than those with diagnosed HIV; and (4) it is difficult to estimate the age distribution of people with undiagnosed HIV for the calculation of age-standardized death rate,[14–17] we included people with undiagnosed HIV in the population of people without HIV. We believe any misclassification of people with undiagnosed HIV should have a negligible impact on the estimates, and, if there is any, it would likely cause bias toward the null (i.e., we would underestimate the differences in age-standardized death rates between people with HIV and people without HIV).

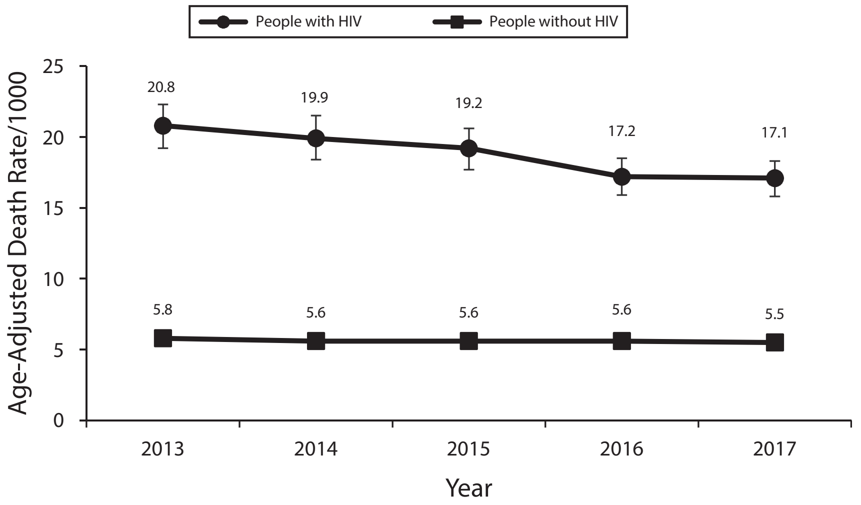


FIGURE 1— Age-Standardized Death Rate in New York City by HIV Status, 2013–2017

Note. Estimates are restricted to adults aged between 18 and 84 years and age-standardized to the 2000 US standard population using 7 age groups: 18–24, 25–34, 35–44, 45–54, 55–64, 65–74, and 75–84 years. A small number of people with undiagnosed HIV are included in the population of people without HIV. Error bars indicate 95% confidence intervals.

Although still quite different, the similarity in age distributions between the standard and analysis populations improved significantly, with the groups aged 18 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64, 65 to 74, and 75 to 84 years accounting for 9.5%, 19.4%, 23.3%, 19.3%, 12.5%, 9.5%, and 6.4%, respectively, of the standard population; 2.7%, 14.6%, 17.2%, 29.7%, 25.7%, 8.5%, and 1.5%, respectively, of people with HIV in

NYC; and 11.5%, 23.2%, 17.7%, 16.4%, 15.1%, 10.5%, and 5.6%, respectively, of people without HIV in NYC. Both the numerator recommendation (≥ 25 total deaths) and the denominator recommendation (≥ 30 in each age group) were also followed. More importantly, little information has been lost by restricting the analysis population to those aged 18 to 84 years, with 98.6% (1302/1320 = 98.6%) of the deaths included in the analysis.

The decision to set 18 years as the lower age limit was based on the following rationale: (1) 18 years is generally considered the start of adulthood in the United States, (2) a small number and proportion of people with HIV in NYC (n = 227; 0.3%) were aged younger than 18 years, and (3) there will be fewer such cases in the future, given that perinatal transmission has been virtually eliminated in NYC.[9] If it has not happened already, some jurisdictions in the United States may soon have no people living with HIV aged younger than 18 years, as the number of perinatal transmissions has declined dramatically and behavioral transmission of HIV in adolescents is rare.[18] Including such a group with a zero denominator and an undefined death rate would make the age-standardized death rate difficult to interpret. Setting the age limit of 18 years would make age-standardized death rates comparable across jurisdictions and over time.

The decision to set 84 years as the upper limit was based on the following considerations: (1) a relatively small number and proportion of people with HIV in NYC (n = 109; 0.1%) were 85 years of age or older and (2) the proportion is likely to be smaller in other parts of the United States, given that NYC has the oldest HIV epidemic in the nation.[7,8,14] Restricting the populations to those aged 18 to 84 years makes the age distributions of the standard and analysis populations more similar to one another and also allows comparison of age-standardized death rates across jurisdictions with old and new HIV epidemics.

Figure 1 shows that the age-standardized death rate among people with HIV in NYC decreased from 20.8 of 1000 (95% confidence interval [CI] = 19.2, 22.3) in 2013 to 17.1 per 1000 (95% CI = 15.8, 18.3) in 2017, and the age-standardized death rate among people without HIV decreased from 5.8 per 1000 (95% CI = 5.7, 5.9) in 2013 to 5.5 per 1000 (95% CI = 5.5, 5.6) in 2017. We calculated the 95% CIs for age-standardized death rates by using the Fay and Feuer method with Tiwari et al. modification.[19,20]

CONCLUSIONS

To enable comparison of age-standardized death rates among people with HIV across jurisdictions and over time, analysts should follow the principles of using the same standard population across jurisdictions, creating similar age distributions between the standard and analysis populations, using a numerator (total deaths) of at least 25, and the denominator of at least 30 in each age group. We recommend using the US 2000 standard population as the standard population and restricting the analysis population to those aged 18 to 84 years. When the number of total deaths is fewer than 25, analysts should consider combining multiple years of data; when the number of people with HIV in certain age groups is fewer than 30, analysts should consider collapsing age groups or combining multiple years of data. The next step may be for CDC to convene a work group to conduct further analyses on people with HIV while restricting to different ages, compare results across all jurisdictions, and publish guidelines for jurisdictions to follow when calculating age-standardized death rates among people with HIV.

ABOUT THE AUTHORS

Qiang Xia, Chitra Ramaswamy, and Lucia V. Torian are with the Bureau of HIV, Division of Disease Control, New York City Department of Health and Mental Hygiene, Queens, NY. Ying Sun and Wenhui Li are with the Bureau of Vital Statistics, Division of Epidemiology, New York City Department of Health and Mental Hygiene.

CORRESPONDENCE

Correspondence should be sent to Qiang Xia, MD, MPH, HIV Epidemiology Program, New York City Department of Health and Mental Hygiene, 42-09 28th St, Queens, NY 11101 (e-mail: qxia@health.nyc.gov). Reprints can be ordered at http://www.ajph.org by clicking the “Reprints” link.

PUBLICATION INFORMATION

Full Citation: Xia Q, Sun Y, Ramaswamy C, Torian LV, Li W. Calculating age-standardized death rates among people with HIV comparable across jurisdictions and over time. *Am J Public Health*. 2021; 111(1):121–126.

Acceptance Date: August 22, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305954

CONTRIBUTORS

Q. Xia developed the idea and led the writing of the article. Q. Xia, C. Ramaswamy, and Y. Sun conducted the data analysis. L. V. Torian and W. Li provided administrative leadership and programmatic support. All authors contributed to the design of the analysis, data interpretation, and writing of the article.

ACKNOWLEDGMENTS

The authors would like to thank Kent Sepkowitz, Oni Blackstock, Gretchen Van Wye, Charon Gwynn, Demetre Daskalakis, and Hannah Helmy for their review and comments on an earlier version of the article.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

HUMAN PARTICIPANT PROTECTION

This analysis used routinely collected New York City population surveillance data and as such did not require institutional review board approval.

REFERENCES

1. Lesko CR, Cole SR, Hall HI, et al.; CNICS Investigators. The effect of antiretroviral therapy on all-cause mortality, generalized to persons diagnosed with HIV in the USA, 2009–11. *Int J Epidemiol*. 2016;45(1):140–150. https://doi.org/10.1093/ije/dyv352
2. Siddiqi AE, Hall HI, Hu X, Song R. Population-based estimates of life expectancy after HIV diagnosis: United States 2008–2011. *J Acquir Immune Defic Syndr*. 2016;72(2):230–236. https://doi.org/10.1097/QAI.0000000000000960
3. Hanna DB, Ramaswamy C, Kaplan RC, et al. Trends in cardiovascular disease mortality among persons with HIV in New York City, 2001–2012. *Clin Infect Dis*. 2016;63(8):1122–1129. https://doi.org/10.1093/cid/ciw470
4. Estimated HIV incidence and prevalence in the United States 2010–2016. *HIV Surveillance Supplemental Report*. Atlanta, GA: Centers for Disease Control and Prevention; 2019;24(1):1–89.
5. Xia Q, Braunstein SL, Wiewel EW, Eavey JJ, Shepard CW, Torian LV. Persons living with HIV in the United States: fewer than we thought. *J Acquir Immune Defic Syndr*. 2016;72(5):552–557. https://doi.org/10.1097/QAI.0000000000001008
6. Principles on the use of direct age-standardisation in administrative data collections: for measuring the gap between Indigenous and non-Indigenous Australians. Canberra, Australia: Australian Institute of Health and Welfare; 2011.
7. Monitoring selected national HIV prevention and care objectives by using HIV surveillance data—United States and 6 dependent areas, 2017. *HIV Surveillance Supplemental Report*. Atlanta, GA: Centers for Disease Control and Prevention; 2019; 24(3):1–74.
8. Hanna DB, Selik RM, Tang T, Gange SJ. Disparities among US states in HIV-related mortality in persons with HIV infection, 2001–2007. *AIDS*. 2012; 26(1):95–103. https://doi.org/10.1097/QAD.0b013e32834dcf87
9. HIV Epidemiology and Field Services Program. *HIV Surveillance Annual Report*, 2017. New York, NY: New York City Department of Health and Mental Hygiene; 2018:1–17.
10. Ahmad OB, Boschi-Pinto C, Lopez AD, Murray CJ, Lozano R, Inoue M. Age standardization of rates: a new WHO standard. Geneva, Switzerland: World Health Organization; 2001:1–14.
11. HIV Epidemiology Section. HIV Epidemiology Annual Report 2018. San Francisco, CA: San Francisco Department of Public Health; 2019:1–122.
12. HIV/AIDS Epidemiology Report 2018. Seattle and Olympia, WA: Public Health – Seattle and King County HIV/AIDS Epidemiology Unit, Washington State Department of Health Infectious Disease Assessment Unit; 2018:1–132.
13. Curtin LR, Klein RJ. Directed standardization (age-adjusted death rates). *Statistical notes*. Hyattsville, MD: National Center for Health Statistics, Centers for Disease Control and Prevention; 1995.
14. Xia Q, Lazar R, Bernard MA, et al. New York City achieves the UNAIDS 90-90-90 targets for HIV-infected Whites but not Latinos/Hispanics and Blacks. *J Acquir Immune Defic Syndr*. 2016; 73(3):e59–e61. https://doi.org/10.1097/QAI.0000000000001132
15. Xia Q, Sun X, Wiewel EW, Torian LV. HIV prevalence and the prevalence of unsuppressed HIV in New York City, 2010–2014. *J Acquir Immune Defic Syndr*. 2017;75(2):143–147. https://doi.org/10.1097/QAI.0000000000001311
16. HIV Epidemiology Program. HIV surveillance annual report. New York, NY: New York City Department of Health and Mental Hygiene; 2018:1–18.
17. Xia Q, Lim S, Wu B, et al. Estimating the probability of diagnosis within 1 year of HIV acquisition. *AIDS*. 2020;34(7):1075–1080. https://doi.org/10.1097/QAD.0000000000002510
18. Diagnoses of HIV infection in the United States and dependent areas, 2017. *HIV Surveillance Report*. Atlanta, GA: Centers for Disease Control and Prevention; 2018;29(1):1–129.
19. Fay MP, Feuer EJ. Confidence intervals for directly standardized rates: a method based on the gamma distribution. *Stat Med*. 1997;16(7):791–801. https://doi.org/10.1002/(SICI)1097-0258(19970415)16:7<791::AID-SIM500>3.0.CO;2-#
20. Tiwari RC, Clegg LX, Zou Z. Efficient interval estimation for age-adjusted cancer rates. *Stat Methods Med Res*. 2006;15(6):547–569. https://doi.org/10.1177/0962280206070621

Physical Health Symptoms and Hurricane Katrina: Individual Trajectories of Development and Recovery More Than a Decade After the Storm

Meghan Zacher, PhD, Ethan J. Raker, MA, Mariana C. Arcaya, PhD, Sarah R. Lowe, PhD, Jean Rhodes, PhD, and Mary C. Waters, PhD

See also Schmeltz, p. 10.

Objectives. To examine how physical health symptoms developed and resolved in response to Hurricane Katrina.

Methods. We used data from a 2003 to 2018 study of young, low-income mothers who were living in New Orleans, Louisiana, when Hurricane Katrina struck in 2005 (n = 276). We fit logistic regressions to model the odds of first reporting or "developing" headaches or migraines, back problems, and digestive problems, and of experiencing remission or "recovery" from previously reported symptoms, across surveys.

Results. The prevalence of each symptom increased after Hurricane Katrina, but the odds of developing symptoms shortly before versus after the storm were comparable. The number of traumatic experiences endured during Hurricane Katrina increased the odds of developing back and digestive problems just after the hurricane. Headaches or migraines and back problems that developed shortly after Hurricane Katrina were more likely to resolve than those that developed just before the storm.

Conclusions. While traumatic experiences endured in disasters such as Hurricane Katrina appear to prompt the development of new physical symptoms, disaster-induced symptoms may be less likely to persist or become chronic than those emerging for other reasons. (*Am J Public Health*. 2021;111:127–135. https://doi.org/10.2105/AJPH.2020.305955)

AJPH January 2021, Vol 111, No. 1

In August 2005, Hurricane Katrina devastated the Gulf Coast, killing almost 2000 people and displacing about 1 million others.[1] Katrina's mental health impacts are well documented, with survivors experiencing posttraumatic stress and elevated psychological distress in both the short- and long-term aftermath.[2–5] Katrina also had a negative impact on survivors' short-term physical health.[6–10] There is a dearth of research, however, investigating the effects of Hurricane Katrina and other disasters on the development of, and recovery from, physical health symptoms, particularly beyond the immediate postdisaster period.

Three factors contribute to this gap in the literature. First, data often lack either predisaster health information or multiple postdisaster assessments.[3,4,11,12] Second, although studies utilizing pre- and postdisaster data find increasing rates of physical health problems, they rarely evaluate outcomes more than a few years after the disaster.[7,10,13,14] Third, studies tend to focus on changes in the prevalence of physical complaints from pre- to postdisaster, obscuring the possibility that symptoms prompted by disasters have distinguishable features related to onset and recovery. Increased disaster exposure is associated with heightened risk of subsequent health problems,[2–5,7,8,10,15,16] but it is unclear whether this reflects the exacerbation of existing issues or the development of new complaints. Furthermore, research has not yet examined whether recovery trajectories of symptoms emerging shortly after disasters are distinct from those of complaints developed over the typical course of life, although we might expect differences given the unique etiology of "disaster-induced" health problems.

In the current study, we were interested primarily in disaster-induced physical symptoms stemming from psychosocial trauma or stress, which many natural and human-made disasters provoke, although disaster-induced symptoms may also involve injuries sustained in the disaster itself (e.g., pain from falling over debris). Assessing how disasters structure trajectories of physical symptoms will inform our understanding of bodily responses to traumatic events, as well as public health efforts to reduce the negative impacts of disasters on survivors' well-being.

We filled these gaps in the literature by using a prospective study of young, low-income, and primarily African American mothers residing in New Orleans, Louisiana, when Hurricane Katrina struck, thus focusing on a sociodemographic group known to suffer health consequences caused by structural inequities throughout the life course[17,18] and to be disproportionately affected by disasters.[3,4,9,19] Using 5 waves of survey data, we examined how physical symptoms that are common and elevated in people experiencing trauma-related disorders, including headaches or migraines, back problems, and digestive problems,[20,21] developed and resolved from 2003, more than a year before Katrina, through 2018, more than a decade afterward. Specifically, in addition to examining changes in symptom prevalence, we asked 2 questions: (1) Did the risk of first reporting or "developing" symptoms increase after Katrina or in response to hurricane-related trauma? (2) Did the odds of "recovering" from previously reported symptoms, where recovery was defined as the first observed instance of remission, depend on whether symptoms were initially reported just after Katrina—and which may have been disaster-induced—versus shortly beforehand?

METHODS

Data were from the Resilience in Survivors of Katrina (RISK) project.[22] Respondents were originally recruited for a randomized controlled trial of an intervention to increase retention at community colleges in New Orleans, which was initiated in 2003. To take part, students had to be a parent aged 18 to 34 years earning less than 200% of the federal poverty line; the resulting sample (n = 1019) was composed largely of African American mothers.[23] Though fathers were also eligible, few were recruited and only mothers were resurveyed at all time points. The current study was therefore restricted to the 942 female respondents.

Respondents were first surveyed between November 2003 and February 2005, on average 1.2 years before Hurricane Katrina (Pre-1). Nearly half (n = 469; 49.8%) completed a second pre-Katrina survey between December 2004 and August 2005 (Pre-2). Pre-2 was interrupted by Katrina, after which participants were followed for the RISK project regardless of whether they remained in New Orleans or moved elsewhere. Three post-Katrina surveys have been conducted, approximately 1 (Post-1, March 2006–March 2007), 4 (Post-2, March 2009–April 2010), and 12 years (Post-3, November 2016–December 2018) after the hurricane. Response rates were high, with more than 70% of the original 942 women responding at each follow-up.

We restricted our sample to the 276 women who provided symptom information at all 5 surveys. Specifically, of the 469 who responded to both Pre-1 and Pre-2, 386 responded to Post-1, 331 also responded to Post-2, and 284 responded to all 3 post-Katrina surveys; we excluded 8 because of missing symptom variables. We retained the 37 respondents with incomplete independent or control variables, the most frequently missing of which was an index of hurricane-related traumas (n = 15), by multiply imputing across 20 chained imputations.[24]

We required complete symptom information for 2 reasons. First, this restriction guaranteed that prevalence figures reflected a consistent sample across surveys. Second, we needed longitudinal information to ascertain the survey at which symptoms were first reported and whether and when previously reported symptoms were observed to be in remission. The majority of those excluded from the sample were ineligible not because of selective nonresponse but rather because they had not yet responded to Pre-2 when it was interrupted by Katrina. Statistical tests (2-sample t test and χ^2 test) showed that our sample did not differ from the 666 excluded women along any Pre-1 health or sociodemographic characteristic besides perceived social support, which was slightly higher among included respondents (3.3 vs 3.2 on a scale of 1 to 4; $t[904] = -2.75$; $P = .006$). The sample restrictions imposed thus enabled our analysis without generating meaningful differences between the included and excluded samples.

Measures

Physical symptoms. We studied headaches or migraines, back problems (e.g., pain), and digestive problems (e.g., stomach ulcers, indigestion). At Pre-1, respondents were asked whether they currently experienced each symptom. Subsequent surveys asked whether symptoms were experienced in the past

12 months or, at Post-1, since Hurricane Katrina. Symptoms were coded as binary variables (0 = did not report symptom; 1 = reported symptom).

Hurricane-related traumas. Following previous research,[5,7,8,15] we constructed an index of traumas endured during Hurricane Katrina. Index values were the sum of affirmative responses to the following:

1. neighborhood flooded,
2. relative or friend died,
3. lacked sufficient food,
4. lacked sufficient water,
5. could not access medications,
6. could not access medical care,
7. believed life was in danger,
8. did not know whether child was safe,
9. did not know whether another relative was safe, and
10. had a relative who could not access medical care.

All experiences were self-reported at Post-1 with the exception of neighborhood flooding, for which we linked objectively measured flood depth to respondents' home addresses.

Sociodemographic control variables. Control variables included age and several characteristics at Pre-1: race/ethnicity (non-Hispanic Black vs other), number of children, whether a respondent was married or cohabiting versus not, food stamp receipt, perceived social support, and psychological distress. Perceived social support was measured with the 8-item Social Provisions Scale.[25] Respondents were asked whether they agreed with each item (e.g., "I have a trustworthy person to turn to if I have problems"), from strongly disagree (1) to strongly agree (4). Responses were averaged, with higher values indicating stronger support. Psychological distress was measured with the Kessler-6 scale.[26] Respondents were asked how often in the past 30 days they had experienced 6 feelings (e.g., hopeless), ranging from none (0) to all (4) of the time. Responses were summed, with higher values indicating greater psychological distress.

Analyses

We first computed descriptive statistics, including means and standard deviations for continuous variables and percentages for categorical measures. Next, we calculated symptom prevalence at each survey by using the raw data.

We then assessed patterns of new symptom development or how likely respondents were to report symptoms for the first time at each of the 5 surveys. Using the raw data, we plotted the percentage of respondents reporting each symptom among those who had not reported it previously at each survey. To test if the likelihood of developing symptoms differed significantly across surveys, we fit logistic regressions of symptoms on a categorical measure of survey (Pre-1, Pre-2, Post-1, Post-2, or Post-3) using long-form data, with 1 observation per respondent-survey. The dependent variable was set to missing in surveys following the respondent's initial report of the symptom; models therefore estimated odds of first reporting the symptom. We used cluster-robust standard errors to account for the nonindependence of observations drawn from the same respondents at different points in time. Model 1 adjusted for sociodemographic characteristics. To examine whether hurricane-related trauma was associated with symptom development, model 2 added the trauma index as a predictor. The trauma index was coded 0 at all surveys besides Post-1; corresponding coefficients thus reflected the effect of trauma on symptom development at Post-1 only.[7]

Next, we explored whether symptoms that may have been induced by Katrina, defined as those first reported at Post-1, exhibited distinct recovery patterns compared with those first reported at Pre-2, just before Katrina. We first examined the unadjusted percentage of complainants who had recovered by Post-2 and Post-3 separately for those who first reported symptoms at Pre-2 and Post-1. We considered a person to have recovered when their previously reported symptoms were first observed to be in remission; we did not examine recurrence. We defined recovery in this manner as we were interested primarily in whether disaster-induced symptoms were more or less likely to persist or become chronic.

We then further stratified and reexamined unadjusted recovery rates according to whether the complainant's symptom was first observed at Pre-2 versus Post-1 and whether they experienced bereavement attributable to Katrina, a binary proxy for high objective exposure to hurricane-related trauma. We focused on bereavement because report of a loved one's death is less likely to be influenced by the respondent's predisaster health than other traumas (e.g., perceiving one's life is in danger or lacking medication), because it can potentially affect anyone (unlike knowing one's child is safe, for example, which only applies to parents), and because it is associated with health in post-disaster[5,7,15,27] and other[28] settings. If disaster-induced symptoms had distinct recovery patterns, we would expect that, for symptoms first reported shortly after Katrina (Post-1), recovery rates would differ between those bereaved and not bereaved, as the development of symptoms was more likely attributable to Katrina among the bereaved. Among those with pre-Katrina symptom onset (Pre-2), we would expect bereavement to have little effect on recovery.

To assess whether observed patterns of recovery were statistically significant, we modeled the relationship between recovery at Post-2 and Post-3 and survey of symptom development (Pre-2 or Post-1) with logistic regression. Models used long-form data, and the indicator of recovery at Post-3 was set to missing if recovery was observed at Post-2; models therefore predicted odds of reporting initial symptom remission at Post-2 and Post-3. We used cluster-robust standard errors. Model 1 adjusted for survey (Post-2 and Post-3) and sociodemographic characteristics. Model 2 added the index of hurricane-related traumas as a predictor. Finally, to assess whether recovery trajectories were distinct for those who were observed to have developed symptoms after Katrina and experienced substantial trauma, we incorporated an interaction between survey of symptom development and the trauma index. Where the interaction was statistically significant (*P* < .05), we proceeded to estimate model 2 stratified by survey of symptom development.

RESULTS

Table 1 presents descriptive statistics. The mean age at Pre-1 was 25.6 years (SD = 4.5). Most respondents identified as non-Hispanic Black (84.3%). At Pre-1, respondents had an average of 1.8 children (SD = 1.0), 26.9% were married or cohabiting, and 67.4% received food stamps. On average, respondents experienced 3.4 (SD = 2.6) of the 10 hurricane-related traumas; 25.2% were bereaved.

TABLE 1— Descriptive Statistics for a Sample of Young, Low-Income Mothers Who Lived in New Orleans, LA, When Hurricane Katrina Occurred: United States, 2003–2018

	Mean (SD) or %
Years since the Pre-1 survey	
Pre-2	1.1 (0.1)
Post-1	2.4 (0.3)
Post-2	5.1 (0.3)
Post-3	13.6 (0.7)
Age at Pre-1, y	25.6 (4.5)
Non-Hispanic Black	84.3
No. of children at Pre-1	1.8 (1.0)
Married or cohabiting at Pre-1	26.9
Received food stamps at Pre-1	67.4
Social support at Pre-1 (Social Provisions Scale, 1–4)	3.3 (0.5)
Psychological distress at Pre-1 (Kessler-6 Scale, 0–24)	5.0 (4.2)
No. of Hurricane Katrina traumas (0–10)	3.4 (2.6)
Neighborhood flooded	40.2
Relative or friend died	25.2
Lacked sufficient food	34.8
Lacked sufficient water	25.7
Could not access medications	32.6
Could not access medical care	26.8
Believed life was in danger	31.5
Did not know whether child was safe	21.7
Did not know whether another relative was safe	78.6
A relative could not access medical care	32.5

Note. Sample size n = 276. All respondents participated in 5 surveys. Pre-1, the first pre-Katrina survey, was conducted November 2003 to February 2005; Pre-2 was conducted December 2004 to August 2005. Post-Katrina surveys were conducted approximately 1 (Post-1, March 2006–March 2007), 4 (Post-2, March 2009–April 2010), and 12 years (Post-3, November 2016–December 2018) after the hurricane.

Symptom Prevalence and Rates of New Symptoms

As shown in Figure 1, each symptom became more prevalent between Pre-1 and Pre-2 and between Pre-2 and Post-1. Prevalence of headaches or migraines increased from 14.9% at Pre-1 to 46.7% at Pre-2, peaked at 59.4% at Post-1, then declined to 55.4% at Post-2 and 45.3% at Post-3. Back and digestive problems became increasingly prevalent across the course of the study. Meanwhile, rates of new symptom development were highest at Post-1 for all 3 symptoms, although they were also rising before Katrina.

Results of logistic regressions provided in model 1 of Table 2 demonstrated that, when we adjusted for sociodemographic characteristics, odds of developing each symptom were significantly higher at Post-1 than at Pre-1 or later post-Katrina follow-ups. However, odds at Post-1 were not significantly higher than at Pre-2. When we controlled for the hurricane-related trauma index in model 2, odds of symptom development were still no higher at Post-1 than Pre-2, although the

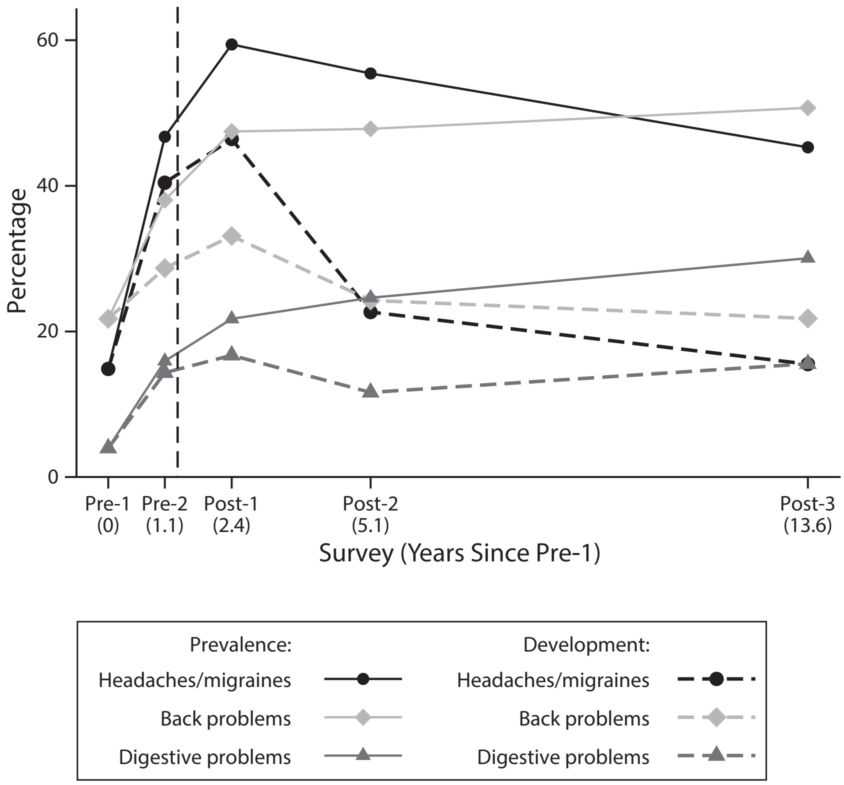


FIGURE 1— **Prevalence of Headaches or Migraines, Back Problems, and Digestive Problems and Rates of New Symptom Development in a Sample of Young, Low-Income Mothers Who Lived in New Orleans, LA, When Hurricane Katrina Occurred: United States, 2003–2018**

Note. Sample size n = 276. Pre-1, the first pre-Katrina survey, was conducted November 2003 to February 2005; Pre-2 was conducted December 2004 to August 2005. Post-Katrina surveys were conducted approximately 1 (Post-1, March 2006–March 2007), 4 (Post-2, March 2009–April 2010), and 12 years (Post-3, November 2016–December 2018) after the hurricane. The dashed vertical line indicates the timing of Hurricane Katrina (August 2005).

trauma index was itself associated with symptom development. Each additional trauma increased odds of developing back and digestive problems at Post-1 by 17% (*P* = .029) and 16% (*P* = .041), respectively. The trauma index was also positively associated with developing headaches or migraines at Post-1, but this effect was not statistically significant (odds ratio [OR] = 1.11; *P* = .192). Among covariates, older age, non-Black race/ethnicity, and Pre-1 marital status and psychological distress predicted significantly higher risk of developing at least 1 symptom.

Recovery Trajectories

Results suggested that symptoms emerging shortly after Katrina were more likely to resolve than those observed earlier, particularly among respondents experiencing substantial hurricane-related trauma. Descriptive results in Appendix Figure A (available as a supplement to the online version of this article at http://www.ajph.org) showed that, for all 3 outcomes, the percentage of complainants recovered by Post-2 and Post-3 was higher among those who first reported the symptom shortly after Katrina (Post-1) than just before (Pre-2). Specifically, 72.3%, 70.6%, and 73.7% of those who first reported headaches or migraines, back problems, and digestive problems at Post-1 recovered by Post-3, respectively, while recovery rates for those who first reported symptoms at Pre-2 were 50.5%, 50.0%, and 65.8%. Descriptive results in Appendix Figure B demonstrated that, for headaches or migraines and back problems, recovery rates were highest for respondents who first reported symptoms at Post-1 and were bereaved; recovery rates for those reporting symptoms before Katrina did not appear to differ by bereavement.

Models adjusting for survey and sociodemographic characteristics (Table 3, model 1) showed that odds of recovering from headaches or migraines and back problems were 2.27 (*P* = .003) and 1.93 (*P* = .044) times higher, respectively, for those who first presented symptoms just after Katrina (Post-1) than shortly before (Pre-2). While results for digestive problems were not statistically significant, the OR suggested a similar pattern (OR = 1.54; *P* = .318). Model 2 showed that the hurricane-related trauma index was not associated with recovery for any symptom overall. Additional models (not shown) demonstrated that the interaction between survey of symptom development and trauma count was statistically significant for headaches or migraines (*P* = .033) only (back problems: *P* = .752; digestive problems: *P* = .956). Stratified models in Appendix Table A showed that trauma count predicted significantly reduced odds of recovery for those who first reported headaches or migraines at Pre-2 (OR = 0.87; *P* = .043), whereas trauma count was associated with higher odds of recovery for those first reporting

TABLE 2— Odds of Developing Headaches or Migraines, Back Problems, and Digestive Problems in a Sample of Young, Low-Income Mothers Who Lived in New Orleans, LA, When Hurricane Katrina Occurred: United States, 2003–2018

	Headaches or Migraines, OR (95% CI)		Back Problems, OR (95% CI)		Digestive Problems, OR (95% CI)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Survey						
Pre-1	0.16 (0.10, 0.27)	0.23 (0.11, 0.46)	0.56 (0.36, 0.88)	0.95 (0.49, 1.84)	0.21 (0.11, 0.43)	0.36 (0.15, 0.88)
Pre-2	0.71 (0.45, 1.10)	0.99 (0.51, 1.93)	0.83 (0.53, 1.31)	1.42 (0.73, 2.75)	0.85 (0.52, 1.39)	1.45 (0.69, 3.06)
Post-1 (Ref)	1	1	1	1	1	1
Post-2	0.34 (0.18, 0.64)	0.47 (0.22, 1.04)	0.60 (0.34, 1.08)	1.05 (0.49, 2.23)	0.57 (0.32, 1.02)	0.99 (0.44, 2.23)
Post-3	0.23 (0.09, 0.56)	0.33 (0.12, 0.92)	0.43 (0.20, 0.94)	0.78 (0.30, 1.99)	0.53 (0.25, 1.12)	0.95 (0.36, 2.49)
No. of Hurricane Katrina traumas[a]	. . .	1.11 (0.95, 1.30)	. . .	1.17 (1.02, 1.35)	. . .	1.16 (1.01, 1.33)
Control variables						
Age	1.00 (0.96, 1.04)	0.99 (0.95, 1.03)	1.03 (0.99, 1.07)	1.02 (0.98, 1.07)	1.05 (1.01, 1.10)	1.05 (1.00, 1.10)
Non-Hispanic Black	0.58 (0.32, 1.04)	0.57 (0.32, 1.01)	0.71 (0.41, 1.21)	0.67 (0.39, 1.15)	0.58 (0.33, 1.02)	0.55 (0.31, 0.96)
No. of children at Pre-1	1.00 (0.83, 1.20)	1.00 (0.83, 1.21)	1.09 (0.93, 1.29)	1.10 (0.93, 1.29)	0.98 (0.80, 1.21)	0.98 (0.79, 1.20)
Married or cohabiting at Pre-1	1.74 (1.19, 2.55)	1.76 (1.21, 2.58)	1.04 (0.68, 1.57)	1.07 (0.70, 1.62)	1.24 (0.79, 1.94)	1.26 (0.80, 1.99)
Received food stamps at Pre-1	1.25 (0.86, 1.80)	1.24 (0.86, 1.79)	1.07 (0.72, 1.59)	1.09 (0.73, 1.62)	1.00 (0.64, 1.58)	1.01 (0.64, 1.59)
Social support at Pre-1	0.81 (0.53, 1.23)	0.81 (0.53, 1.25)	0.97 (0.63, 1.49)	0.97 (0.63, 1.50)	0.85 (0.51, 1.44)	0.86 (0.51, 1.46)
Psychological distress at Pre-1	1.06 (1.01, 1.11)	1.06 (1.01, 1.11)	1.06 (1.01, 1.10)	1.05 (1.01, 1.10)	1.05 (0.99, 1.11)	1.05 (0.99, 1.11)
Constant	1.96 (0.30, 12.78)	1.45 (0.21, 9.87)	0.21 (0.03, 1.55)	0.14 (0.02, 1.11)	0.10 (0.01, 0.88)	0.06 (0.01, 0.64)
No. observations (no. respondents)	784 (276)	784 (276)	827 (276)	827 (276)	1124 (276)	1124 (276)
Pseudo-R^2	0.102	0.104	0.025	0.030	0.059	0.064

Note. CI = confidence interval; OR = odds ratio. Pre-1, the first pre-Katrina survey, was conducted November 2003 to February 2005; Pre-2 was conducted December 2004 to August 2005. Post-Katrina surveys were conducted approximately 1 (Post-1, March 2006–March 2007), 4 (Post-2, March 2009–April 2010), and 12 years (Post-3, November 2016–December 2018) after the hurricane. Pseudo-R^2 is averaged across 20 imputations.

[a] Coded 0 at all surveys except Post-1, so coefficients reflect effects on odds of developing symptoms at Post-1 only.

headaches or migraines at Post-1 (OR = 1.17; $P = .089$), although the latter effect was not statistically significant. No control variables were significantly associated with recovery.

DISCUSSION

We investigated the impact of Hurricane Katrina on 3 physical health symptoms—headaches or migraines, back problems, and digestive problems—at 5 time points, beginning more than a year before and ending more than a decade after the disaster. In this sample of young, low-income mothers living in New Orleans when Katrina struck, symptom prevalence increased between the first and final surveys. Prevalence of headaches or migraines increased from 14.9% at baseline to 46.7% just before the hurricane, peaked at 59.4% at the first post-Katrina survey, then declined to 45.3% in the most recent survey. Prevalence of back and digestive problems was lower to begin with, and did not peak shortly after Katrina, but prevalence of both symptoms increased substantially between the first and final surveys, from 21.7% to 50.7% and 4.0% to 30.1%, respectively. These findings update those of earlier work[7] using uniquely long-term postdisaster data.

We also assessed whether Katrina prompted the development of new physical symptoms. While the observed rate of developing each symptom was higher in the immediate aftermath of Katrina than at other time points, when we adjusted for sociodemographic characteristics, odds of symptom development were not significantly different just after compared with just before Katrina. Those who experienced more hurricane-related traumas, however, had higher odds of developing back and digestive problems shortly after Katrina. This is consistent with previous research showing that disaster exposure heightens subsequent risk of poor health[2–5,7,8,10,15,16] and further

TABLE 3— Odds of Recovering From Previously Reported Headaches or Migraines, Back Problems, and Digestive Problems in a Sample of Young, Low-Income Mothers Who Lived in New Orleans, LA, When Hurricane Katrina Occurred: United States, 2003–2018

	Headaches or Migraines, OR (95% CI)		Back Problems, OR (95% CI)		Digestive Problems, OR (95% CI)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Survey of symptom development						
Pre-2 (Ref)	1	1	1	1	1	1
Post-1	2.27 (1.33, 3.90)	2.25 (1.32, 3.85)	1.93 (1.02, 3.65)	1.92 (1.01, 3.64)	1.54 (0.66, 3.58)	1.56 (0.67, 3.62)
No. of Hurricane Katrina traumas	. . .	0.98 (0.89, 1.09)	. . .	1.03 (0.90, 1.18)	. . .	0.93 (0.80, 1.07)
Control variables						
Age	0.99 (0.93, 1.05)	0.99 (0.93, 1.06)	1.01 (0.93, 1.08)	1.00 (0.93, 1.08)	0.96 (0.87, 1.05)	0.96 (0.87, 1.05)
Non-Hispanic Black	0.90 (0.38, 2.17)	0.93 (0.38, 2.30)	1.34 (0.46, 3.85)	1.27 (0.43, 3.72)	0.66 (0.20, 2.18)	0.75 (0.20, 2.76)
No. of children at Pre-1	1.07 (0.76, 1.52)	1.08 (0.75, 1.53)	1.45 (0.97, 2.17)	1.44 (0.96, 2.15)	0.94 (0.61, 1.47)	0.98 (0.63, 1.54)
Married or cohabiting at Pre-1	0.52 (0.27, 1.02)	0.52 (0.27, 1.01)	1.05 (0.39, 2.79)	1.07 (0.40, 2.89)	0.55 (0.22, 1.38)	0.54 (0.22, 1.32)
Received food stamps at Pre-1	0.51 (0.25, 1.05)	0.51 (0.25, 1.05)	0.69 (0.32, 1.47)	0.69 (0.32, 1.47)	0.64 (0.22, 1.88)	0.68 (0.23, 2.00)
Social support at Pre-1	0.81 (0.37, 1.75)	0.79 (0.36, 1.74)	0.70 (0.29, 1.71)	0.74 (0.29, 1.86)	0.92 (0.34, 2.50)	0.86 (0.31, 2.42)
Psychological distress at Pre-1	0.99 (0.91, 1.07)	0.99 (0.91, 1.07)	0.92 (0.84, 1.01)	0.92 (0.84, 1.01)	1.05 (0.96, 1.14)	1.04 (0.95, 1.14)
Survey						
Post-2 (Ref)	1	1	1	1	1	1
Post-3	1.17 (0.56, 2.44)	1.15 (0.55, 2.41)	0.71 (0.29, 1.69)	0.72 (0.30, 1.74)	1.67 (0.55, 5.05)	1.67 (0.54, 5.19)
Constant	2.25 (0.08, 63.22)	2.37 (0.08, 68.02)	1.00 (0.01, 80.91)	0.85 (0.01, 74.12)	7.02 (0.05, 1094.91)	9.41 (0.05, 1642.58)
No. observations (no. respondents)	261 (160)	261 (160)	180 (113)	180 (113)	118 (76)	118 (76)
Pseudo-R^2	0.046	0.046	0.060	0.061	0.052	0.059

Note. CI = confidence interval; OR = odds ratio. Pre-1, the first pre-Katrina survey, was conducted November 2003 to February 2005; Pre-2 was conducted December 2004 to August 2005. Post-Katrina surveys were conducted approximately 1 (Post-1, March 2006–March 2007), 4 (Post-2, March 2009–April 2010), and 12 years (Post-3, November 2016–December 2018) after the hurricane. Pseudo-R^2 is averaged across 20 imputations. Models do not include those who reported the symptom at Pre-1 or those who did not report the symptom at either Pre-2 or Post-1. Models predict recovery at Post-2 and Post-3 only.

suggests that disaster-related trauma prompts incident health issues, rather than just exacerbating existing problems.

Finally, our findings suggested that disaster-induced symptoms were less persistent and more likely to resolve than those developing for other reasons. After we adjusted for sociodemographic characteristics, those who first presented with headaches or migraines and back problems just after Katrina were significantly more likely to have been observed as recovered over the following decade than those whose symptoms emerged just before the disaster. These results build on previous research that found resilience, characterized by few health problems in the immediate aftermath of a disaster and swift recovery from problems that arise, to be the most common postdisaster health trajectory.[10,12,29] We also showed that, for headaches or migraines, the impact on recovery of hurricane-related trauma exposure depended on whether symptoms predated the disaster. For those first reporting headaches or migraines just before Katrina, trauma exposure was associated with significantly reduced odds of recovery. However, for those who developed headaches or migraines shortly after Katrina, hurricane-related trauma predicted higher odds of recovery, although this effect was not statistically significant.

The contributions of this study are threefold. First, we showed that traumas endured during a major disaster predicted the development of back and digestive problems. Second, we found evidence that disaster-induced symptoms were more likely to resolve than complaints unrelated to the disaster and associated trauma. These findings suggest that physical symptoms stemming from disaster-related psychosocial trauma have a unique signature, developing shortly after a disaster and resolving faster than typical complaints. Studies of populations exposed to other natural and human-made disasters should test for these and other features of trauma-related and possibly psychosomatic symptoms to gain insights into the interplay between mental and physical well-being and bodily responses to psychosocial stressors.

Finally, the current study exemplified the utility of long-term panel studies for examining individual health trajectories in addition to changes in prevalence. Unlike previous work, we traced outcomes from before to more than a decade after a major disaster, and were able to control for predisaster characteristics. Critically, we also discerned that symptom prevalence and rates of new symptom development were increasing before Katrina. Without multiple pre-Katrina assessments, we would have erroneously attributed this increased symptomatology to the disaster.

Limitations

This study has several limitations. Results may not be generalizable to the pre-Katrina New Orleans population or to survivors of other disasters, as the sample was composed of young, low-income, and primarily African American mothers, all of whom were initially enrolled in community college, rather than a representative cross-section of the population. This demographic is, however, of critical importance for public health, as women, the socioeconomically disadvantaged, and racial/ethnic minorities are at high risk of postdisaster health problems[3,4,9,19] and face structural conditions impeding well-being throughout the life course, including limited access to quality health care.[17,18]

We relied on self-reported symptoms rather than diagnoses and could not explore variability in symptom severity. Moreover, while our data were longitudinal, symptom information was not continuous, such that because of survey timing and question wording, there were periods over the course of the study during which we do not know whether symptoms were present. Some symptoms and remissions therefore likely went unobserved. Relatedly, although symptoms can come and go across the life course, we were unable to evaluate recurrence. Future studies should collect more detailed data on the nature of physical symptoms and the timing of their development, recovery, and recurrence to further elucidate the health effects of disasters.

Future research should also examine the social, psychological, economic, and care-related pathways through which disasters affect physical symptoms. We were unable to assess, for example, whether respondents accessed treatment before or after Katrina or how treatment affected recovery. Furthermore, unlike studies that compare health trajectories of people who were and were not affected by a disaster,[30] we could not fully disentangle the effects of Katrina from changes resulting from general life course processes. Increasing symptomatology might have been expected as respondents aged, for example. Our key findings, namely that hurricane-related trauma predicted symptom development and that recovery rates differed by timing of symptom development, cannot be explained by such secular trends. Nonetheless, future research should combine prospective, longitudinal data from disaster survivors with comparative control samples to examine how patterns diverge for disaster-affected and unaffected groups, and to investigate effects of disasters on health that take years to manifest.

Public Health Implications

This study established the first estimates, to our knowledge, of physical symptom incidence attributable to Hurricane Katrina, generating implications for future disasters, both natural and human-made. Our findings suggested that public health interventions should focus on survivors who experienced particularly traumatic events and that resources should be disseminated in disasters' short-term aftermath, when symptoms are most likely to present. As survivors are beginning to rebuild their lives, poor physical health can be a major barrier to social and economic recovery.[31] Moreover, as climate change progresses and extreme weather events, including devastating hurricanes, coastal floods, and heat waves become more frequent,[32,33] developing effective postdisaster public health responses will be increasingly critical to the well-being of Americans, especially those most vulnerable to adversity. AJPH

ABOUT THE AUTHORS

Meghan Zacher is with the Population Studies and Training Center and the Data Science Initiative, Brown University, Providence, RI. Ethan J. Raker and Mary C. Waters are with the Department of Sociology, Harvard University, Cambridge, MA. Mariana C. Arcaya is with the Department of Urban Studies, Massachusetts Institute of Technology, Cambridge. Sarah R. Lowe is with the Department of Social and Behavioral Sciences, Yale School of Public Health, New Haven, CT. Jean Rhodes is with the Department of Psychology, University of Massachusetts, Boston.

CORRESPONDENCE

Correspondence should be sent to Meghan Zacher, Population Studies and Training Center, Brown University, 68 Waterman St, Providence, RI 02912 (e-mail: meghan_zacher@brown.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Zacher M, Raker EJ, Arcaya MC, Lowe SR, Rhodes J, Waters MC. Physical health symptoms and Hurricane Katrina: individual trajectories of development and recovery more than a decade after the storm. *Am J Public Health*. 2021;111(1): 127–135.

Acceptance Date: August 22, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305955

CONTRIBUTORS

All authors contributed to the study design. M. Zacher conducted the analysis. M. Zacher, E. J. Raker, and M. C. Arcaya drafted the initial article. M. C. Arcaya, S. R. Lowe, J. Rhodes, and M. C. Waters advised the study. All authors provided critical feedback and approved the final version of the article.

ACKNOWLEDGMENTS

This study was supported by Eunice Kennedy Shriver National Institute of Child Health and Human Development grants P01HD082032, R01HD057599, and R01HD046162; National Science Foundation grant BCS-0555240; MacArthur Foundation grant 04-80775-000-HCD; Robert Wood Johnson Foundation grant 23029; the Princeton Center for Economic Policy Studies; the Harvard Center for Population and Development Studies; the Brown Population Studies and Training Center, which receives funding from Eunice Kennedy Shriver National Institute of Child Health and Human Development grant P2CHD041020; and a Malcolm H. Wiener PhD Scholarship. Research reported in this article was also supported by an Early Career Research Fellowship to S. R. Lowe from the Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine.

Note. The article's content is solely the responsibility of the authors and does not necessarily represent the official views of the Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

HUMAN PARTICIPANT PROTECTION

Institutional review boards at Harvard University and Princeton University approved the Resilience in Survivors of Katrina project.

REFERENCES

1. Knabb RD, Rhome JR, Brown DP. Tropical cyclone report, Hurricane Katrina, 23–30 August, 2005. National Hurricane Center. 2005. Available at: https://www.nhc.noaa.gov/data/tcr/AL122005_Katrina.pdf. Accessed February 1, 2020.
2. Galea S, Brewin CR, Gruber M, et al. Exposure to hurricane-related stressors and mental illness after Hurricane Katrina. *Arch Gen Psychiatry*. 2007;64(12):1427–1434. https://doi.org/10.1001/archpsyc.64.12.1427
3. Mills MA, Edmondson D, Park CL. Trauma and stress response among Hurricane Katrina evacuees. *Am J Public Health*. 2007;97(suppl 1):S116–S123. https://doi.org/10.2105/AJPH.2006.086678
4. Sastry N, VanLandingham M. One year later: mental illness prevalence and disparities among New Orleans residents displaced by Hurricane Katrina. *Am J Public Health*. 2009;99(suppl 3):S725–S731. https://doi.org/10.2105/AJPH.2009.174854
5. Raker EJ, Lowe SR, Arcaya MC, Johnson ST, Rhodes J, Waters MC. Twelve years later: the long-term mental health consequences of Hurricane Katrina. *Soc Sci Med*. 2019;242:112610. https://doi.org/10.1016/j.socscimed.2019.112610
6. Fonseca VA, Smith H, Kuhadiya N, et al. Impact of a natural disaster on diabetes: exacerbation of disparities and long-term consequences. *Diabetes Care*. 2009;32(9):1632–1638. https://doi.org/10.2337/dc09-0670
7. Lowe SR, Willis M, Rhodes JE. Health problems among low-income parents in the aftermath of Hurricane Katrina. *Health Psychol*. 2014;33(8):774–782. https://doi.org/10.1037/hea0000016
8. Rhodes J, Chan C, Paxson C, Rouse CE, Waters M, Fussell E. The impact of Hurricane Katrina on the mental and physical health of low-income parents in New Orleans. *Am J Orthopsychiatry*. 2010;80(2):237–247. https://doi.org/10.1111/j.1939-0025.2010.01027.x
9. Sastry N, Gregory J. The effect of Hurricane Katrina on the prevalence of health impairments and disability among adults in New Orleans: differences by age, race, and sex. *Soc Sci Med*. 2013;80:121–129. https://doi.org/10.1016/j.socscimed.2012.12.009
10. Vu L, VanLandingham MJ. Physical and mental health consequences of Katrina on Vietnamese immigrants in New Orleans: a pre- and post-disaster assessment. *J Immigr Minor Health*. 2012;14(3):386–394. https://doi.org/10.1007/s10903-011-9504-3
11. Goldmann E, Galea S. Mental health consequences of disasters. *Annu Rev Public Health*. 2014;35(1):169–183. https://doi.org/10.1146/annurev-publhealth-032013-182435
12. Lowe SR, Bonumwezi JL, Young MN, Galea S. Physical health resilience in the aftermath of natural disasters. In: Chandra A, Acosta J, eds. *Community Resilience: Practical Applications to Strengthen Whole Communities in Disaster*. Oxford, UK: Butterworth-Heinemann; in press.
13. Kario K, Matsuo T, Shimada K, Pickering TG. Factors associated with the occurrence and magnitude of earthquake-induced increases in blood pressure. *Am J Med*. 2001;111(5):379–384. https://doi.org/10.1016/S0002-9343(01)00832-4
14. Saito K, Kim JI, Maekawa K, Ikeda Y, Yokoyama M. The great Hanshin-Awaji earthquake aggravates blood pressure control in treated hypertensive patients. *Am J Hypertens*. 1997;10(2):217–221. https://doi.org/10.1016/S0895-7061(96)00351-2
15. Paxson C, Fussell E, Rhodes J, Waters M. Five years later: recovery from post traumatic stress and psychological distress among low-income mothers affected by Hurricane Katrina. *Soc Sci Med*. 2012;74(2):150–157. https://doi.org/10.1016/j.socscimed.2011.10.004
16. Chan CS, Rhodes JE. Measuring exposure in Hurricane Katrina: a meta-analysis and an integrative data analysis. *PLoS One*. 2014;9(4):e92899. https://doi.org/10.1371/journal.pone.0092899
17. Geronimus AT, Hicken M, Keene D, Bound J. "Weathering" and age patterns of allostatic load scores among Blacks and Whites in the United States. *Am J Public Health*. 2006;96(5):826–833. https://doi.org/10.2105/AJPH.2004.060749
18. Lillie-Blanton M, Hoffman C. The role of health insurance coverage in reducing racial/ethnic disparities in health care. *Health Aff (Millwood)*. 2005;24(2):398–408. https://doi.org/10.1377/hlthaff.24.2.398
19. Chakraborty J, Collins TW, Grineski SE. Exploring the environmental justice implications of Hurricane Harvey flooding in greater Houston, Texas. *Am J Public Health*. 2019;109(2):244–250. https://doi.org/10.2105/AJPH.2018.304846
20. Löwe B, Kroenke K, Spitzer RL, et al. Trauma exposure and posttraumatic stress disorder in primary care patients: cross-sectional criterion standard study. *J Clin Psychiatry*. 2011;72(3):304–312. https://doi.org/10.4088/JCP.09m05290blu
21. Kroenke K. Patients presenting with somatic complaints: epidemiology, psychiatric co-morbidity and management. *Int J Methods Psychiatr Res*. 2003;12(1):34–43. https://doi.org/10.1002/mpr.140
22. Waters MC. Life after Hurricane Katrina: the Resilience in Survivors of Katrina (RISK) project. *Sociol Forum*. 2016;31(suppl 1):750–769. https://doi.org/10.1111/socf.12271
23. Richburg-Hayes L, Brock T, LeBlanc A, Paxson C, Rouse CE, Barrow L. *Rewarding Persistence: Effects of a Performance-Based Scholarship Program for Low-Income Parents*. New York, NY: MDRC; 2009.
24. Rubin DB. Multiple imputation after 18+ years. *J Am Stat Assoc*. 1996;91(434):473–489. https://doi.org/10.1080/01621459.1996.10476908
25. Cutrona CE, Russell DW. The provisions of social relationships and adaptation to stress. In: Jones WH, Perlman D, eds. *Advances in Personal Relationships*. Vol 1. Greenwich, CT: JAI Press; 1987:37–67.
26. Kessler RC, Andrews G, Colpe LJ, et al. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychol Med*. 2002;32(6):959–976. https://doi.org/10.1017/S0033291702006074
27. Raker EJ, Zacher M, Lowe S. Lessons from Hurricane Katrina for predicting the indirect health consequences of the COVID-19 pandemic. *Proc Natl Acad Sci USA*. 2020;117(23):12595–12597. https://doi.org/10.1073/pnas.2006706117
28. Domingue BW, Duncan L, Harrati A, Belsky DW. Short-term mental health sequelae of bereavement predict long-term physical health decline in older adults: US Health and Retirement Study analysis. *J Gerontol B Psychol Sci Soc Sci*. 2020; gbaa044; epub ahead of print April 3, 2020. https://doi.org/10.1093/geronb/gbaa044
29. Lowe SR, Joshi S, Pietrzak RH, Galea S, Cerdá M. Mental health and general wellness in the aftermath of Hurricane Ike. *Soc Sci Med*. 2015;124:162–170. https://doi.org/10.1016/j.socscimed.2014.11.032
30. Isaranuwatchai W, Coyte PC, McKenzie K, Noh S. Impact of the 2004 tsunami on self-reported physical health in Thailand for the subsequent 2 years. *Am J Public Health*. 2013;103(11):2063–2070. https://doi.org/10.2105/AJPH.2013.301248
31. Arcaya MC, Subramanian SV, Rhodes JE, Waters MC. Role of health in predicting moves to poor neighborhoods among Hurricane Katrina survivors. *Proc Natl Acad Sci USA*. 2014;111(46):16246–16253. https://doi.org/10.1073/pnas.1416950111
32. Knutson T, Camargo SJ, Chan JCL, et al. Tropical cyclones and climate change assessment part II: projected response to anthropogenic warming. *Bull Am Meteorol Soc*. 2019;101(3):E303–E322. https://doi.org/10.1175/BAMS-D-18-0194.1
33. Intergovernmental Panel on Climate Change. *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. New York, NY: Cambridge University Press; 2012.

Adolescent Birth Rates and Rural–Urban Differences by Levels of Deprivation and Health Professional Shortage Areas in the United States, 2017–2018

Sylvester O. Orimaye, PhD, MPH, Nathan Hale, PhD, MPH, Edward Leinaar, MPH, Michael G. Smith, DrPH, and Amal Khoury, PhD, MPH

Objectives. To examine the differences in adolescent birth rates by deprivation and Health Professional Shortage Areas (HPSAs) in rural and urban counties of the United States in 2017 and 2018.

Methods. We analyzed available data on birth rates for females aged 15 to 19 years in the United States using the restricted-use natality files from the National Center for Health Statistics, American Community Survey 5-year population estimates, and the Area Health Resources Files.

Results. Rural counties had an additional 7.8 births per 1000 females aged 15 to 19 years (b = 7.84; 95% confidence interval [CI] = 7.13, 8.55) compared with urban counties. Counties with the highest deprivation had an additional 23.1 births per 1000 females aged 15 to 19 years (b = 23.12; 95% CI = 22.30, 23.93), compared with less deprived counties. Rural counties with whole shortage designation had an additional 8.3 births per 1000 females aged 15 to 19 years (b = 8.27; 95% CI = 6.86, 9.67) compared with their urban counterparts.

Conclusions. Rural communities across deprivation and HPSA categories showed disproportionately high adolescent birth rates. Future research should examine the extent to which contraceptive access differs among deprived and HPSA-designated rural communities and the impact of policies that may create barriers for rural communities. (*Am J Public Health*. 2021;111:136–144. https://doi.org/10.2105/AJPH.2020.305957)

AJPH January 2021, Vol 111, No. 1

Adolescent birth rates have steadily declined in the United States over the past 3 decades, reaching a record low of fewer than 18 births per 1000 females aged between 15 and 19 years in 2018.[1] Notable declines in adolescent birth rates have been observed across all racial and ethnic population groups.[1,2] While factors contributing to observed declines in adolescent birth rates are broad, recent evidence suggests that lower proportions of adolescents engaging in sexual intercourse coupled with more sexually active adolescents using some form of contraception, particularly long-acting reversible contraceptives, are 2 important factors.[3]

Although adolescent pregnancy and subsequent birth rates have declined, adolescent childbearing remains an important public health issue that warrants attention.[3] The vast majority of births among adolescents are unintended and introduce many socioeconomic and health-related challenges for adolescents relative to their peer groups.[3,4] The health consequences of adolescent childbearing range from adverse birth outcomes to psychological effects of childbearing for both the mother and the child.[4] While it is important to note that not all adolescent births are unintended, limited access to reproductive health services for adolescents and marginalized populations can cause these populations to have disproportionately high rates of unintended pregnancy.[5]

Previous research specifically focused on adolescent childbearing has consistently noted that unfavorable socioeconomic conditions experienced at the community and family levels underpin adolescent birth rates and observed racial/ethnic disparities.[6] Specifically, educational achievement, employment, and income have all been independently associated with adolescent births.[7] Similar patterns have been noted by geography as the rate of adolescent birth remains higher in rural communities relative to their urban counterparts.[8]

Higher rates of poverty and unemployment, shifting demographics, lower educational achievement, and lack of access to affordable health care and health care professionals are more prevalent in rural communities than in their urban counterparts.[9] Additional evidence suggests that in some rural or underresourced communities, fewer publicly funded clinics and health care professionals providing contraception are available,[10] and those rural adolescents may avoid reproductive health services over concerns of confidentiality. Further evidence suggests that receipt of sexual health education may be less common in rural communities.[11,12]

While previous research has noted the influence of social determinants of health on adolescent birth rates and noted rural–urban differences in rates of adolescent birth,[8,13] few studies have examined these factors in tandem. In this study, we examined the differences in adolescent birth rates by levels of sociodemographic deprivation based on a summary of social determinants of health measures and Health Professional Shortage Areas (HPSAs) in rural and urban counties of the United States, combining data from 2017 and 2018, the 2 most recent years of data available.

Deprivation indices and HPSA categories are increasingly common tools for examining the intersection of community context with health outcomes.[14] Key socioeconomic indicators that measure community-level deprivation are harmonized into a standard measure that characterizes key underlying social and economic constructs, rather than examining separate factors alone.[15] While it is common to observe higher levels of deprivation in rural communities,[13] recent studies have shown that urban communities can also have a similar or higher level of deprivation,[15,16] as well as a shortage of health care professionals.[17,18]

We hypothesized that our measures for rural–urban, area deprivation, and HPSA categories will be associated with adolescent birth rates. However, the extent to which rural–urban differences exist within comparable levels of deprivation and HPSA categories remains largely unknown. We posited that observed rural–urban differences would not be uniform across levels of deprivation and HPSA categories, with larger gaps observed in counties with higher levels of deprivation and HPSA categories.

METHODS

We conducted a cross-sectional study combining 2017 and 2018 county-level vital records data. County-level birth rates were derived from restricted-use natality files obtained from the National Center for Health Statistics linked with the American Community Survey 5-year population estimates from the Census Bureau. Additional county-level measures of interest, including the HPSA categories, were obtained from the Area Health Resources Files (AHRF). We analyzed data for all 3143 counties with available data on birth rates for females aged 15 to 19 years from all 50 states in the United States. Consistent with the Centers for Disease Control and Prevention,[1] we restricted the age group to females aged 15 to 19 years for reporting adolescent birth rates.

Measures

Adolescent birth rates. Consistent with previous research,[1,8,13] we identified adolescent birth rates as the ratio of pregnancies with live birth outcomes among females aged 15 to 19 years to the total population of females aged 15 to 19 years in each county per year. While studies have shown that the majority of adolescent births result from unintended pregnancies,[19–21] we are not attempting to quantify all adolescent unintended pregnancies for this analysis. Rather, we are focusing only on live births to adolescents.[1]

Rural–urban categories. Rural–urban categories were based on the 2013 Urban Influence Code (UIC) classification scheme by the Office of Management and Budget, which is consistent with previous county-level analysis.[14,15,22] The UIC distinguishes metropolitan and nonmetropolitan counties by population size or by proximity to metropolitan and nonmetropolitan areas.[23] Of the 12 UIC classifications, 2 subdivisions of the metropolitan areas with UICs of 1 (large—in a metro area with at least 1 million residents) and 2 (small—in a metro area with fewer than 1 million residents) formed the urban category, while 10 subdivisions of the nonmetropolitan areas (UICs 3–12) comprised the rural category.

Area deprivation index. The area deprivation index (ADI)[14,15] was constructed using county-level measures from the AHRF that reflect varying degrees of sociodemographic vulnerabilities within counties. Originally developed by researchers at the University of South Carolina, the ADI captures relevant county-level social determinants of health as a composite measure of county-level deprivation.[14] Five unique sociodemographic variables (income, poverty, unemployment, high-school graduation rate, and single-parent homes) were retained through a principal component analysis to characterize the underlying deprivation by counties. The retained variables were standardized into z scores, which were then summed together as a single measure used to derive the index. Counties were grouped into 4 categories using the quantile distribution of the deprivation index, which includes least deprived (quartile 1), not very deprived (quartile 2), somewhat deprived (quartile 3), and most deprived (quartile 4).[14,15]

Health Professional Shortage Area codes. As part of the AHRF, the HPSA codes identify county-level health care and health care workforce access for (1) primary care physicians, (2) dentists, and (3) mental health practitioners from the Health Resources and Services Administration database. The HPSA codes allocate designation status based on shortage areas. Counties that lack all 3 health care workforce groups are designated whole shortage areas and coded 1 on the AHRF. Where a proportion of a county has access to parts of the health care workforce, the county is a partly designated shortage area and coded 2. A county has a none designation and is coded 0 when it has all 3 health care workforce areas.[24]

Statistical Analysis

We examined the characteristics of counties by level of deprivation (least, not very, somewhat, and most deprived) and by HPSA categories (none, partly, and whole designated). We used the Student *t* test to examine differences in characteristics between rural and urban counties. We examined bivariate rural–urban differences in adolescent birth rates, bivariate relationships between adolescent birth rates and levels of deprivation, and the bivariate relationship between adolescent birth rates and HPSA categories.[8] We used 2 parallel adjusted linear regression models to examine the independent effect of deprivation, HPSA, and rural–urban classification on observed adolescent birth rates. Interaction terms for deprivation and rural–urban classification, as well as HPSA categories and rural–urban classification, were included in the separate models to assess potential rural–urban differences in adolescent birth rates within comparable levels of county deprivation and HPSA categories.

The adjusted models controlled for select variables of relevance (total population, race and ethnicity, non–English-speaking residents, and health care resources) that were not included in the ADI.[25,26] Also, we adjusted for the overall 5-year change in adolescent birth rates for each county to account for the changing trajectory of adolescent birth rates in each county. We obtained unadjusted and adjusted graphical plots of differences between rural and urban categories by levels of deprivation and HPSA categories from the least squares means of each model with a 95% confidence interval (CI). We considered the varying precision of estimated adolescent birth rates across counties by including a weight variable in the analysis, which was computed as the ratio of the sample population of females aged 15 to 19 years in each county to each county population. We conducted all data management and analyses with SAS version 9.4 (SAS Institute Inc, Cary, NC).

RESULTS

Approximately 62.9% of all counties in the United States were rural (Table 1). We observed significant differences in deprivation and HPSA categories between rural and urban counties. Of the rural counties in the United States, 19.6% were least deprived compared with 34.0% of urban counties, 23.5% were not very deprived compared with 27.6% of urban counties, 25.5% were somewhat deprived compared with 24.1% of urban counties, and 31.2% were most deprived compared with 14.3% of urban counties. Of the rural counties, 9.4% were HPSA none designated compared with 15.6% of urban counties, 59.4% were HPSA partly designated compared with 68.5% of urban counties, and 31.2% were HPSA whole designated compared with 15.9% of urban counties.

Key differences between rural and urban counties were noted for select covariates, including race and ethnicity. A higher proportion of adolescents in rural counties (43.1%) were enrolled in Medicaid compared with 36.6% in urban counties. Rural counties were associated with a lower primary care physician to population ratio (46.9%) compared with 60.6% for urban counties. The 5-year decline in adolescent birth rates was significantly slower in rural counties (–15.1%) compared with their urban counterparts (–24.4%).

TABLE 1— Characteristics of US Counties by Rural and Urban Categories: 2017–2018

County Characteristics	All Counties (n = 3143), Mean (95% CI)	Rural (n = 1976), Mean (95% CI)	Urban (n = 1167), Mean (95% CI)
ADI categories, %			
Least deprived**	24.97 (23.90, 26.04)	19.64 (18.4, 20.88)	33.98 (32.05, 35.90)
Not very deprived*	25.00 (23.93, 26.07)	23.45 (22.13, 24.77)	27.62 (25.8, 29.43)
Somewhat deprived[a]	25.00 (23.93, 26.07)	25.54 (24.18, 26.90)	24.09 (22.35, 25.83)
Most deprived**	25.03 (23.96, 26.10)	31.37 (29.92, 32.82)	14.32 (12.89, 15.74)
HPSA categories, %			
None designated**	11.71 (10.91, 12.50)	9.39 (8.48, 10.30)	15.62 (14.15, 17.10)
Parts designated**	62.77 (61.57, 63.96)	59.41 (57.87, 60.94)	68.45 (66.57, 70.34)
Whole designated**	25.52 (24.45, 26.60)	31.21 (29.76, 32.65)	15.93 (14.44, 17.41)
Population, females aged 15–19 y, %			
Total population**	6.25 (6.21, 6.29)	6.13 (6.07, 6.18)	6.46 (6.40, 6.51)
White**	83.23 (82.82, 83.65)	84.83 (84.29, 85.37)	80.54 (79.91, 81.17)
Black**	9.02 (8.66, 9.38)	7.84 (7.38, 8.31)	11.01 (10.46, 11.56)
Hispanic*	9.14 (8.80, 9.48)	8.76 (8.31, 9.20)	9.78 (9.26, 10.29)
Native Hawaiian/Pacific Islander*	0.08 (0.07, 0.09)	0.07 (0.06, 0.09)	0.10 (0.08, 0.12)
American Indian**	1.95 (1.76, 2.14)	2.54 (2.27, 2.82)	0.95 (0.75, 1.15)
Asian**	1.33 (1.26, 1.40)	0.71 (0.66, 0.77)	2.38 (2.23, 2.53)
Non–English-speaking residents**	3.41 (3.29, 3.53)	3.00 (2.85, 3.15)	4.09 (3.89, 4.29)
Health care resources			
Female < 18 y using Medicaid, %**	40.69 (40.33, 41.04)	43.09 (42.62, 43.55)	36.63 (36.13, 37.14)
Primary care physician per 100 000**	51.96 (51.07, 52.86)	46.87 (45.83, 47.92)	60.57 (58.98, 62.15)
Trend: 5-y change in adolescent birth rate, %**	−18.77 (−19.89, −17.65)	−15.18 (−16.89, −13.47)	−24.36 (−25.36, −23.36)

Noter. ADI = area deprivation index; CI = confidence interval; HPSA = Health Professional Shortage Area.

Source. Restricted-use natality files provided by the National Center for Health Statistics through the Centers for Disease Control and Prevention, American Community Survey 5-year population estimates provided by the Census Bureau, and the Area Health Resources Files.

*Difference between rural and urban categories is significant at $P < .05$; **$P < .001$.
[a] No difference between rural and urban categories.

Bivariate Associations With Adolescent Birth Rates

Table 2 examines the bivariate relationships between adolescent birth rates and each covariate of primary interest (rurality, county deprivation, and HPSA categories). We noted a significant differential adolescent birth rate by rurality and across levels of deprivation and HPSA categories.

Compared with the reference urban counterparts, adolescent birth rates in rural counties were markedly higher, contributing an additional 7.8 adolescent births per 1000 females aged 15 to 19 years (b = 7.84; 95% CI = 7.13, 8.55).

Higher adolescent birth rates were observed for higher levels of deprivation. When compared with the least deprived reference category, not very deprived counties had a higher adolescent birth rate (b = 6.70; 95% CI = 5.88, 7.51). On average, somewhat deprived counties had an additional 14.1 adolescent births per 1000 females aged 15 to 19 years (b = 14.10; 95% CI = 13.29, 14.91), while most deprived counties had an additional 23.1 adolescent births per 1000 females aged 15 to 19 years (b = 23.12; 95% CI = 22.30, 23.93).

Compared with counties in the none designated HPSA reference category, partly designated counties had significantly higher adolescent birth rates (b = 4.39; 95% CI = 3.28, 5.50). Counties that were whole HPSA designated also had significantly higher adolescent birth rate compared with the none designated reference category and the partly designated counties (b = 9.94; 95% CI = 8.69, 11.18).

TABLE 2— Bivariate Association Between Adolescent Birth Rates, Rurality, Deprivation, and Health Professional Shortage Area Categories: United States, 2017–2018

Categories	b (95% CI)*
Rurality	
Urban counties (Ref)	0
Rural counties	7.84 (7.13, 8.55)
Deprivation level	
Least deprived (Ref)	0
Not very deprived	6.70 (5.88, 7.51)
Somewhat deprived	14.10 (13.29 14.91)
Most deprived	23.12 (22.30, 23.93)
Health Professional Shortage Areas	
None designated (Ref)	0
Parts designated	4.39 (3.28, 5.50)
Whole designated	9.94 (8.69, 11.18)

Note. CI = confidence interval.

*Births per 1000 females aged 15 to 19 years.

Adjusted Analysis of Rural–Urban Differences

By levels of deprivation. Adjusted analysis examining rural–urban differences in adolescent birth rates within comparable levels of deprivation is shown in Table 3. The adjusted analysis explained about 50.7% of the total variance in the model (adjusted $R^2 = 0.5066$). On average, higher adolescent birth rates were noted for higher levels of deprivation, regardless of residence. However, the magnitude of adolescent birth rates across levels of deprivation was greater in rural counties than what was observed among their urban counterparts. When we compared it with the reference group of least deprived urban counties, we noted no statistically significant differences in adolescent birth rates among the least deprived rural counties (b = 0.54; 95% CI = –0.57, 1.65). However, we noted significant differences in adolescent birth rates for rural counties that were not very deprived when compared with urban counties that were least deprived (b = 6.05; 95% CI = 5.00, 7.11). Also, rural counties that were somewhat deprived had significantly higher adolescent birth rates compared with the reference category (b = 12.30; 95% CI = 11.18, 13.42). A significantly higher adolescent birth rate was noted among rural counties that were most deprived when compared with urban counties that were least deprived (b = 19.13; 95% CI = 17.79, 20.46).

Among urban counties that were not very deprived, the adolescent birth rate was higher than what was noted among urban counties that were least deprived (b = 5.29; 95% CI = 4.22, 6.37). Urban counties that were somewhat deprived had significantly higher adolescent birth rates than their least deprived counterparts (b = 10.45; 95% CI = 9.24, 11.65), but the rate was significantly below what was observed among rural counties that were somewhat deprived. The adolescent birth rate was significantly higher among urban counties that were most deprived (b = 15.65; 95% CI = 14.08, 17.22), when compared with their least deprived urban counterpart. Furthermore, adolescent birth rates in most deprived rural counties were significantly higher than in the most deprived urban counties.

Significant contributions of the select covariates were noted with the exception of the percentage of White and Black females aged 15 to 19 years. Notably, the county percentage of females aged 15 to 19 years (b = −1.36; 95% CI = −1.54, −1.18), Asian females aged 15 to 19 years (b = −0.53; 95% CI = −0.69, −0.36), and primary care physicians per 100 000 population (b = −0.04; 95% CI = −0.04, −0.03) were significantly associated with lower adolescent birth rate. However, percentage change in adolescent birth rate in the 5 years before 2018 (b = 0.05; 95% CI = 0.05, 0.06), percentage of Hispanic females aged 15 to 19 years (b = 0.10; 95% CI = 0.06, 0.14), percentage of American Indian females aged 15 to 19 years (b = 0.31; 95% CI = 0.23, 0.40), percentage of Hawaii/Pacific Islander females aged 15 to 19 years (b = 1.71; 95% CI = 1.03, 2.39), percentage of non–English-speaking individuals (b = 0.19; 95% CI = 0.07, 0.30), and the percentage of female adolescents aged younger than 18 years enrolled in Medicaid (b = 0.06; 95% CI = 0.03, 0.09) were all associated with higher adolescent birth rates.

By Health Professional Shortage Area categories. Table 3 shows the adjusted analysis for rural–urban differences in adolescent birth rates among comparable HPSA categories. The adjusted analysis explained about 32.6% of the total variance (adjusted $R^2 = 0.326$) in the model. Adolescent birth rates were higher among rural counties within each HPSA designated category, on average. Among rural counties with whole shortage designation, adolescent birth rates were higher by an average of 8.3 births per 1000 females aged 15 to 19 years (b = 8.27; 95% CI = 6.86, 9.67), which is substantially higher when compared with the reference group of none designated urban counties. Compared with the reference group, partly designated rural counties had higher adolescent births (b = 7.29; 95% CI = 6.00, 8.58). Notably, none designated rural counties had higher adolescent birth rates when compared with the reference group of none designated urban counties (b = 5.93; 95% CI = 4.23, 7.62). Significant differences in adolescent births were noted among urban counties that were whole (b = 3.88; 95% CI = 2.19, 5.57) and partly (b = 2.29; 95% CI = 0.98, 3.59) designated, when compared with the reference group. However, adolescent birth rates in those urban counties were comparably lower than those of their rural counterparts.

Adolescent birth rates were significantly indirectly associated with the county percentage of females aged 15 to 19 years (b = −1.65; 95% CI = −1.85, −1.44) and percentage of Asian females aged 15 to 19 years (b = −1.34; 95% CI = −1.52, −1.16). However, percentage change in adolescent birth rate in the 5 years before 2018 (b = 0.05; 95% CI = 0.04, 0.06); percentages of females aged 15 to 19 years who were Black (b = 0.22; 95% CI = 0.13, 0.31), Hispanic (b = 0.20; 95% CI = 0.15, 0.24), American Indian (b = 0.41; 95% CI = 0.31, 0.51), and Hawaii/Pacific Islander (b = 2.70; 95% CI = 1.92, 3.49); and percentage of non–English-speaking individuals (b = 0.23; 95% CI = 0.10, 0.36) all

TABLE 3— Adjusted Rural–Urban Differences in Adolescent Birth Rates by Area Deprivation Index and Health Professional Shortage Area: United States, 2017–2018

Variable	b (95% CI)*
Model 1: ADI×rural–urban with covariates	
Least deprived/urban (Ref)	0
Not very deprived/urban	5.29 (4.22, 6.37)
Somewhat deprived/urban	10.45 (9.24, 11.65)
Most deprived/urban	15.65 (14.08, 17.22)
Least deprived/rural	0.54 (−0.57, 1.65)
Not very deprived/rural	6.05 (5, 7.11)
Somewhat deprived/rural	12.3 (11.18, 13.42)
Most deprived/rural	19.13 (17.79, 20.46)
Covariates, %	
5-y change in adolescent birth rate	0.05 (0.05, 0.06)
Females aged 15–19 y	−1.36 (−1.54, −1.18)
White females aged 15–19 y	0.03 (−0.05, 0.11)
Black females aged 15–19 y	0.04 (−0.03, 0.12)
Hispanic females aged 15–19 y	0.10 (0.06, 0.14)
Hawaii/Pacific Islander females aged 15–19 y	1.71 (1.03, 2.39)
American Indian females aged 15–19 y	0.31 (0.23, 0.40)
Asian females aged 15–19 y	−0.53 (−0.69, −0.36)
Non–English-speaking	0.19 (0.07, 0.3)
Females < 18 y in Medicaid	0.06 (0.03, 0.09)
Primary care physician per 100 000 population	−0.04 (−0.04, −0.03)
Model 2: HPSA×rural–urban with covariates	
None designated/urban (Ref)	0
Parts designated/urban	2.29 (0.98, 3.59)
Whole designated/urban	3.88 (2.19, 5.57)
None designated/rural	5.93 (4.23, 7.62)
Parts designated/rural	7.29 (6.00, 8.58)
Whole designated/rural	8.27 (6.86, 9.67)
Covariates, %	
5-y change in adolescent birth rate	0.05 (0.04, 0.06)
Females aged 15–19 y	−1.65 (−1.85, −1.44)
White females aged 15–19 y	−0.04 (−0.12, 0.05)
Black females aged 15–19 y	0.22 (0.13, 0.31)
Hispanic females aged 15–19 y	0.20 (0.15, 0.24)
Hawaii/Pacific Islander females aged 15–19 y	2.70 (1.92, 3.49)
American Indian females aged 15–19 y	0.41 (0.31, 0.51)
Asian females aged 15–19 y	−1.34 (−1.52, −1.16)
Non-English speaking	0.23 (0.10, 0.36)
Females < 18 y in Medicaid	NA
Primary care physician per 100 000 population	NA

Note. ADI = area deprivation index; CI = confidence interval; HPSA = Health Professional Shortage Area; NA = variable not included because HPSA already captures health care resources.

*Births per 1000 females aged 15 to 19 years.

TABLE 4— Unadjusted and Adjusted Rural–Urban Predicted Means of the Adolescent Birth Rates by Levels of Deprivation and Health Professional Shortage Area Categories: United States, 2017–2018

	Rural (n = 1976)		Urban (n = 1167)	
Rural–Urban by ADI and HPSA	**Unadjusted**	**Adjusted**	**Unadjusted**	**Adjusted**
ADI categories				
Least deprived	16.43**	16.18[a]	11.51**	15.64[a]
Not very deprived	21.37*	21.69[a]	19.05*	20.93[a]
Somewhat deprived	29.01**	27.94*	25.66**	26.08*
Most deprived	37.74**	34.76**	33.33**	31.29**
HPSA categories				
None designated	23.88**	25.53**	15.82**	19.60**
Parts designated	26.98**	26.89**	20.13**	21.89**
Whole designated	31.36**	27.87**	24.60**	23.48**

Note. ADI = area deprivation index; HPSA = Health Professional Shortage Area.

*P < .05 for rural–urban pair; **P < .001 for rural–urban pair.

[a] Difference for rural–urban pair not significant.

were directly associated with higher adolescent birth rates.

Predicted Means of Rural–Urban Differences

Table 4 provides the predicted means of the adolescent birth rates derived from the unadjusted and adjusted models for both ADI and HPSA categories. We observed significant differences between rural and urban counties across all levels of deprivation in the unadjusted models. In the adjusted models, however, rural–urban differences in the rate of adolescent birth were attenuated among the least and not very deprived counties but remained significant among counties that are somewhat or most deprived.

In the unadjusted model for HPSA categories, higher adolescent birth rates were noted for both rural and urban counties as the county HPSA status changed from none to partly or whole designated shortage area. In the adjusted model, the difference in adolescent birth rates within the rural and urban counties across all the HPSA categories slightly leveled out, albeit with rural counties continuing to have significantly higher adolescent birth rates compared with urban counties.

DISCUSSION

In our study, we noted significantly higher adolescent birth rates as the level of county deprivation moved from lower to higher deprived categories for both rural and urban counties. Adolescent birth rates in rural communities were higher than what was observed among urban communities, which is consistent with recent findings on rural–urban differences in adolescent births.[8,17] While these 2 findings are important, our study also found that rural–urban differences in the rate of adolescent births persisted within comparable levels of deprivation, particularly among the most deprived counties. Importantly, the largest rural–urban differences in adolescent birth rates occurred among the most deprived counties. These findings suggest that higher levels of county deprivation may have more of an impact on adolescent births in rural communities than what is observed among their urban counterparts.

Furthermore, our study showed significantly higher adolescent birth rates by HPSA designation status among rural counties compared with urban counties. While these findings reveal the unique characteristics of the HPSA status as a useful social determinant of adolescent birth, we believe that rural communities have inherent vulnerabilities that contribute to poorer health outcomes including high adolescent birth rates.[15,16] For example, multilevel social and environmental factors such as census divisions, socioeconomic status, household sizes, minority language, and less access to health care facilities were shown to positively influence poor health outcomes including adolescent births.[15,16,27]

In addition to access to care in physician practices, the availability of contraceptive services through other safety net providers is also important. Our study shows that each additional primary care physician reduced adolescent birth rates by 0.04 births per 100 000 population. Previous research suggests that adequate contraceptive access in vulnerable communities will likely reduce adolescent births.[25,28,29] The Title X program, administered by the Office of Population Affairs within the US Department of Health and Human Services,[30,31] has had meaningful impacts on reducing adolescent births through the provision of contraceptives including long-acting reversible contraceptives.[32] However, there remain enormous challenges around contraceptive access[33] exacerbated by the recent domestic gag rule that puts further restrictions on Title X grantees.[34] Our findings show that residents living in deprived and medically underserved rural communities are more likely to be affected by these challenges. The Performance Measure Learning Collaborative could improve contraceptive access in vulnerable rural and urban communities.[35] This collaborative facilitates quality contraceptive care through clinical performance measures and a hybrid of effective best practices for Title X grantees. Health care infrastructures such as private insurance networks and federally qualified health centers could better expand access to contraceptive care using performance measures through collaborative learning.[35] Also, provision of contraceptive care through telehealth could bridge the accessibility gap and facilitate patient-centered contraceptive services, leading to improved wellness in deprived rural communities.[5]

Limitations

This study is not without limitations. The causes of rural–urban differences in adolescent birth rates over time were not examined in this study. As such, definitive causes of rural–urban differences in adolescent birth rates remain to be established.[17] As shown by the goodness-of-fit R^2 statistics for the adjusted models, it is evident that there are other sources of variation that are currently unaccounted for by our models. Also, we did not consider state-level health care access, such as Medicaid expansion, in the current study. In the future, we will expand our current models by examining the longitudinal differences in the level of impact of national policies on adolescent birth rates, unintended pregnancies, and repeat births in both rural and urban counties of the United States.

Public Health Implications

Our study provides additional evidence on rural disparities in terms of deprivation and structural barriers such as HPSAs. Notably, our findings emphasize that living in rural communities that often have disparate socioeconomic, demographic, and structural vulnerabilities is associated with higher adolescent birth rates compared with urban communities. Our study contributes to the body of evidence on the impact of adequate health care resources in reducing adolescent births in rural communities with underlying socioeconomic and structural vulnerability.[16,25,28,29]

Notably, each additional primary care physician reduced adolescent birth rates by 0.04 births per 100 000 population. Although not completely sufficient, availability and access to primary care physicians could be crucial to effective contraceptive counseling and follow-up procedures, particularly in the most deprived rural communities.[18] Furthermore, there is the need to address structural and financial barriers, which could improve women's health outcomes and reduce adolescent birth rates especially in deprived rural communities. AJPH

ABOUT THE AUTHORS

All authors are with the Center for Applied Research and Evaluation in Women's Health, Department of Health Services Management and Policy, East Tennessee State University, Johnson City.

CORRESPONDENCE

Correspondence should be sent to Sylvester O. Orimaye, Department of Health Services Management and Policy, East Tennessee State University, 1276 Gilbreath Dr, Johnson City, TN 37614 (e-mail: orimaye@etsu.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Orimaye SO, Hale N, Leinaar E, Smith MG, Khoury A. Adolescent birth rates and rural–urban differences by levels of deprivation and health professional shortage areas in the united states, 2017–2018. *Am J Public Health*. 2021;111(1): 136–144.

Acceptance Date: August 26, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305957

CONTRIBUTORS

S. O. Orimaye conducted the data analyses, wrote the original article, and managed the revisions and responses to reviewers. N. Hale and A. Khoury conceptualized and designed the study and contributed to writing and editing the article. E. Leinaar performed data curation and management and contributed to writing and editing the article. M. G. Smith contributed to the design and management of the study and to writing and editing the article. All authors contributed to the critical review of the study.

ACKNOWLEDGMENTS

We thank our anonymous reviewers for the helpful feedback.

CONFLICTS OF INTEREST

There are no conflicts of interest.

HUMAN PARTICIPANT PROTECTION

This study reports results from the analysis of de-identified, publicly released data and is exempt from institutional review board review as per section 46.101(b) of National Institutes of Health document 45 CFR 46.

REFERENCES

1. Martin JA, Hamilton BE, Osterman MJK, Driscoll AK. Births: final data for 2018. *Natl Vital Stat Rep*. 2019; 68(13):1–47.
2. Kearney MS, Levine PB. Teen births are falling: what's going on? The Brookings Institution. 2014. Available at: https://www.brookings.edu/wp-content/uploads/2016/06/teen_births_falling_whats_going_on_kearney_levine.pdf. Accessed October 21, 2020.
3. Abma JC, Martinez GM. Sexual activity and contraceptive use among teenagers in the United States, 2011–2015. *Natl Health Stat Report*. 2017; (104):1–23.
4. Diedrich JT, Klein DA, Peipert JF. Long-acting reversible contraception in adolescents: a systematic review and meta-analysis. *Am J Obstet Gynecol*. 2017;216(4):364.e1–364.e12. https://doi.org/10.1016/j.ajog.2016.12.024
5. Sundstrom B, DeMaria AL, Ferrara M, Meier S, Billings D. "The closer, the better:" the role of telehealth in increasing contraceptive access

among women in rural South Carolina. *Matern Child Health J*. 2019;23(9):1196–1205. https://doi.org/10.1007/s10995-019-02750-3

6. Penman-Aguilar A, Carter M, Snead MC, Kourtis AP. Socioeconomic disadvantage as a social determinant of teen childbearing in the US. *Public Health Rep*. 2017;128(suppl 1):5–22. https://doi.org/10.1177/00333549131282s102
7. Decker MJ, Isquick S, Tilley L, et al. Neighborhoods matter. A systematic review of neighborhood characteristics and adolescent reproductive health outcomes. *Health Place*. 2018;54:178–190. https://doi.org/10.1016/j.healthplace.2018.09.001
8. Hamilton BE, Rossen LM, Branum AM. Teen birth rates for urban and rural areas in the United States, 2007–2015. *NCHS Data Brief*. 2016;(264):1–8.
9. Crosby RA, Wendel ML, Vanderpool RC, Casey BR. *Rural Populations and Health: Determinants, Disparities, and Solutions*. San Francisco, CA: John Wiley & Sons; 2012.
10. Singh GK, Siahpush M. Widening rural–urban disparities in life expectancy, US, 1969–2009. *Am J Prev Med*. 2014;46(2):e19–e29. https://doi.org/10.1016/j.amepre.2013.10.017
11. Martins SL, Starr KA, Hellerstedt WL, Gilliam ML. Differences in family planning services by rural–urban geography: survey of Title X–supported clinics in Great Plains and Midwestern states. *Perspect Sex Reprod Health*. 2016;48(1):9–16. https://doi.org/10.1363/48e7116
12. Lindberg LD, Maddow-Zimet I, Boonstra H. Changes in adolescents' receipt of sex education, 2006–2013. *J Adolesc Health*. 2016;58(6):621–627. https://doi.org/10.1016/j.jadohealth.2016.02.004
13. Daniels K, Martinez GM, Nugent CN. Urban and rural variation in fertility-related behavior among US women, 2011–2015. *NCHS Data Brief*. 2017;(297):1–8.
14. Hale N, Probst J, Robertson A. Rural area deprivation and hospitalizations among children for ambulatory care sensitive conditions. *J Community Health*. 2016;41(3):451–460. https://doi.org/10.1007/s10900-015-0113-2
15. Hale N, Beatty K, Smith M. The intersection of residence, community vulnerability, and premature mortality. *J Rural Health*. 2019;35(4):471–479. https://doi.org/10.1111/jrh.12318
16. Yee CW, Cunningham SD, Ickovics JR. Application of the Social Vulnerability Index for identifying teen pregnancy intervention need in the United States. *Matern Child Health J*. 2019;23(11):1516–1524. https://doi.org/10.1007/s10995-019-02792-7
17. Sutton A, Lichter DT, Sassler S. Rural–urban disparities in pregnancy intentions, births, and abortions among US adolescent and young women, 1995–2017. *Am J Public Health*. 2019;109(12):1762–1769. https://doi.org/10.2105/AJPH.2019.305318
18. Fields BE, Bigbee JL, Bell JF. Associations of provider-to-population ratios and population health by county-level rurality. *J Rural Health*. 2016;32(3):235–244. https://doi.org/10.1111/jrh.12143
19. Gavin L, Frederiksen B, Robbins C, Pazol K, Moskosky S. New clinical performance measures for contraceptive care: their importance to healthcare quality. *Contraception*. 2017;96(3):149–157. https://doi.org/10.1016/j.contraception.2017.05.013
20. Potter JE, Stevenson AJ, Coleman-Minahan K, et al. Challenging unintended pregnancy as an indicator of reproductive autonomy. *Contraception*. 2019;100(1):1–4. https://doi.org/10.1016/j.contraception.2019.02.005
21. Kost K, Zolna M. Challenging unintended pregnancy as an indicator of reproductive autonomy: a response. *Contraception*. 2019;100(1):5–9. https://doi.org/10.1016/j.contraception.2019.04.010
22. Shoff C, Yang T-C. Spatially varying predictors of teenage birth rates among counties in the United States. *Demogr Res*. 2012;27(14):377–418. https://doi.org/10.4054/DemRes.2012.27.14
23. Cromartie J. *Rural America at a glance 2018 edition*. US Department of Agriculture. 2018. Available at: http://ageconsearch.umn.edu/record/282512/files/EIB200.pdf. Accessed April 24, 2020.
24. Health Resources and Services Administration. User documentation for the county Area Health Resources File (AHRF), 2018–2019. 2019. Available at: https://data.hrsa.gov/topics/health-workforce/ahrf. Accessed January 8, 2020.
25. Lindo JM, Packham A. How much can expanding access to long-acting reversible contraceptives reduce teen birth rates? *Am Econ J Econ Policy*. 2017;9(3):348–376. https://doi.org/10.1257/pol.20160039
26. Kraft JM, Kulkarni A, Hsia J, Jamieson DJ, Warner L. Sex education and adolescent sexual behavior: do community characteristics matter? *Contraception*. 2012;86(3):276–280. https://doi.org/10.1016/j.contraception.2012.01.004
27. Simpson KR. Ongoing crisis in lack of maternity services in rural America. *MCN Am J Matern Child Nurs*. 2020;45(2):132. https://doi.org/10.1097/NMC.0000000000000605
28. Andrews B, Ross C, Yoost JL. Availability of long acting reversible contraceptives for adolescents in urban vs rural West Virginia counties. *Marshall J Med*. 2019;5(3):20–29. https://doi.org/10.33470/2379-9536.1228
29. Steenland MW, Pace LE, Sinaiko AD, Cohen JL. Association between South Carolina Medicaid's change in payment for immediate postpartum long-acting reversible contraception and birth intervals. *JAMA*. 2019;322(1):76–78. https://doi.org/10.1001/jama.2019.6854
30. Frost JJ, Frohwirth L, Zolna MR. Contraceptive needs and services, 2014 update. Guttmacher Institute. 2016. Available at: https://www.guttmacher.org/report/contraceptive-needs-and-services-2014-update. Accessed April 24, 2020.
31. Ranji U, Salganicoff A, Sobel L, Rosenzweig C, Gomez I. Financing family planning services for low-income women: the role of public programs. The Henry J. Kaiser Family Foundation. 2017. Available at: http://files.kff.org/attachment/Issue-Brief-Financing-Family-Planning-Services-for-Low-income-Women. Accessed April 24, 2020.
32. Frost JJ, Frohwirth LF, Blades N, Zolna MR, Douglas-Hall A, Bearak J. Publicly funded contraceptive services at US clinics, 2015. Guttmacher Institute. 2017. Available at: https://www.guttmacher.org/report/publicly-funded-contraceptive-services-us-clinics-2015. Accessed April 24, 2020.
33. Kumar N, Brown JD. Access barriers to long-acting reversible contraceptives for adolescents. *J Adolesc Health*. 2016;59(3):248–253. https://doi.org/10.1016/j.jadohealth.2016.03.039
34. Mahase E. US abortion gag: clinics that leave family planning programme may have to destroy contraceptives. *BMJ*. 2019;366:l4969. https://doi.org/10.1136/bmj.l4969
35. Loyola Briceno AC, Kawatu J, Saul K, et al. From theory to application: using performance measures for contraceptive care in the Title X family planning program. *Contraception*. 2017;96(3):166–174. https://doi.org/10.1016/j.contraception.2017.06.009

Estimation of the Time Needed to Deliver the 2020 USPSTF Preventive Care Recommendations in Primary Care

Natalie Privett, PhD, and Shanice Guerrier, MS

See also Galea and Vaughan, p. 17.

Objectives. To reexamine the time required to provide the US Preventive Services Task Force (USPSTF)–recommended preventive services to a nationally representative adult patient panel of 2500.

Methods. We determined the required time for a single physician to deliver the USPSTF preventive services by multiplying the eligible population, annual frequency, and patient-contact time required for each recommendation, all calculated by using data from the recommendations themselves and literature. We modeled a representative panel of 2500 adults based on the 2010 US Census Bureau data.

Results. To deliver the USPSTF recommended preventive services across a 2500 adult patient panel would require 8.6 hours per working day, accounting for 131% of available physician time. Compared with 2003, there are fewer recommendations in 2020, but they require 1.2 more physician patient-contact hours per working day.

Conclusions. The time required to deliver recommended preventive care places unrealistic expectations on already overwhelmed providers and leaves patients at risk. This is a systems problem, not a time-management problem. The USPSTF provides a set of recommendations with strong evidence of positive impact. It is imperative that our health care system is designed to deliver. (*Am J Public Health*. 2021;111:145–149. https://doi.org/10.2105/AJPH.2020.305967)

For primary care, there is an increasing gap between what is expected and what is realistic. Our expectations of these physicians have been ever increasing. The increase in workload per primary care visit has far outpaced any increase in visit duration, resulting in more to accomplish in less time.[1] Not surprisingly, physicians are feeling more rushed, overwhelmed, and less effective than ever before.[2,3]

In addition to providers, patients are suffering. Preventive care rates remain startlingly low, putting millions of patients at unnecessary risk each year. Less than half of adults aged 65 years or older are up to date on core preventive services with significant racial and ethnic disparities placing a large number at particular disadvantage.[4] Many reasons have been posited for these low rates,[5] but the most significant barrier is time.

More than 15 years ago, Yarnall et al. contributed one of the most comprehensive efforts to quantify the gap between the expectation and reality of primary care by estimating the amount of time required to deliver the 1996 US Preventive Services Task Force (USPSTF) recommendations to a nationally representative patient panel.[6] Their main finding was that there was not enough time to deliver the recommended preventive services.

During the years since this work was published, a lot has changed—guidelines, population demographics, and advancements, such as health information technology, decision aids, and team-based care. This analysis provides an update on the original work of Yarnall et al.,[6] analyzing the current time requirements for preventive care recommendations. Our specific results differ from those of Yarnall et al., but the conclusion is unchanged: there still is not enough time for prevention.

METHODS

We leveraged many data sources to determine the total time necessary to provide preventive services to an adult population. We used data from the 2010 US Census Bureau[7] to model a representative panel of 2500 adults with age and gender distribution based on that of the US population. In addition, using the 2020 USPSTF recommendations and literature (https://bit.ly/2JVh6Ql), we derived (1) a list of recommended preventive services and, for each, the (2) population eligible to receive it, (3) frequency of performing each, and (4) patient-contact time required to deliver. The Appendix (available as a supplement to the online version of this article at http://www.ajph.org) details the assumptions, data sources, and references used for each recommendation and calculation.

The USPSTF recommendations are based on systematic review of evidence, assessment of the balance between harms and benefits, and the certainty and magnitude of the net benefit.[8] We only included services given a grade of either "A" or "B," which were indicated as highly beneficial to patients, in our analysis. We only included services recommended for men and nonpregnant women aged 25 years and older. Although these recommendations are certainly not exhaustive, they represent the most strongly recommended and evidence-based primary care preventive services for adults. Immunizations, an important pillar of preventive care, are not included in the USPSTF recommendations.

For each recommended service, the USPSTF recommendation stated eligible population criteria (e.g., screening for osteoporosis in women aged 65 years and older). We conducted further research to quantify the eligible population.

Where a range was cited, we used the most conservative frequency estimate (e.g., for breast cancer screening every 1 to 2 years, we used a frequency of every 2 years). We excluded any service recommended only 1 time within the lifetime of a patient. Where any recommendation stated "periodically," we assumed annual screenings.

We used 1 of 3 possible approaches to determine the amount of patient-contact time needed to deliver each recommended service. The USPSTF served as first point of reference. When it was not included in the recommendation, we referenced literature. Lastly, if both options were exhausted, we used time estimates from Yarnall et al.,[6] in which ordered tests were 1 minute, health checks performed by nurses were 0.25 minutes for physicians to review results, and counseling services were 1.5 or 3 minutes depending on complexity of the topic. All times assume the service is provided by a single physician.

Assuming services are delivered by a single physician, we determined the time needed to deliver preventive services by multiplying eligible population, annual frequency, and time required per service, which can be expressed as $\sum_{i=1}^{N} p_i f_i t_i$, where services are numbered from 1 to N, p_i represents the population eligible for service i, f_i represents the annual frequency for service i, and t_i represents physician time required to administer service i. We calculated the 1569.6 total available direct contact physician hours to deliver all preventive, chronic, and acute care similarly, assuming physicians spend 32.7 hours per week in direct patient care.[9] Conversions assume 48 weeks per year and 5 days per week.

RESULTS

Table 1 shows the age and gender distribution of the representative panel of 2500 adult patients. Using these estimates, we determined that a single physician would need at least 8.6 hours per day to deliver all grade A and B USPSTF recommendations (Table 2), with counseling making up a large majority of this time (Table 3). Based on total physician time available, ensuring the provision of all USPSTF recommendations would require 131% of physicians' direct patient care time (Table 3). It is important to note that this estimated time does not include the administrative work required to deliver this care, which has been estimated to contribute an additional 2 hours for every 1 hour spent in direct patient care.[10] Literature posits that primary care physicians should spend only 16% of their available time on preventive care[11] as compared with the acute and chronic care they are also responsible for delivering, highlighting a significant gap.

Comparing the analysis by Yarnall et al. of the 1996 USPSTF recommendations[6] with ours of the 2020 recommendations, the net change is 4 fewer recommended services but 1.2 more

TABLE 1— Representative Panel From the 2010 US Census Bureau

Patient Age Group	Male, No.	Female, No.	Total, No.
25–34 y	253	251	504
35–44 y	251	253	504
45–54 y	271	280	552
55–64 y	216	232	447
≥ 65 y	213	281	494
Total	1204	1296	2500

TABLE 2— Time Requirements for Each 2020 US Preventive Services Task Force Recommendation for Adults Aged 25 Years and Older in Representative Practice: United States

Grade[a]	Preventive Service	Eligible Population		Annual Frequency	Minutes Per Service	Hours Per Year
		Description	No.			
Screening						
A	Blood pressure	All	2500	1	0.25	10.42
B	BRCA risk assessment	Women with personal or family history or susceptibility	240	1	5	19.98
A	Cervical cancer	Women aged 21–65 y	1015	0.3	3	16.92
B	Chlamydia and gonorrhea	High-risk women	82	1	3	4.08
A	Colorectal cancer	Adults aged 50–75 y	1214	0.1	34.4	69.63
B	Depression	All	2500	1	4	166.67
B	Diabetes	Overweight and obese adults aged 40–70 y	994	0.3	1	4.97
B	Hepatitis B	High-risk adults	338	1	1	5.63
B	Hepatitis C	Injection drug users	65	1	1	1.08
A	HIV	Adults aged 15–65 y and high-risk adults aged ≥ 65 y	137	1	1	2.29
B	Intimate partner violence	Women of reproductive age	504	1	4.4	36.93
B	Lung cancer	Criteria-meeting adults aged 55–80 y	159	1	1	2.66
B	Mammogram	Women aged ≥ 40 y	921	0.5	1	7.68
B	Osteoporosis	Postmenopausal women at increased risk and women aged ≥ 65 y	659	0.2	1	2.20
A	Syphilis	High-risk adults	137	4	1	9.15
B	Tuberculosis	High-risk adults	188	1	1	3.13
B	Unhealthy alcohol use	All	2500	1	1	41.67
Counseling						
B	BRCA genetic counseling	Those who screen positive	14	1	1	0.24
B	Fall prevention	Community-dwelling adults aged ≥ 65 y who are at increased risk	140	1	1.5	3.50
B	Healthy diet and physical activity	Overweight and obese adults with CVD risk factors	481	1	30	240.39
B	Obesity	Adults with a body mass index of ≥ 30	995	1	15	248.75
B	STI prevention	High-risk adults	1786	1	30	892.91
A	Tobacco cessation	All	2500	1	3	125.00
B	Unhealthy alcohol use reduction	Those who screen positive	750	1	5	62.50
Preventive medication						
B	Aspirin use to prevent CVD and colorectal cancer	High-risk adults without previously diagnosed CVD	54	1	1.5	1.36
B	Breast cancer preventive medications	High-risk women	57	1	1.5	1.43
A	Folic acid	Women of reproductive age	504	1	1.5	12.59
A	HIV preexposure prophylaxis	High-risk adults	1786	1	1.5	44.65
B	Statin use to prevent CVD	Criteria-meeting adults without history of CVD	822	1	1.5	20.55
Total required physician hours per y						2058.9
Total required physician hours per d						8.6

Note. BRCA = breast cancer gene; CVD = cardiovascular disease; STI = sexually transmitted infection.

[a] The US Preventive Services Task Force recommends that grade A and B services are provided. Grade A services have a high certainty of substantial net benefit; grade B services have a moderate to high certainty of moderate to substantial net benefit (https://www.uspreventiveservicestaskforce.org/uspstf/grade-definitions).

TABLE 3— Time Requirement for 2020 US Preventive Services Task Force–Recommended Services by Category

	No. Recommendations	No. Hours per Day	No. Hours per Year	% of Available Physician Time
Screening	17	1.7	405.1	26
Counseling	7	6.6	1573.3	100
Preventive medication	5	0.3	80.6	5
Total	29	8.7	2058.9	131

hours per day required to deliver all recommended services.

DISCUSSION

Our research reveals the infeasibility of a single physician delivering all USPSTF recommendations via quantitative analysis of the time requirement across a nationally representative adult patient panel. Immunizations and non–patient-facing administrative work are not included in time estimates.

The implications are serious for primary care physicians, many of whom are already overwhelmed and burned out.[12] Excessive workload is a main driver of physician burnout, even more so when considering the associated clerical and documentation tasks required.[10,13–16] All the while, low preventive care persists, affecting morbidity, mortality, and quality of life for both individuals and populations.[17–22]

That the amount of time required to administer the current recommendations is still unrealistic for a single physician is in fact a systems problem and not a time-management problem. Seeking to reduce the amount of time these services require or prioritizing some services over others fails to recognize the importance of delivering all of these strongly supported recommendations to at-risk populations. This can only be done by redesigning the structure of primary care delivery. Many ideas present promise, such as team-based care,[11,23] clinical–community coordination and integration,[24–27] and investing in science and policy of practice.[28,29]

PUBLIC HEALTH IMPLICATIONS

Since the analysis by Yarnall et al.,[6] a lot has changed, but the conclusion today is unchanged: there still is not enough time for prevention. This is a systems problem and not a time management problem. The USPSTF provides a set of recommendations with strong evidence of positive impact. It is imperative that our health care system is redesigned to deliver.

ABOUT THE AUTHORS

At the time the study was conducted, both authors were with the Arnhold Institute for Global Health, Icahn School of Medicine at Mount Sinai, New York, NY. Natalie Privett was also with the Department of Health System Design and Global Health, Icahn School of Medicine at Mount Sinai.

CORRESPONDENCE

Correspondence should be sent to Natalie Privett, PhD, Design Institute for Health, 1601 Trinity St, Bldg B, Stop Z1000, Austin, TX 78712 (e-mail: natalie.privett@austin.utexas.edu). Reprints can be ordered at http://www.ajph.org by clicking the “Reprints” link.

PUBLICATION INFORMATION

Full Citation: Privett N, and Guerrier S. Estimation of the time needed to deliver the 2020 USPSTF preventive care recommendations in primary care. *Am J Public Health*. 2021;111(1):145–149.

Acceptance Date: September 4, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305967

CONTRIBUTORS

N. Privett originated the project and main conceptual ideas. S. Guerrier performed primary research and initial data analyses. Both authors developed the numerical model. N. Privett updated analyses. Both authors wrote the article.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to claim.

HUMAN PARTICIPANT PROTECTION

This work did not involve any human participants or nonpublic data; therefore, institutional review board approval was not sought.

REFERENCES

1. Abbo ED, Zhang Q, Zelder M, Huang ES. The increasing number of clinical items addressed during the time of adult primary care visits. *J Gen Intern Med*. 2008;23(12):2058–2065. https://doi.org/10.1007/s11606-008-0805-8
2. Shanafelt TD, Dyrbye LN, West CP, Sinsky CA. Potential impact of burnout on the US physician workforce. *Mayo Clin Proc*. 2016;91(11):1667–1668. https://doi.org/10.1016/j.mayocp.2016.08.016
3. Dyrbye L, Shanafelt T, Sinsky C, et al. Burnout among health care professionals: a call to explore and address this underrecognized threat to safe, high-quality care. National Academy of Medicine. 2017. Available at: https://nam.edu/burnout-among-health-care-professionals-a-call-to-explore-and-address-this-underrecognized-threat-to-safe-high-quality-care. Accessed June 4, 2018.
4. Older adults. Healthy People 2020. 2020. Available at: https://www.healthypeople.gov/2020/topics-objectives/topic/older-adults. Accessed August 11, 2020.
5. Berenson RA, Rich EC. US approaches to physician payment: the deconstruction of primary care. *J Gen Intern Med*. 2010;25(6):613–618. https://doi.org/10.1007/s11606-010-1295-z
6. Yarnall KSH, Pollak KI, Østbye T, Krause KM, Michener JL. Primary care: is there enough time for prevention? *Am J Public Health*. 2003;93(4):635–641. https://doi.org/10.2105/ajph.93.4.635
7. US Census Bureau. Statistical abstract of the United States: 2012. 2012. Available at: https://www.census.gov/library/publications/2011/compendia/statab/131ed.html. Accessed October 26, 2020.

8. Krist AH, Bibbins-Domingo K, Wolff TA, Mabry-Hernandez IR. Advancing the methods of the US Preventive Services Task Force. *Am J Prev Med*. 2018;54(1 suppl 1):S1–S3. https://doi.org/10.1016/j.amepre.2017.10.012
9. White B, Twiddy D. The state of family medicine: 2017. *Fam Pract Manag*. 2017;24(1):26–33.
10. Sinsky C, Colligan L, Li L, et al. Allocation of physician time in ambulatory practice: a time and motion study in 4 specialties. *Ann Intern Med*. 2016;165(11):753–760. https://doi.org/10.7326/M16-0961
11. Yarnall KSH, Østbye T, Krause KM, Pollak KI, Gradison M, Michener JL. Family physicians as team leaders: "time" to share the care. *Prev Chronic Dis*. 2009;6(2):A59.
12. Shanafelt TD, Hasan O, Dyrbye LN, et al. Changes in burnout and satisfaction with work–life balance in physicians and the general US working population between 2011 and 2014 [erratum in *Mayo Clin Proc*. 2016;91(2):276]. *Mayo Clin Proc*. 2015;90(12):1600–1613. https://doi.org/10.1016/j.mayocp.2015.08.023
13. Sansom A, Calitri R, Carter M, Campbell J. Understanding quit decisions in primary care: a qualitative study of older GPs. *BMJ Open*. 2016;6(2):e010592. https://doi.org/10.1136/bmjopen-2015-010592
14. Wallace JE, Lemaire JB, Ghali WA. Physician wellness: a missing quality indicator. *Lancet*. 2009;374(9702):1714–1721. https://doi.org/10.1016/S0140-6736(09)61424-0
15. Shanafelt TD, Dyrbye LN, West CP. Addressing physician burnout. *JAMA*. 2017;317(9):901–902. https://doi.org/10.1001/jama.2017.0076
16. Helfrich CD, Simonetti JA, Clinton WL, et al. The association of team-specific workload and staffing with odds of burnout among VA primary care team members. *J Gen Intern Med*. 2017;32(7):760–766. https://doi.org/10.1007/s11606-017-4011-4
17. Watson M, Benard V, King J, Crawford A, Saraiya M. National assessment of HPV and Pap tests: changes in cervical cancer screening, National Health Interview Survey. *Prev Med*. 2017;100:243–247. https://doi.org/10.1016/j.ypmed.2017.05.004
18. Kiefer MM, Silverman JB, Young BA, Nelson KM. National patterns in diabetes screening: data from the National Health and Nutrition Examination Survey (NHANES) 2005–2012. *J Gen Intern Med*. 2015;30(5):612–618. https://doi.org/10.1007/s11606-014-3147-8
19. Rein DB, Smith BD, Wittenborn JS, et al. The cost-effectiveness of birth-cohort screening for hepatitis C antibody in US primary care settings. *Ann Intern Med*. 2012;156(4):263–270. https://doi.org/10.7326/0003-4819-156-4-201202210-00378
20. Akincigil A, Matthews EB. National rates and patterns of depression screening in primary care: results from 2012 and 2013. *Psychiatr Serv*. 2017;68(7):660–666. https://doi.org/10.1176/appi.ps.201600096
21. White A, Thompson TD, White MC, et al. Cancer screening test use—United States, 2015. *MMWR Morb Mortal Wkly Rep*. 2017;66(8):201–206. https://doi.org/10.15585/mmwr.mm6608a1
22. Pham D, Bhandari S, Pinkston CM, Oechsli M, Kloecker GH. Lung cancer screening registry reveals low-dose CT screening remains heavily underutilized. *Clin Lung Cancer*. 2020;21(3):e206–211. https://doi.org/10.1016/j.cllc.2019.09.002
23. Sinsky CA, Bodenheimer T. Powering-up primary care teams: advanced team care with in-room support. *Ann Fam Med*. 2019;17(4):367–371. https://doi.org/10.1370/afm.2422
24. Shenson D, Anderson L, Slonim A, Benson W. Vaccinations and preventive screening services for older adults: opportunities and challenges in the USA. *Perspect Public Health*. 2012;132(4):165–170. https://doi.org/10.1177/1757913912444850
25. Krist AH, Shenson D, Woolf SH, et al. Clinical and community delivery systems for preventive care: an integration framework. *Am J Prev Med*. 2013;45(4):508–516. https://doi.org/10.1016/j.amepre.2013.06.008
26. Ogden LL, Richards CL, Shenson D. Clinical preventive services for older adults: the interface between personal health care and public health services. *Am J Public Health*. 2012;102(3):419–425. https://doi.org/10.2105/AJPH.2011.300353
27. Centers for Disease Control and Prevention, Administration on Aging, Agency for Healthcare Research and Quality, Centers for Medicare and Medicaid Services. Enhancing use of clinical preventive services among older adults: closing the gap. AARP. 2011. Available at: https://www.cdc.gov/aging/agingdata/data-portal/clinical-preventive-services.html. Accessed October 26, 2020.
28. Sinsky CA, Brown MT. Optimal panel size: are we asking the right question? *Ann Intern Med*. 2020;172(3):216–217. https://doi.org/10.7326/M19-3673
29. Paige NM, Apaydin EA, Goldhaber-Fiebert JD, et al. What is the optimal primary care panel size?: A systematic review. *Ann Intern Med*. 2020;172(3):195–201. https://doi.org/10.7326/M19-2491

Optimal Allocation of Societal HIV Prevention Resources to Reduce HIV Incidence in the United States

Stephanie L. Sansom, PhD, MPP, MPH, Katherine A. Hicks, MS, Justin Carrico, BS, Evin U. Jacobson, PhD, Ram K. Shrestha, PhD, Timothy A. Green, PhD, and David W. Purcell, JD, PhD

See also Friedman et al., p. 12, and Galea and Vaughan, p. 17.

Objectives. To optimize combined public and private spending on HIV prevention to achieve maximum reductions in incidence.

Methods. We used a national HIV model to estimate new infections from 2018 to 2027 in the United States. We estimated current spending on HIV screening, interventions that move persons with diagnosed HIV along the HIV care continuum, pre-exposure prophylaxis, and syringe services programs. We compared the current funding allocation with 2 optimal scenarios: (1) a limited-reach scenario with expanded efforts to serve eligible persons and (2) an ideal, unlimited-reach scenario in which all eligible persons could be served.

Results. A continuation of the current allocation projects 331 000 new HIV cases over the next 10 years. The limited-reach scenario reduces that number by 69%, and the unlimited reach scenario by 94%. The most efficient funding allocations resulted in prompt diagnosis and sustained viral suppression through improved screening of high-risk persons and treatment adherence support for those infected.

Conclusions. Optimal allocations of public and private funds for HIV prevention can achieve substantial reductions in new infections. Achieving reductions of more than 90% under current funding will require that virtually all infected receive sustained treatment. (*Am J Public Health*. 2021;111:150–158. https://doi.org/10.2105/AJPH.2020.305965)

AJPH January 2021, Vol 111, No. 1

As HIV heads into its fifth decade in the United States, treatment has improved remarkably, so that even those diagnosed in their 20s can achieve nearly normal life expectancy, though at a lifetime cost approaching $500 000.[1,2] The annual number of new infections has dropped precipitously from an estimated 130 000 in 1985, but has stalled at about 39 000 a year since 2013.[3,4] An estimated 1.1 million persons are living with HIV, but only 86% are aware of their infection, and only 53% are receiving sustained treatment sufficient for transmission-eliminating, life-prolonging viral suppression.[5]

In 2019, the US Department of Health and Human Services (HHS) proposed the "Ending the HIV Epidemic: A Plan for America" initiative. This federal effort aims to reduce the annual number of new infections to fewer than 3000 or less than 1 per 100 000 population, which, per the World Health Organization, defines epidemic control. HHS plans to achieve this aim by coordinating the programs, resources, and infrastructure of its many agencies and offices.[6] In addition to federal agencies, state and local governments and the private sector also provide significant support for HIV prevention and treatment.

Optimal resource allocation methods can help determine the most efficient use of HIV prevention funds to reduce new infections. Previous HIV resource allocation models have examined the most efficient use of funds from 1 or 2 federal agencies.[7,8] However, given the ambitiousness of the current initiative to end the HIV epidemic, an evaluation of combined societal funding—public and private—may shed more light on whether and how elimination might be achieved. In this article, we estimate societal funding for HIV prevention and its optimal allocation to curtail HIV incidence in the United States.

METHODS

We applied the HIV Optimization and Prevention Economics (HOPE) model, a dynamic, compartmental model that simulates that portion of the US population aged 13 to 64 years that is sexually active or drug injecting.[9] Our analytic time horizon was 2018 through 2027. We built HOPE in MATLAB (MathWorks, Natick, MA). An extensive description of the model's design, inputs, assumptions, and calibration can be found in the appendix of Khurana et al.[9]

Key Model Inputs

The model required data to describe the US population, particularly persons with HIV (PWH), HIV risk behaviors and their associated transmission risks, the cost and efficacy of HIV prevention and treatment, and the transition rates of PWH along the care continuum and across disease stages. To obtain estimated values for most model inputs, we reviewed and summarized the published, peer-reviewed literature and surveillance data (Appendix, Section 1, Table A, available as a supplement to the online version of this article at http://www.ajph.org). To obtain transition rates along the HIV care continuum, as well as the values of other inputs for which data were limited or uncertain, we calibrated the inputs, selecting values within bounds informed by published literature, unpublished data, or expert opinion. We calibrated these inputs so that model outcomes matched surveillance data for 1 or multiple time points from 2010 to 2016. The matched outcomes included HIV incidence by transmission category and gender, HIV prevalence for the United States as a whole, and the proportion of PWH estimated to be in each continuum stage.

Prevention Interventions Considered in the Model

Persons with HIV who through treatment are able to achieve and maintain a viral load of fewer than 200 copies per milliliter, hereafter referred to as viral suppression, have effectively no risk of sexual transmission.[10–13] As a result, important HIV prevention strategies include early diagnosis, prompt linkage to care, rapid initiation of antiretroviral therapy (ART), and maintenance in care and treatment. In addition, preexposure prophylaxis (PrEP)[14–16] and syringe services programs (SSPs)[17–19] are effective tools to prevent infection in persons at high risk of acquiring HIV (Figure 1). Thus, we considered allocations to 14 interventions:

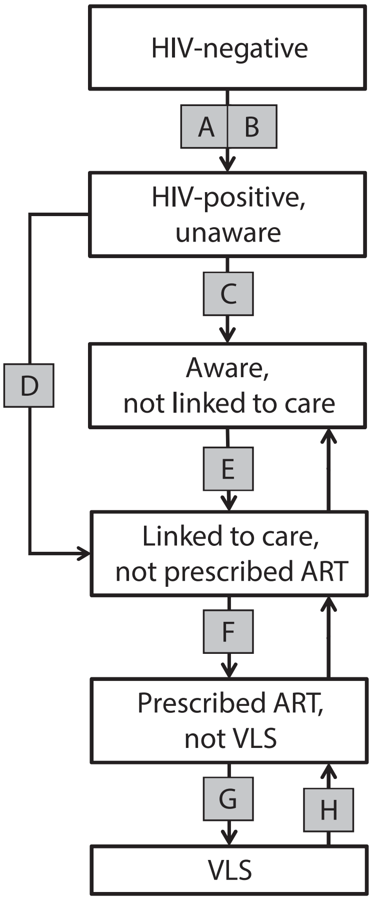
1. HIV screening for high- and low-risk men who have sex with men (MSM), high- and low-risk heterosexuals, and all persons who inject drugs (PWID; 5 interventions);
2. HIV care–continuum interventions influencing linkage to care at and after diagnosis, prescription of ART, and adherence to care and treatment to achieve and maintain viral suppression (5 interventions);
3. PrEP for high-risk MSM, high-risk heterosexuals, and all PWID (3 interventions); and
4. SSPs (1 intervention).

Estimation of Current Funds and Optimal Allocation

We derived total funding for each intervention by multiplying the cost per person served by the annual number served. For diagnosis in particular, we estimated the average cost per diagnosis for each risk group by dividing the costs of screening and diagnosis by the total number of diagnoses. For interventions that move PWH along the HIV care continuum, we assessed the average number of persons reaching each step of the continuum (e.g., linking to care, being prescribed ART, achieving and maintaining viral suppression) annually from 2018 to 2027. We determined the average annual number of persons reaching each step of the continuum by model calibration, so that the modeled number matched published HIV surveillance data on the care continuum in 2010, and either 2015 or 2016 (the most recent data for each step). We projected rates of change between the 2 time periods forward through 2027 in the current allocation. Per-person costs (Appendix, Table A) were based on published studies of interventions.

We based the per-person PrEP cost on the annual 2018 drug cost of $12 599[20] plus an annual monitoring cost of $1431.[21] The estimated number receiving PrEP in 2018 was 100 292.[22] Thus, the estimated total cost of PrEP delivery in the United States was $1.4 billion. We estimated the per-person cost in 2018 for syringe services programs, $234, by using data on the median annual number of syringes used by PWID[23] and the cost of injection equipment.[19,24] The cost of needle-using equipment per injection itself was derived from the estimate of the total costs of SSPs nationally ($24.5 million) and the number of syringes distributed under those programs (45.9 million).[19] All costs in the model were expressed in 2018 US dollars. We assumed that the current allocation of total HIV prevention funding remained fixed from 2018 through 2027 under the current allocation scenario.

Although not included in the optimization, we estimated care and treatment costs by disease stage and progress along the HIV care continuum. We assumed that everyone linked to care received care, and that those prescribed ART received ART, unless they dropped



	Intervention	How Intervention Affects Model Flow
A	PrEP	Decreases the number of individuals who become HIV-infected
B	SSP	Decreases the number of PWID who become HIV-infected
C	Screening	Increases the number of undiagnosed HIV-infected individuals who become diagnosed with HIV
D	Linkage to care at diagnosis	Increases the number of undiagnosed HIV-infected individuals who become diagnosed with HIV and are immediately linked to care
E	Linkage to care after diagnosis	Increases the number of individuals who are aware of their infection but not in care who are linked to care
F	ART prescription	Increases the number of individuals who are prescribed ART
G	Adherence to care and treatment to become virally suppressed	Increases the number of individuals who are prescribed ART but are not virally suppressed who become virally suppressed
H	Adherence to care and treatment to remain virally suppressed	Decreases the number of individuals who lose their VLS status

FIGURE 1— Diagram of How HIV Prevention Interventions Relate to HIV and the HIV Care Continuum: United States

Note. ART = antiretroviral therapy; PrEP = pre-exposure prophylaxis; PWID = persons who inject drugs; SSP = syringe services programs; VLS = viral load suppression.

out of care. The per-person annual ART cost used in the model was $25 059.[20] We included health-care utilization costs for HIV-related illness.

Using the estimated total prevention funds and the current allocation of those funds, we explored optimal allocations of the funding across interventions and populations in 2 scenarios: a limited-reach scenario in which estimates of the maximum percentage of eligible persons who could be reached by each intervention reflected expanded efforts to serve such persons, and an idealistic, unlimited-reach scenario in which all eligible persons could be reached by each intervention, given sufficient funding. Changes in allocations to interventions under the 2 scenarios slowed the annual rate of movement to related care continuum steps when funding decreased, and accelerated it when funding increased.

Assumptions about the expected proportion of eligible persons who could be reached under the limited-reach scenario fall between the proportion currently reached and 100% in the unlimited reach scenario (Appendix, Table A). To model the effect of prevention funding, which is typically provided in 5-year increments, we estimated the optimal allocation of these funds for the 5-year time periods 2018 to 2022 and 2023 to 2027. We reported the results of the 2 consecutive 5-year allocations that, when combined, produced the greatest reduction in new HIV infections over 10 years.

For our current allocation scenario, we estimated the number of HIV infections that would occur from 2018 through 2027 if the current allocation of total HIV prevention funding remained fixed throughout that period. Then, assuming the same amount of funding, we used optimization techniques (from MATLAB's Optimization Toolbox) and the HOPE model to estimate the 2018–2022 and 2023–2027 allocations that would prevent the most HIV infections from 2018 through 2027. We outline the full optimization formulation in Sections 2 and 3 of the Appendix.

Key outcomes included the optimal allocations to HIV screening, the HIV care–continuum interventions, PrEP, SSPs, and the resulting number of new HIV infections from 2018 to 2027. We projected changes in the proportions of PWH who had achieved each step along the HIV care continuum by 2027, and we noted changes in average annual treatment costs.

Uncertainty and Sensitivity Analyses

We conducted sensitivity and uncertainty analyses, and we present the methods and results of those analyses in Section 4 of the Appendix.

RESULTS

We estimated total 2018 national HIV prevention funding of $2.6 billion (Table 1). Among prevention interventions, we estimated 30.0% currently was allocated to HIV screening, including 25.3% for low-risk heterosexuals and 1.2% for high-risk MSM; 16.7% to interventions that move people along the HIV care continuum, including 5.7% and 9.7% to interventions that support adherence to care and treatment to achieve and to maintain viral suppression, respectively; 52.5% to PrEP, including 6.0% to high-risk heterosexuals and 46.4% to high-risk MSM; and 0.9% to SSPs. When we continued the estimated current allocation through 2027, the model projected a total HIV incidence over that period of 331 051 cases, or 33 100 a year on average (Figure 2; Table 2).

Limited-Reach Scenario

The optimal allocation for the limited-reach scenario was largely influenced by the percentage of eligible persons who we specified as reachable. For both 5-year time periods, the model allocated the maximum amount possible to 10 of the 14 interventions given the limit on the percentage of eligible persons who could be reached, indicating that even more would be spent on those interventions (and less on others) in the absence of those limits. The interventions funded to the maximum level included the screening of all risk groups except low-risk heterosexuals, all HIV care–continuum interventions, and SSPs.

For the first 5 years of the limited-reach scenario, the optimal allocation included 14.9% for screening, 36.7% for the HIV care–continuum interventions, 46.0% for PrEP, and 2.4% for SSPs. Major increases (defined as 5 or more rounded percentage points) in the proportion of prevention funding allocated to a particular intervention between the current and optimal scenarios during the first 5-year time period occurred in screening high-risk heterosexuals (2.4% to 9.3%), interventions that support adherence to care and treatment to achieve viral suppression (5.7% to 13.7%), and interventions that support adherence to care and treatment to sustain viral suppression (9.7% to 19.1%; Table 1). Major decreases occurred in screening of low-risk heterosexuals (25.3% to 0.4%) and PrEP for high-risk heterosexuals (6.0% to 0.0%). In the second time period, a major increase in funding, compared with the first 5-year period in the limited-reach scenario, occurred in PrEP for high-risk MSM (from 46.0% to 59.5%). A major decrease occurred in interventions that support adherence to care and treatment to achieve viral suppression (13.7% to 5.1%).

These consecutive 5-year optimal allocations were associated with a decrease in 10-year cumulative HIV incidence of 69% compared with the current allocation, from 331 051 cases to 103 359 cases (or 10 400 cases per year on average; Table 2). At the end of the 10 years, among all risk groups with the exception of low-risk heterosexuals, 99% of persons with HIV were diagnosed (for low-risk heterosexuals, 85% of those infected were diagnosed), 98% were linked to care, 98% had been prescribed ART, and 86% had achieved viral suppression.

Unlimited-Reach Scenario

In the optimal allocation for the unlimited-reach scenario, of the 14 interventions, 6 were funded for everyone eligible during the first 5 years and 7 during the second 5 years. During the first 5 years, fully funded interventions included screening of high-risk MSM and interventions that increase linkage to care at and after diagnosis, increase ART prescription, and support adherence to care and treatment to achieve and maintain viral suppression. During the second 5 years, interventions that were fully funded were the same as during the first 5 years but also included SSPs.

For the first 5 years of the unlimited-reach scenario, the optimal allocation included 35.4% for HIV screening, 64.6% for interventions that move people along the HIV care continuum, 0.0% for PrEP, and 0.0% for SSPs. Major increases in the proportion of prevention funding allocated to a particular intervention in the first 5 years of the unlimited-reach scenario compared with the first 5 years of the limited-reach scenario included screening high-risk heterosexuals (from 9.3% to 14.1%), screening high-risk MSM (from 2.7% to 16.2%), interventions that

TABLE 1— Allocations Under the Current and Optimal HIV Prevention–Related Allocation Scenarios: United States, 2018–2027

Outcome	Current Allocation, $ Million (% of HIV Prevention Funding), 2018–2027	Optimal Allocation With Limited Reach, $ Million (% of HIV Prevention Funding)		Optimal Allocation With Unlimited Reach, $ Million (% of HIV Prevention Funding)	
		2018–2022	2023–2027	2018–2022	2023–2027
Prevention funding for screening					
High-risk HETs	62.5 (2.4)	243.1 (9.3)[a]	230.2 (8.8)[a]	368.0 (14.1)	247.5 (9.5)
Low-risk HETs	662.8 (25.3)	11.4 (0.4)	4.0 (0.2)	0.2 (0.0)	1 276.9 (48.8)
High-risk MSM	30.3 (1.2)	69.5 (2.7)[a]	56.8 (2.2)[a]	425.3 (16.2)[a]	200.0 (7.6)[a]
Low-risk MSM	17.9 (0.7)	29.2 (1.1)[a]	34.3 (1.3)[a]	94.7 (3.6)	45.8 (1.7)
PWID	10.9 (0.4)	29.2 (1.1)[a]	26.7 (1.0)[a]	38.9 (1.5)	76.8 (2.9)
Proportion of prevention budget for screening	(30.0)	(14.9)	(13.4)	(35.4)	(70.5)
Prevention funding for care continuum					
Linkage to care at diagnosis	18.4 (0.7)	64.1 (2.4)[a]	7.7 (0.3)[a]	9.1 (0.3)[a]	2.9 (0.1)[a]
Linkage to care after diagnosis	15.4 (0.6)	33.6 (1.3)[a]	8.2 (0.3)[a]	189.6 (7.2)[a]	2.5 (0.1)[a]
ART prescription	1.2 (0.0)	3.7 (0.1)[a]	1.5 (0.1)[a]	35.9 (1.4)[a]	16.2 (0.6)[a]
Adherence to care and treatment to become virally suppressed	148.9 (5.7)	358.9 (13.7)[a]	132.4 (5.1)[a]	807.4 (30.8)[a]	4.9 (0.2)[a]
Adherence to care and treatment to remain virally suppressed	253.6 (9.7)	499.7 (19.1)[a]	499.1 (19.1)[a]	649.3 (24.8)[a]	625.8 (23.9)[a]
Proportion of prevention budget for care continuum	(16.7)	(36.7)	(24.8)	(64.6)	(24.9)
Prevention funding for PrEP					
For high-risk HETs	158.1 (6.0)	0.1 (0.0)	0.3 (0.0)	0.0 (0.0)	0.0 (0.0)
For high-risk MSM	1 215.4 (46.4)	1 205.3 (46.0)	1 557.4 (59.5)	0.0 (0.0)	0.0 (0.0)
For PWID	0.0 (0.0)	0.1 (0.0)	0.3 (0.0)	0.0 (0.0)	0.0 (0.0)
Proportion of prevention budget for PrEP	(52.5)	(46.0)	(59.5)	(0.0)	(0.0)
Prevention funding for syringe services programs	23.1 (0.9)	63.6 (2.4)[a]	59.4 (2.3)[a]	0.0 (0.0)	119.1 (4.5)[a]
Total prevention funding	2 618.5	2 618.5	2 618.5	2 618.5	2 618.5
Average annual treatment and care funding	35 199 (93.1)	35 731 (93.2)	34 845 (93.0)	36 615 (93.3)	33 693 (92.8)
Total funding	37 520.7	38 349.6	37 463.6	39 233.7	36 311.1

Note. ART = antiretroviral therapy; HETs = sexually active heterosexuals; MSM = men who have sex with men; PrEP = pre-exposure prophylaxis; PWID = persons who inject drugs.

[a] Allocation to this intervention was limited by the maximum percentage of eligible persons who we assumed could be reached (in the limited-reach scenario) or by the maximum number of persons eligible (in the unlimited-reach scenario).

increase linkage to care after diagnosis (from 1.3% to 7.2%), interventions that support adherence to care and treatment to become virally suppressed (from 13.7% to 30.8%), and interventions that support adherence to care and treatment to remain virally suppressed (from 19.1% to 24.8%). A major decrease occurred in PrEP for high-risk MSM (from 46.0% to 0.0%).

In the unlimited-reach scenario, compared with the first 5-year time period, major increases in the allocation of prevention funding during the second 5-year time period included screening low-risk heterosexuals (from 0.0% to 48.8%) and SSPs (from 0.0% to 4.5%). Major decreases occurred in screening high-risk MSM (from 16.2% to 7.6%), interventions that increase linkage to care after diagnosis (from 7.2% to 0.1%),

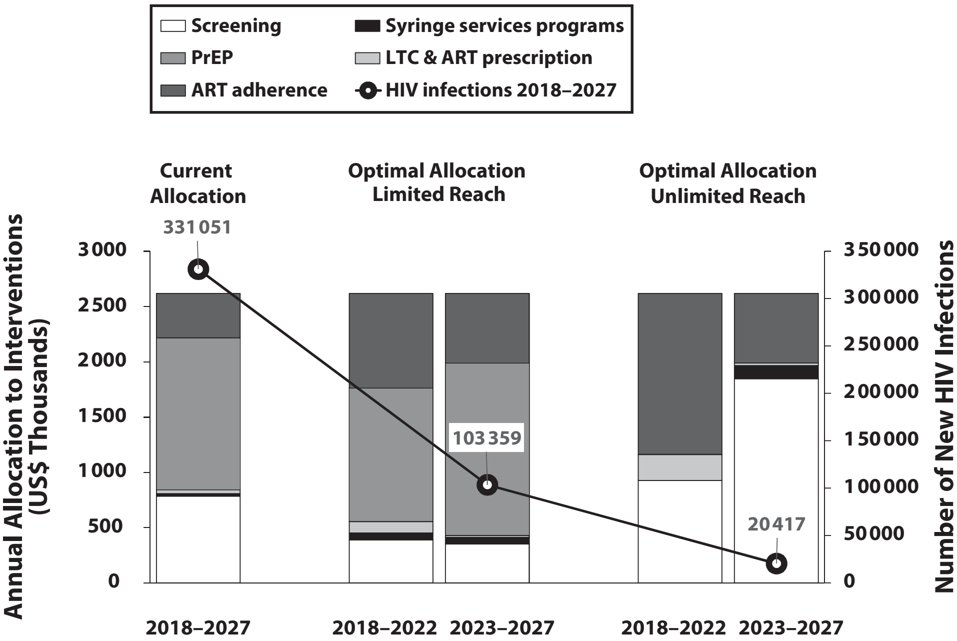


FIGURE 2— Annual Allocations to HIV Care–Continuum Interventions Under Current and Optimal Allocation Scenarios and Associated Cumulative Number of HIV Infections: United States, 2018–2027

Note. ART = antiretroviral therapy; LTC = linkage to care; MSM = men who have sex with men; PrEP = pre-exposure prophylaxis; PWID = persons who inject drugs. The same total prevention funding was applied in the 3 scenarios, but the allocations differed. Allocations to screening, PrEP, and interventions that increase linkage to care and support adherence to care and treatment represented allocations across subpopulations. Screening, for instance, included high- and low-risk MSM, high- and low-risk heterosexuals, and all PWID; PrEP included allocations to high-risk MSM, high-risk heterosexuals, and all PWID; linkage-to-care interventions influenced linkage at and after diagnosis; and interventions that support adherence to care and treatment included allocations to both achieve and maintain viral suppression. The dots on the solid black line indicate the 10-year cumulative incidence of HIV associated with a 10-year allocation of current funding and the 2 consecutive 5-year allocations under the 2 optimal distributions.

and interventions that support adherence to care and treatment to become virally suppressed (from 30.8% to 0.2%).

The optimal allocation in the unlimited-reach scenario was associated with a decrease in 10-year cumulative HIV incidence of 94%, from 331 051 cases to 20 417 cases (or 2000 cases per year on average) compared with the current scenario. At the end of the 10 years, nearly all infections (> 99.7%) were diagnosed; however, among low-risk heterosexuals, only 97% of infections were diagnosed. Nearly all persons with HIV (> 99.7%) were linked to care, prescribed ART, and virally suppressed.

DISCUSSION

Models, no matter the complexity or degree of validation, cannot fully represent the dynamics of HIV infection or capture the uncertainties inherent in HIV prevention program implementation. However, when tested carefully, modeling can provide insights into strategies more likely than others to achieve large reductions in HIV incidence. Our results suggest that the current estimated allocation of HIV prevention funds, if maintained over the next 10 years, is likely to be associated with stable incidence rates of approximately 33 100 cases a year. The current allocation spends a large proportion of prevention funding on testing low-risk heterosexuals and on PrEP for high-risk MSM. Although PrEP has been clinically proven to be highly efficacious in preventing acquisition of HIV among those susceptible,[14–16] models comparing interventions show that it is less effective in reducing new HIV cases nationally than ensuring that those already infected cannot transmit to others by achieving and maintaining viral suppression with effective ART.[9] Our analysis focused on the most efficient use of constant annual prevention funding to prevent new cases of HIV. Only after the most efficient interventions are funded are the remaining dollars shifted to less efficient interventions.

When compared with the current allocation, optimal allocations increased funding for screening populations at high risk of acquiring HIV and for interventions that move people along the HIV care continuum, especially those that support adherence to achieve and maintain viral suppression. The result was a surge in the percentage of persons with HIV whose infection was

TABLE 2— Outcomes Under the Current and Optimal HIV Prevention–Related Allocation Scenarios: United States, 2018–2027

Outcome	Current Allocation, No. Cases or % Distribution	Optimal Allocation With Limited Reach, No. Cases (% Difference vs Current Allocation) or % Distribution	Optimal Allocation With Unlimited Reach, No. Cases (% Difference vs Current Allocation) or % Distribution
10-year cumulative HIV incidence			
HETs	55 420	26 019 (−53)	6 746 (−88)
MSM	267 301	71 529 (−73)	11 262 (−96)
PWID	8 330	5 811 (−30)	2 409 (−71)
Total	331 051	103 359 (−69)	20 417 (−94)
Distribution of PWH along care continuum in 2027			
Diagnosed			
High-risk HETs	91	99	100
Low-risk HETs	82	85	97
High-risk MSM	88	99	100
Low-risk MSM	87	99	100
PWID	98	99	100
Linked to care	88	98	100
Prescribed ART	85	98	100
VLS among all PWH	51	86	100

Note. ART = antiretroviral therapy; HETs = sexually active heterosexuals; MSM = men who have sex with men; PWH = persons with HIV; PWID = persons who inject drugs; VLS = viral load suppression.

diagnosed and who were virally suppressed, and a sharp reduction in incidence over 10 years. The model reflects the clinical reality that when everyone infected is virally suppressed, transmission comes to a halt.[25]

We evaluated 2 optimization scenarios: a limited-reach scenario in which estimates of the maximum percentage of eligible persons who could be reached by each intervention reflected expanded efforts to serve such persons, and an idealistic, unlimited-reach scenario in which all eligible persons could be reached by each intervention. The largest reduction in HIV incidence over 10 years was observed in the ideal, unlimited-reach scenario that required nearly all persons infected with HIV to be diagnosed promptly and effectively treated to achieve and maintain viral suppression.

To more closely mimic how prevention programs are funded, we structured the model to allow for 2 consecutive 5-year allocations rather than a single 10-year allocation. In the limited-reach scenario, the optimal allocation for the first 5 years invested every dollar possible into screening all risk groups except low-risk heterosexuals, linking diagnosed persons to care and treatment, and supporting efforts to achieve and maintain viral suppression. Funding HIV screening and the HIV care–continuum interventions according to the optimal allocation, however, required only 51.6% of available prevention funds because of constraints on the number who could be reached. Sufficient funds thus were left over to allocate enough to support all persons eligible for SSPs. Even then, nearly half of all funds were unallocated, and most (46.0%) went to PrEP for high-risk MSM. In the unlimited-reach scenario, in which all eligible persons could be reached, the model increased allocations to HIV screening and to interventions that moved people along the care continuum, and these interventions absorbed all prevention funds, so that none were available for SSPs and PrEP.

In both the limited- and unlimited-reach scenarios, allocations in the second 5-year period served to shore up gains made in infections prevented during the first 5 years and to shift funds no longer required for screening, linkage, ART prescription, and achieving viral suppression into less cost-effective interventions. For instance, in the limited-reach scenario, even more funding was allocated to PrEP for high-risk MSM. In the unlimited-reach scenario, nearly half of all funds were allocated to screening low-risk heterosexuals, many of whom were unreachable in the limited-reach scenario.

Reductions in incidence over time resulted in reductions in annual HIV care and treatment costs, estimated at $35.2 billion per year on average from 2018 to 2027 in the current allocation scenario. In both the limited- and unlimited-reach scenarios, those costs rose above the average during the first 5 years to pay for the increased number of persons diagnosed and on ART and dropped below it during the final 5 years as the number of new HIV cases decreased. In the limited-reach scenario, they dropped 1.0% ($354 million/year) compared with current costs, and in the unlimited-reach scenario, they dropped 4.3% ($1.5 billion/year), indicating the large potential health care savings when HIV incidence drops.

Limitations

Our analysis has a number of potential limitations. We assumed that moving each PWH along each step of the care continuum required an average expenditure based on published cost data. However, for some people the move may have been costless, whereas for others it may have been more costly than we assumed. Because of lack of data, we did not increase intervention costs in either optimal allocation scenarios as higher percentages of eligible persons were reached or for subgroups that historically have been hard to reach. Better assessments of how intervention costs change for the hardest to reach will be important for understanding the full costs of HIV elimination in the United States.

We did not explicitly account for costs incurred as funds are transferred downstream from agencies to program providers, although these costs can be substantial. However, the Kaiser Family Foundation reported that the federal fiscal year 2018 request for domestic HIV prevention funds was $0.9 billion.[26] Considering that our estimated $2.6 billion prevention cost included $1.4 billion in funds for PrEP, typically incurred by the private sector, our public sector funding was approximately $1.2 billion. This amount is reasonably consistent with the Kaiser estimate, although we used very different methods to derive it. We were not able to include some interventions that have been implemented in local communities; we call for additional scientific research to demonstrate the efficacy of these interventions in preventing HIV.

Public Health Implications

In conclusion, optimizing the allocation of current societal investments in HIV prevention could achieve substantial reductions in new infections. Our results are consistent with and build on previous findings from models that optimized funding from the perspective of 1 or 2 government agencies. Given stable funding and the current effectiveness of intervention delivery, sizeable reductions in HIV incidence may be realized by focusing on screening persons at highest risk of HIV, linking the newly diagnosed to care, and supporting those in treatment to achieve and maintain viral suppression. Funds then could be spent on primary prevention programs including syringe services and PrEP for high-risk MSM.

Modeling an unlimited-reach scenario, in which all persons eligible for prevention and treatment can be reached, while aspirational, is instructive because it reinforces the idea that the path to HIV elimination, given current funding, is one that focuses primarily on prompt diagnosis with sustained treatment of those infected. Implementing optimal allocations will require careful planning so that implementation is done in accordance with community input and governing rules, laws, and ethics. Our results highlight which interventions to fund and how much to fund them to achieve maximum reductions in HIV transmission. However, models such as ours do not prescribe how best to deliver those interventions, especially for the hardest-to-reach populations. Determining best delivery strategies will be an important next step for program managers and implementation scientists. AJPH

ABOUT THE AUTHORS

Stephanie L. Sansom, Evin U. Jacobson, Ram K. Shrestha, Timothy A. Green, and David W. Purcell are with the Division of HIV/AIDS Prevention, Centers for Disease Control and Prevention (CDC), Atlanta, GA. Katherine A. Hicks and Justin Carrico are with RTI Health Solutions, Raleigh, NC.

CORRESPONDENCE

Correspondence should be sent to Stephanie L. Sansom, PhD, MPP, MPH, 1600 Clifton Road NE, US8-2, Atlanta, GA 30329 (e-mail: ssansombiz@gmail.com). Reprints can be ordered at http://www.ajph.org by clicking the “Reprints” link.

PUBLICATION INFORMATION

Full Citation: Sansom SL, Hicks KA, Carrico J, et al. Optimal allocation of societal HIV prevention resources to reduce HIV incidence in the united states. *Am J Public Health*. 2021;111(1):150–158.

Acceptance Date: September 4, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305965

CONTRIBUTORS

S. L. Sansom conceptualized the analysis; oversaw the model design and parameterization; reviewed and refined model results, tables, and figures; and drafted and edited the article. K. A. Hicks and J. Carrico developed the model design and parameterization; coded and ran the model; produced results, tables, and figures; drafted the technical appendix; and reviewed and edited the article. E. U. Jacobson reviewed model inputs and coding, reviewed tables and figures, and edited the article and technical appendix. R. K. Shrestha developed intervention costs based on published literature and independent calculations, reviewed figures and tables, and edited the article and technical appendix. T. A. Green and D. W. Purcell reviewed the conceptual framework and results; reviewed and edited tables, figures, and the article; and provided insights on policy and programmatic implications of the results.

ACKNOWLEDGMENTS

All funding for this project came from the CDC.

The authors gratefully acknowledge the contributions of Paul Farnham, PhD, Jennifer Kates, PhD, John Brooks, MD, and Nidhi Khurana, PhD, for reviews of the article and helpful comments.

Note. The findings and conclusions are those of the authors and do not necessarily represent the views of the CDC.

CONFLICTS OF INTEREST

None of the authors have potential or actual conflicts of interest.

HUMAN PARTICIPANT PROTECTION

Institutional review board approval was not needed for this analysis because it was based on published data.

REFERENCES

1. Antiretroviral Therapy Cohort Collaboration. Survival of HIV-positive patients starting antiretroviral therapy between 1996 and 2013: a collaborative analysis of cohort studies. *Lancet HIV*. 2017;4(8):e349–e356. https://doi.org/10.1016/S2352-3018(17)30066-8
2. Farnham PG, Gopalappa C, Sansom SL, et al. Updates of lifetime costs of care and quality-of-life estimates for HIV-infected persons in the United States: late versus early diagnosis and entry into care. *J Acquir Immune Defic Syndr*. 2013;64(2):183–189. https://doi.org/10.1097/QAI.0b013e3182973966
3. Centers for Disease Control and Prevention. Estimated HIV incidence and prevalence in the United States, 2010–2016. HIV Surveillance Supplemental Report. 2019;24(1). Available at: http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html. Accessed July 11, 2019.
4. Hall HI, Song R, Rhodes P, et al.; HIV Incidence Surveillance Group. Estimation of HIV incidence in the United States. *JAMA*. 2008;300(5):520–529. https://doi.org/10.1001/jama.300.5.520
5. Centers for Disease Control and Prevention. Monitoring selected national HIV prevention and care objectives by using HIV surveillance data—United States and 6 dependent areas, 2017. HIV Surveillance Supplemental Report. 2019;24(3). Available at: https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-supplemental-report-vol-24-3.pdf. Accessed December 30, 2019.
6. Fauci AS, Redfield RR, Sigounas G, Weahkee MD, Giroir BP. Ending the HIV epidemic: a plan for the United States. *JAMA*. 2019;321(9):844–845. https://doi.org/10.1001/jama.2019.1343
7. Lasry A, Sansom SL, Hicks KA, Uzunangelov V. Allocating HIV prevention funds in the United States: recommendations from an optimization model. *PLoS One*. 2012;7(6):e37545. https://doi.org/10.1371/journal.pone.0037545
8. Yaylali E, Farnham PG, Cohen S, Purcell DW, Hauck H, Sansom SL. Optimal allocation of HIV prevention funds for state health departments. *PLoS One*. 2018;13(5):e0197421. https://doi.org/10.1371/journal.pone.0197421
9. Khurana N, Yaylali E, Farnham PG, et al. Impact of improved HIV care and treatment on PrEP effectiveness in the United States, 2016–2020. *J Acquir Immune Defic Syndr*. 2018;78(4):399–405. https://doi.org/10.1097/QAI.0000000000001707
10. Bavinton BR, Pinto AN, Phanuphak N, et al.; Opposites Attract Study Group. Viral suppression and HIV transmission in serodiscordant male couples: an international, prospective, observational, cohort study. *Lancet HIV*. 2018;5(8):e438–e447. https://doi.org/10.1016/S2352-3018(18)30132-2
11. Cohen MS, Chen YQ, McCauley M, et al.; HPTN 052 Study Team. Antiretroviral therapy for the prevention of HIV-1 transmission. *N Engl J Med*. 2016;375(9):830–839. https://doi.org/10.1056/NEJMoa1600693
12. Rodger AJ, Cambiano V, Bruun T, et al.; PARTNER Study Group. Risk of HIV transmission through condomless sex in serodifferent gay couples with the HIV-positive partner taking suppressive antiretroviral therapy (PARTNER): final results of a multicentre, prospective, observational study. *Lancet*. 2019;393(10189):2428–2438. https://doi.org/10.1016/S0140-6736(19)30418-0
13. Rodger AJ, Cambiano V, Bruun T, et al.; PARTNER Study Group. Sexual activity without condoms and risk of HIV transmission in serodifferent couples when the HIV-positive partner is using suppressive antiretroviral therapy. *JAMA*. 2016;316(2):171–181. https://doi.org/10.1001/jama.2016.5148
14. Baeten JM, Donnell D, Ndase P, et al.; Partners PrEP Study Team. Antiretroviral prophylaxis for HIV prevention in heterosexual men and women. *N Engl J Med*. 2012;367(5):399–410. https://doi.org/10.1056/NEJMoa1108524
15. Grant RM, Lama JR, Anderson PL, et al.; iPrEx Study Team. Preexposure chemoprophylaxis for HIV prevention in men who have sex with men. *N Engl J Med*. 2010;363(27):2587–2599. https://doi.org/10.1056/NEJMoa1011205
16. Thigpen MC, Kebaabetswe PM, Paxton LA, et al.; TDF2 Study Group. Antiretroviral preexposure prophylaxis for heterosexual HIV transmission in Botswana. *N Engl J Med*. 2012;367(5):423–434. https://doi.org/10.1056/NEJMoa1110711
17. Adams M, An Q, Broz D, Burnett J, Wejnert C, Paz-Bailey G; NHBS Study Group. Distributive syringe sharing and use of syringe services programs (SSPs) among persons who inject drugs. *AIDS Behav*. 2019;23(12):3306–3314. https://doi.org/10.1007/s10461-019-02615-4
18. Aspinall EJ, Nambiar D, Goldberg DJ, et al. Are needle and syringe programmes associated with a reduction in HIV transmission among people who inject drugs: a systematic review and meta-analysis. *Int J Epidemiol*. 2014;43(1):235–248. https://doi.org/10.1093/ije/dyt243
19. Des Jarlais DC, Nugent A, Solberg A, Feelemyer J, Mermin J, Holtzman D. Syringe service programs for persons who inject drugs in urban, suburban, and rural areas—United States, 2013. *MMWR Morb Mortal Wkly Rep*. 2015;64(48):1337–1341. https://doi.org/10.15585/mmwr.mm6448a3
20. US Department of Veterans Affairs. Pharmaceutical prices. Federal supply schedule, Office of Procurement, Acquisition and Logistics (OPAL). 2018. Available at: https://www.va.gov/opal/nac/fss/pharmPrices.asp. Accessed July 18, 2019.
21. Desai K, Sansom SL, Ackers ML, et al. Modeling the impact of HIV chemoprophylaxis strategies among men who have sex with men in the United States: HIV infections prevented and cost-effectiveness. *AIDS*. 2008;22(14):1829–1839. https://doi.org/10.1097/QAD.0b013e32830e00f5
22. Sullivan PS, Giler RM, Mouhanna F, et al. Trends in the use of oral emtricitabine/tenofovir disoproxil fumarate for pre-exposure prophylaxis against HIV infection, United States, 2012–2017. *Ann Epidemiol*. 2018;28(12):833–840. https://doi.org/10.1016/j.annepidem.2018.06.009
23. Centers for Disease Control and Prevention. HIV infection, risk, prevention, and testing behaviors among persons who inject drugs—National HIV Behavioral Surveillance: injection drug use, 20 US Cities, 2015. *HIV Surveillance Special Report*. May 2018;18. Available at: http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html. Accessed January 7, 2019.
24. Nguyen TQ, Weir BW, Des Jarlais DC, Pinkerton SD, Holtgrave DR. Syringe exchange in the United States: a national level economic evaluation of hypothetical increases in investment. *AIDS Behav*. 2014;18(11):2144–2155. https://doi.org/10.1007/s10461-014-0789-9
25. Centers for Disease Control and Prevention. HIV treatment as prevention. 2019. Available at: https://www.cdc.gov/hiv/risk/art/index.html. Accessed July 18, 2019.
26. Henry J. Kaiser Family Foundation. US federal funding for HIV/AIDS: trends over time. 2019. Available at: http://files.kff.org/attachment/Fact-Sheet-US-Federal-Funding-for-HIVAIDS-Trends-Over-Time. Accessed July 12, 2019.

Gender Differences in First and Corresponding Authorship in Public Health Research Submissions During the COVID-19 Pandemic

Michelle L. Bell, PhD, and Kelvin C. Fong, PhD

See also Pinho-Gomes, p. 15.

Objectives. To investigate the rate of manuscript submission to a major peer-reviewed journal (*American Journal of Public Health*) by gender, comparing periods before and during the pandemic.

Methods. We used data from January 1 to May 12, 2020, and defined the start of the pandemic period by country as the first date of 50 or more confirmed cases. We used an algorithm to classify gender based on first name and nation of origin. We included authors whose gender could be estimated with a certainty of at least 95%.

Results. Submission rates were higher overall during the pandemic compared with before. Increases were higher for submissions from men compared with women (41.9% vs 10.9% for corresponding author). For the United States, submissions increased 23.8% for men but only 7.9% for women. Women authored 29.4% of COVID-19–related articles.

Conclusions. Our findings suggest that the pandemic exacerbated gender imbalances in scientific research. (*Am J Public Health*. 2021;111:159–163. https://doi.org/10.2105/AJPH.2020.305975)

AJPH January 2021, Vol 111, No. 1

Gender imbalance in child care, elder care, and housework is well documented, including in families where women work outside the home,[1–4] and can contribute to work–family conflict.[5] In academic households, division of housework by gender persists, with findings similar to those of other dual-career couples.[6,7] Female scientists perform twice as much work as male scientists at household tasks such as laundry, cleaning, food preparation, and grocery shopping, whereas male scientists perform more work related to some other tasks (e.g., yardwork, vehicle maintenance).[6,7] The least amount of core housework was conducted by male scientists with stay-at-home partners. Disparities differed by academic rank (e.g., full professor vs assistant professor), yet female scientists performed more housework than male scientists at all ranks. The net disparity equated to an additional 14.6 hours per week of housework for female scientists.[7]

The COVID-19 pandemic has altered the nature of work, including for the scientific community. Scientists at all career stages have had to shift and adapt to online teaching, videoconferencing, and lack of access to laboratories and other critical professional resources. Researchers who are also clinicians or public health practitioners face the additional burden of caring for COVID-19 patients and safety concerns. Scientists at government agencies may need to develop guidance for their own agency as well as society. These challenges are in addition to strained institutional finances, which negatively affect scientists' income and job security as well as emotional well-being. Some universities have already implemented financial measures such as layoffs, furloughs, frozen or reduced benefits, hiring freezes, and pay cuts.[8,9] Surveys of college and university presidents indicate serious immediate concerns regarding short-term unbudgeted financial costs and long-term concerns of financial stability affecting the ability to employ staff and faculty.

The pandemic's far-reaching effects could widen preexisting gender imbalances in academia and at home, with potentially more responsibilities for women with school-age children and their needs for at-home schooling, ill family members to care for, financial stressors, and other factors. Commentaries and editorials have noted how the pandemic's impacts on academic work and scientific research differ by gender and have given anecdotal evidence of declines in submission of articles from women, and in some cases increases in submissions from men.[10,11]

We investigated gender differences in the rate of manuscript submissions to a major public health journal, comparing periods before and during the COVID-19 pandemic. Our hypothesis was that when we compared these 2 periods, the change in rate of submissions would be lower for women than for men because of the gender imbalances described here.

METHODS

We evaluated data for manuscripts submitted to the *American Journal of Public Health* from January 1 to May 12, 2020, to assess differences by corresponding and first authors' gender, comparing time periods before and during the COVID-19 pandemic. We obtained data for all submissions during this time period from the Journal. Defining the date used to distinguish the prepandemic and pandemic periods poses a challenge, because the pandemic's impacts are progressive and not clearly defined by a specific date. For consistency in analysis across countries, we considered the start of the pandemic period as the first date of 50 or more confirmed cases.[12] For the United States, this was February 25, 2020. More submissions originated from the United States than from other countries; we performed separate analyses for all locations, the United States, and non-US locations.

We classified the genders of the corresponding author and first author using an algorithm (by Gender API) that accounts for nation of origin (over 200 countries considered) and provides an uncertainty estimate of the assigned gender.[13] Gender API, a pay-for-service company, is one of the largest online platforms for identifying gender. The company developed its algorithm using data from multiple publicly available government and social network data sources. Currently, the database has over 800 000 unique names. On the basis of first-name and country-of-origin inputs from each manuscript, the algorithm generated an estimate of whether the author was male or female, along with a measure of uncertainty. For example, the input of "Karen" and "United States" provides an estimate of female with estimated 99% accuracy, whereas "Taylor" and "United States" provides an estimate of female with 60% accuracy. Gender classifications with accuracy of less than 50% were categorized by the algorithm as unknown. Our primary analysis considered authors with gender identified with an accuracy of 95% or more; we included a sensitivity analysis comprising all authors whose gender could be determined with an estimated accuracy of 50% or more.

We calculated the average number of submissions per day for men and women based on number of days in the prepandemic and pandemic periods using country-specific start dates of the pandemic. We coded publications during the pandemic period as related to COVID-19 based on searches for the terms "COVID," "pandemic," or "nCOV" in manuscript titles. We conducted analyses in R Statistical Software 4.0.2 (R Foundation for Statistical Computing, Vienna, Austria) and Excel (Microsoft, Redmond, WA).

RESULTS

We analyzed a total of 1767 manuscripts from 60 countries and territories. Table A (available as a supplement to the online version of this article at http://www.ajph.org) provides the number of manuscripts submitted by continent and gender (male, female, unknown), by categories of estimated accuracy of gender prediction, for the prepandemic and pandemic periods. The gender of the first author matched that of the corresponding author for 74.6% of manuscripts.

We categorized the gender of 97.7% of corresponding authors and 99.3% of first authors. Of those whose gender was predicted, estimated accuracy averaged 94.0% for corresponding authors and 93.5% for first authors. Our primary analysis considered the subset of observations with an estimated accuracy of 95% or more (1341 manuscripts for corresponding author, 1307 for first author). We predicted gender with an estimated accuracy of 50% or more for 92.3% to 100% of corresponding authors by continent. For our primary analysis, which considered only authors whose gender could be estimated with at least 95% accuracy, the algorithm fared better for submissions from Europe, North America, and South America, and least well for Asia. Figure A (available as a supplement to the online version of this article at https://www.ajph.org) shows the number of weekly submissions by gender for all locations, the United States only, and non-US locations. Most submissions were from the United States (68.6%).

Overall, more manuscripts per day were submitted during the pandemic period than previously, with an increase of 25.1%. However, the pattern of manuscript submissions differed by gender. For men, the rate of submissions (manuscripts/day) for corresponding authors went up 41.9%, whereas for women they increased 10.9%, indicating an almost 4-times-higher increase in productivity for men compared with women ($P < .05$). Among manuscripts from the United States, when we compared the pandemic with the prepandemic period, submissions by corresponding author increased 23.8% for men but only 7.9% for women. For non-US authors, submissions from the prepandemic to the pandemic period also increased more for men than women, although submissions increased more for both men and women from non-US countries than from the United States (e.g., for corresponding author, increase of 23.8% for US men and 113% for non-US men). Limited numbers of submissions hindered separate analysis by country other than the United States. Sensitivity analyses considering all observations with gender identified (i.e., including those with estimated certainty of $\geq 50\%$) or for first authors rather than corresponding authors showed similar general trends, with submissions by men increasing far more than those by women (Table 1).

TABLE 1— Percentage Change in Manuscript Submission Productivity (Manuscripts/Day) Comparing Prepandemic Period to Pandemic Period, by Gender: *American Journal of Public Health*, January 1–May 12, 2020

	Gender Identified With $\geq 95\%$ Estimated Accuracy, %		Sensitivity Analysis (All Gender-Identified Data), %	
	Men	Women	Men	Women
Corresponding author				
Overall	41.9	10.9*	47.9	12.4*
United States	23.8	7.9	26.3	9.7
Non-US country	113	27.1*	185	94.4
First author				
Overall	35.6	12.1	38.8	17.5
United States	18.1	8.6	19.0	13.3
Non-US country	114	31.1	177	105

Note. The analysis considering "all data" with gender identified includes those with estimated accuracy of 50% or greater. If estimated accuracy is less than 50%, the value for gender is set to unknown and not included in this analysis. The start of the pandemic period differed by country. These percentages relate to changes in the rate of submission (manuscripts/day), not number of manuscripts, as the number of days prepandemic and during the pandemic differed by country.

*For comparisons between men and women, $P < .05$ for χ^2.

We also evaluated submissions from the United States using a different definition of the prepandemic and pandemic periods. Here, we defined the start of the pandemic as March 13, 2020, the date the US federal government declared a state of emergency.[14] With this categorization of the pandemic period, rates of submission increased for both men and women, but more so for men (35.0% and 21.6% for men and women, respectively, for corresponding author; online Table B).

Of the articles submitted during the pandemic period, 34.4% were related to COVID-19. The majority of COVID-19 articles were submitted by men. Of COVID-19 manuscripts, 29.4% of corresponding authors were women, compared with 54.2% of articles prior to the pandemic.

DISCUSSION

During the COVID-19 pandemic, submission rates to a major public health journal were higher overall compared with before the pandemic. However, the increase in submission rates differed by gender for both corresponding and first authors. Women had lower increases to their submission rates compared with men. Most articles related to COVID-19 were authored by men.

In academia, disparities by gender are well documented. Among faculty, men spend more of their professional time on research and activities related to service and administration, whereas women spend more time teaching and performing service to the university.[6,15] Women, especially mothers, who receive doctoral degrees are more likely than their male counterparts to be adjunct faculty or to leave the academic labor force.[16] At the Massachusetts Institute of Technology (MIT), a committee, formed in 1994 at the request of 16 of the 17 MIT tenured women faculty members in science, identified systematic gender discrimination, including differences in salary, access to space, resources, and leadership positions.[17] Female junior faculty perceived motherhood as a career obstacle that differed from that faced by male faculty with children.

With respect to peer-reviewed journal articles—a key metric of academic success and productivity—authorship by women has increased in recent decades, but has consistently lagged behind that of men.[18,19] For 6 top medical journals, the percentage of articles by women grew from 5.9% in 1970 to 29.3% in 2004 for first authors, and from 3.7% to 19.3% for senior authors.[18] A study of 2459 medical journals found that the odds of authoring an invited commentary were 21% lower for women than men, accounting for field of expertise, seniority, and publication metrics.[20] Work by women is cited less often,[21–23] and men are more likely to self-cite.[24–26] Women are less represented as peer reviewers[23,27,28] and members of the editorial boards of journals.[28] Data on whether acceptance of a submitted manuscript differs by the author's gender are inconsistent, with several studies of individual journals identifying no bias and others finding higher acceptance rates for men.[23,28,29] Our findings on journal submission data indicate that the COVID-19 pandemic has aggravated the disparities by gender by which women remain at a disadvantage compared with men.

Our study had some limitations. For assigning gender to the authors of each submission, the algorithm used was unlikely to be fully accurate. Further, gender categorization was limited to "male" or "female" and did not consider the many other categories, including gender nonbinary and others. Our data provide no way of distinguishing these genders and do not provide information on how authorship changed beyond the broad and incomplete categories of male and female. The estimated date used to define the pandemic is country-specific, but substantial heterogeneity exists within countries regarding the pandemic's progression. Policies such as school closures, stay-at-home orders or guidance, and child care assistance provided by universities may also affect productivity and differ within countries. Further, the analysis is based on first and corresponding authors only, and patterns of authorship by gender may differ for other forms of authorship (e.g., third author). Submissions were primarily from the United States, with limited submissions in many regions (e.g., 13 submissions from Africa). Authorship trends by gender may differ by region. This work did not distinguish between junior and senior researchers, and the authorship trends may differ by the scientists' level of experience. Data were restricted to a single journal and are most representative of research in public health. Yet even within public health, and trends in relation to the pandemic, authorship may differ by subdiscipline, such as social epidemiology versus biostatistics. Similar research in other disciplines, using data from other journals, is warranted. Gender differences in the fraction of submitted articles that are accepted may also be affected by the pandemic. Further research is needed on trends in increased submissions during the pandemic compared with the prepandemic period, such as how this differs by gender with respect to position (e.g., junior vs senior researchers, tenured vs untenured professors) and contributing factors (e.g., more research on the pandemic, different child care).

This research is consistent with other analyses on trends in academic authorship by gender during the pandemic for other disciplines. Other work indicates that manuscript submissions are increasing faster for men than women based on preprint articles[30,31] and fewer submissions from women in economics.[32] However, analysis of data from March 15 to April 15, 2020, for the *American Journal of Political Science* observed a slight increase in female authorship; women made up 33% of authors for submitted manuscripts during this period compared with 25% previously, although submissions for articles in which first authors were women were down.[33] A gender gap in submissions also was not observed for *Research and Practice in Thrombosis and Haemostatis*.[34]

Our results about COVID-19 articles are consistent with other work finding that women contribute less to COVID-19 preprints than to preprints on other topics.[31] A recent study analyzed 1370 articles related to COVID-19 and found that 34% of authors were women, with lower representation for first author (29%) and last author (26%).[35] Critically, this means that women's perspectives are underrepresented in COVID-19 research.

The COVID-19 pandemic disrupted many areas of society, with larger impacts in some demographic groups. In analyzing journal submissions data, we found differences in manuscript submission rates by gender with higher increases in productivity for men than women. Our findings likely reflect gender work–life imbalances that predate the COVID-19 pandemic and go beyond the scientific community. In response to the pandemic, many universities have begun to enact policies to increase family leave (including for men), provide child care resources, and extend time to tenure review. Such policies and more recognition of gender disparities are necessary to address the gap between women and men in science and require investment in long-term solutions to increase equity during the recovery from and beyond the pandemic. AJPH

ABOUT THE AUTHORS

Michelle L. Bell and Kelvin C. Fong are with the School of the Environment, Yale University, New Haven, CT.

CORRESPONDENCE

Correspondence should be sent to Michelle L. Bell, Yale University, 195 Prospect St, New Haven, CT

06511 (e-mail: Michelle.Bell@yale.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: Bell ML, Fong KC. Gender differences in first and corresponding authorship in public health research submissions during the COVID-19 pandemic. *Am J Public Health*. 2021;111(1): 159–163.

Acceptance Date: September 14, 2020.

DOI: https://doi.org/10.2105/AJPH.2020.305975

CONTRIBUTORS

M. L. Bell designed the overall concept and hypothesis of the study and completed the analysis. M. L. Bell and K. C. Fong contributed to the overall conceptual framework, interpretation of results, conclusions, and manuscript.

ACKNOWLEDGMENTS

We thank Brian Selzer for helping prepare the data set and Alfredo Morabia for valuable insights.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

HUMAN PARTICIPANT PROTECTION

Institutional review board approval was not needed for this study as data were obtained from secondary sources.

REFERENCES

1. Bianchi SM, Sayer LC, Milkie MA, Robinson JP. Housework: who did, does or will do it, and how much does it matter? *Soc Forces*. 2012;91(1):55–63. https://doi.org/10.1093/sf/sos120
2. Hochschild A, Machung A. *The Second Shift: Working Families and the Revolution at Home*. London, UK: Penguin Books; 2003.
3. McMunn A, Bird L, Webb E, Sacker A. Gender divisions of paid and unpaid work in contemporary UK couples. *Work Employ Soc*. 2020;34(2):155–173. https://doi.org/10.1177/0950017019862153
4. Swinkels J, van Tilburg T, Verbakel E, van Groenou MB. Explaining the gender gap in the caregiving burden of partner caregivers. *J Gerontol B Psychol Sci Soc Sci*. 2019;74(2):309–317.
5. Cerrato J, Cifre E. Gender inequality in household chores and work–family conflict. *Front Psychol*. 2018;9:1330. https://doi.org/10.3389/fpsyg.2018.01330
6. Suitor JJ, Mecom D, Feld IS. Gender, household labor, and scholarly productivity among university professors. *Gender Issues*. 2001;19(4):50–67. https://doi.org/10.1007/s12147-001-1007-4
7. Schiebinger L, Gilmartin SK. Housework is an academic issue. *Academe*. 2010;96:39–44.
8. Whitford E. "Just no comparison" for pandemic's financial shock. Inside Higher Ed. April 27, 2010. Available at: https://www.insidehighered.com/news/2020/04/27/colleges-rev-cuts-pandemic-related-costs-keep-mounting. Accessed May 14, 2020.
9. Higher Inside Ed. Hanover Research. Responding to the COVID-19 crisis, part II: a new survey of college and university presidents. Inside Higher Ed and Hanover Research. 2020. Available at: https://www.insidehighered.com/booklet/responding-covid-19-crisis-part-ii-new-survey-college-and-university-presidents. Accessed May 14, 2020.
10. Fazackerly A. Women's research plummets during lockdown—but articles from men increase. *The Guardian*. May 12, 2020. Available at: https://www.theguardian.com/education/2020/may/12/womens-research-plummets-during-lockdown-but-articles-from-men-increase. Accessed May 14, 2020.
11. Flaherty C. No room of one's own. Inside Higher Ed. April 21, 2020. Available at: https://www.insidehighered.com/news/2020/04/21/early-journal-submission-data-suggest-covid-19-tanking-womens-research-productivity. Accessed May 14, 2020.
12. University of Oxford, Blavatnik School of Government. Oxford COVID-19 Government Response Tracker (OxCGRT) 2020. Available at: https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker. Accessed June 4, 2020.
13. Gender API. 2020. Available at: https://gender-api.com/en. Accessed June 5, 2020.
14. Executive Office of the President. Declaring a national emergency concerning the novel coronavirus disease (COVID-19) outbreak. *Fed Regist*. 2020;85:15337–15338.
15. Guarino CM, Borden VMH. Faculty service loads and gender: are women taking care of the academic family? *Res High Educ*. 2017;58(6):672–694. https://doi.org/10.1007/s11162-017-9454-2
16. Wolfinger NH, Mason MA, Goulden M. Stay in the game: gender, family formation, and alternative trajectories in the academic life course. *Soc Forces*. 2009;87(3):1591–1621. https://doi.org/10.1353/sof.0.0182
17. Massachusetts Institute of Technology. A study on the status of women faculty in science at MIT. *MIT Faculty Newsletter*. 1999;XI(4). Available at: http://web.mit.edu/fnl/women/women.html. Accessed June 16, 2020.
18. Jagsi R, Guancial EA, Worobey CC, et al. The "gender gap" in authorship of academic medical literature—a 35-year perspective. *N Engl J Med*. 2006;355(3):281–287. https://doi.org/10.1056/NEJMsa053910
19. Yun EJ, Yoon DY, Kim B, et al. Closing the gender gap: increased female authorship in *AJR* and *Radiology*. *Am J Roentgenol*. 2015;205(2):237–241. https://doi.org/10.2214/AJR.14.14225
20. Thomas EG, Jayabalasingham B, Collins T, Geertzen J, Bui C, Dominici F. Gender disparities in invited commentary authorship in 2459 medical journals. *JAMA Netw Open*. 2019;2(10):e1913682. https://doi.org/10.1001/jamanetworkopen.2019.13682
21. Dion ML, Sumner JL, Mitchell SM. Gendered citation patterns across political science and social science methodology fields. *Polit Anal*. 2018;26(3):312–327. https://doi.org/10.1017/pan.2018.12
22. Bendels MHK, Müller R, Brueggmann D, Groneberg DA. Gender disparities in high-quality research revealed by Nature Index journals. *PLoS One*. 2018;13(1):e0189136. https://doi.org/10.1371/journal.pone.0189136
23. Royal Society of Chemistry. Is publishing in the chemical sciences gender biased? Driving change in research culture. Royal Society of Chemistry. 2019. Available at: https://www.rsc.org/globalassets/04-campaigning-outreach/campaigning/gender-bias/gender-bias-report-final.pdf. Accessed May 14, 2020.
24. Andersen JP, Schneider JW, Jagsi R, Neilsen MW. Gender variations in citation distributions in medicine are very small and due to self-citation and journal prestige. *Elife*. 2019;8:e45374. https://doi.org/10.7554/eLife.45374
25. King ML, Bergstrum CT, Correll SJ, Jacquet J, West JD. Men set their own cites high: gender and self-citation across fields and over time. *Socius*. 2017;3. https://doi.org/10.1177/2378023117738903
26. Maliniak D, Powers R, Ryan W, Walter BF. The gender citation gap in international relations. *Int Organ*. 2013;67(4):889–922. https://doi.org/10.1017/S0020818313000209
27. Helmer M, Schottdorf M, Neef A, Battaglia D. Gender bias in scholar peer review. *Elife*. 2017;6:e21718. https://doi.org/10.7554/eLife.21718
28. Fox CW, Duffy MA, Fairbairn DJ, Meyer JA. Gender diversity of editorial boards and gender differences in the peer review process at six journals of ecology and evolution. *Ecol Evol*. 2019;9(24):13636–13649. https://doi.org/10.1002/ece3.5794
29. Berg J. Looking inward at gender issues. *Science*. 2017;355(6323):329. https://doi.org/10.1126/science.aam8109
30. Cui R, Ding H, Zhu F. Gender inequality in research productivity during the COVID-19 pandemic. Harvard Business School. 2020. Working Paper 20-129. Available at: https://hbswk.hbs.edu/item/gender-inequality-in-research-productivity-during-the-covid-19-pandemic. Accessed May 14, 2020.
31. Vincent-Lamarre P, Sugimoto CR, Larivière V. The decline of women's research production during the coronavirus pandemic. Nature Index 2020. Available at: https://www.natureindex.com/news-blog/decline-women-scientist-research-publishing-production-coronavirus-pandemic. Accessed June 18, 2020.
32. Shurchkov O. Is COVID-19 turning back the clock on gender equality in academia? 2020. Available at: https://medium.com/@olga.shurchkov/is-covid-19-turning-back-the-clock-on-gender-equality-in-academia-70c00d6b8ba1. Accessed June 18, 2020.
33. Dolan K, Lawless JL. It takes a submission: gendered patterns in the pages of AJPS. *American Journal of Political Science*. 2020. Available at: https://ajps.org/2020/04/20/it-takes-a-submission-gendered-patterns-in-the-pages-of-ajps. Accessed June 18, 2020.
34. Cushman M. Gender gap in women authors is not worse during COVID-19 pandemic: results from *Research and Practice in Thrombosis and Haemostasis*. *Res Pract Thromb Haemost*. 2020;4(5):672–673. https://doi.org/10.1002/rth2.12399
35. Pinho-Gomes AC, Peters S, Thompson K, et al. Where are the women? Gender inequalities in COVID-19 research authorship. *BMJ Glob Health*. 2020;5(7):e002922. https://doi.org/10.1136/bmjgh-2020-002922

Employers: Find the next member of your team through APHA

Looking for the perfect entry-level candidate to be a part of your public health team?

Looking for the perfect entry-level candidate to be a part of your public health team? APHA's Public Health CareerMart can help you make the connection. CareerMart has qualified public health candidates ready to help you meet your goals. Log onto CareerMart to post your open positions and browse resumes. Share a 30-day entry-level job posting at a special discounted rate.

careers.apha.org

PUBLIC HEALTH CareerMart®
AN INITIATIVE OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

Read AJPH?
A PUBLICATION OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

Earn Continuing Education credits while you learn

Thanks to APHA's program with the ***American Journal of Public Health***, earning continuing education credits is easy.

Read select sections or the entire book to earn credits for **CHES®**, **CME**, **CNE** and **CPH**.

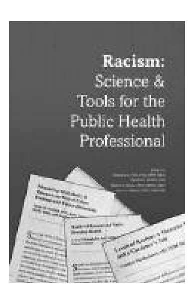
SIGN UP TODAY!

Introductory rate:
APHA members: $10 per credit
Non-members: $20 per credit

ce Online Continuing Education Program

APHA.org/continuing-education

APHA
AMERICAN PUBLIC HEALTH ASSOCIATION
For science. For action. For health.


Racism: Science & Tools for the Public Health Professional

Earn Continuing Education credits while you learn

Thanks to APHA's Center for Professional Development, earning continuing education credits is easy.

Read select sections or the entire book to earn credits for **CHES®**, **CME**, **CNE** and **CPH**.

SIGN UP TODAY!

Sections (3 credits each)	**Entire Book (15 credits)**
APHA members: $15	APHA members: $60
Non-members: $30	Non-members: $100

ce Online Continuing Education Program

APHA.org/continuing-education

APHA
AMERICAN PUBLIC HEALTH ASSOCIATION
For science. For action. For health.

ERRATUM

In: Richmond-Bryant J, Mikati I, Benson AF, Luben J, and Sacks JD. Disparities in distribution of particulate matter emissions from US coal-fired power plants by race and poverty status after accounting for reductions in operations between 2015 and 2017. *Am J Public Health*. 2020;110(5):655-661. https://doi.org/10.2105/AJPH.2019.305558

A statistic was reported incorrectly. On page 658, the last sentence in the last column should read:

> Still, changes in absolute burdens for each subgroup suggest that reductions have been greater among those living below the poverty line and among White individuals, although the reductions observed were not significantly different from the cases in which facilities were retired at random (Figure 1).

This correction does not affect the paper's conclusions.

https://doi.org/10.2105/AJPH.2019.305558e

ERRATUM

In: Castañeda SF, Bharti B, Rojas M, et al. Outreach and inreach strategies for colorectal cancer screening among Latinos at a federally qualified health center: a randomized controlled trial, 2015–2018. *Am J Public Health*. 2020;110(4):587-594. https://doi.org/10.2105/AJPH.2019.305524

Two grants were omitted from the article. On page 593, the first paragraph in the Acknowledgments section should read:

> ## ACKNOWLEDGMENTS
>
> This research was made possible by the San Diego State University/University of California, San Diego Cancer Center Comprehensive Partnership (U54 CA13238406A1 and U54 CA13237906A1). Drs. Castañeda and Gupta receive funding from the Accelerating Colorectal Cancer Screening and Follow-Up Through Implementation Science (National Cancer Institute awards UG3CA244298 and UG3CA233314).

https://doi.org/10.2105/AJPH.2019.305524e

ERRATUM

In: Williams JC, Anderson N, Holloway T, Sanford III E, Eugene J, Isom J. Reopening the United States: Black and Hispanic workers are essential and expendable again. *Am J Public Health*. 2020;110(10):1506-1508. https://doi.org/10.2105/AJPH.2020.305879

An author's name was printed incorrectly. The correct name is Ezelle Sanford III. On page 1506, the third sentence of the About the Authors section should read:

> Ezelle Sanford III is with the Program on Race, Science, and Society, Center for Africana Studies, University of Pennsylvania, Philadelphia.

On page 1508, the author byline should read:

J. Corey Williams, MD, MA
Nientara Anderson, MD, MHS
Terrell Holloway, MD
Ezelle Sanford III, PhD
Jeffrey Eugene, MD
Jessica Isom, MD, MPH

On page 1508, the last sentence of the Contributors section should read:

> Ezelle Sanford III, Jeffrey Eugene, and Jessica Isom were the secondary editors.

https://doi.org/10.2105/AJPH.2020.305879e