

Lessons Learned From the Public Health Workforce's Experiences With the COVID-19 Response

Sarah E. Scales, Elizabeth Patrick, Kahler W. Stone, Kristina W. Kintziger, Meredith A. Jagger, and Jennifer A. Horney

Sarah E. Scales, MPH, is a Doctoral Student, Epidemiology Department; Elizabeth Patrick is an Undergraduate Research Assistant, Behavioral Health and Nutrition Department; and Jennifer A. Horney, PhD, MPH, is a Professor, Epidemiology Department; all in the College of Health Sciences, University of Delaware, Newark, DE. Kahler W. Stone, DrPH, MPH, is an Assistant Professor, Department of Health and Human Performance, Middle Tennessee State University, Murfreesboro, TN. Kristina W. Kintziger, PhD, MPH, is an Assistant Professor, Department of Public Health, University of Tennessee, Knoxville, TN. Meredith A. Jagger, MPH, is an Independent Researcher, Austin, TX.

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Abstract

Limited research is available on the COVID-19 response experiences of local, state, and federal public health workers in the United States. Although the response to COVID-19 is still presenting challenges to the public health workforce, public health systems must also begin to consider lessons learned that can be applied to future disasters. During July and August 2021, a random sample of participants from a cross-sectional study of the public health workforce was invited to participate in interviews to obtain information on the current state of public health operations, the ongoing response to the COVID-19 crisis, and takeaways for improving future preparedness and response planning. Interviews were transcribed and inductively coded to identify themes. Twenty-four initial interview invitations were sent, and random substitutions were made until thematic saturation was reached when 17 interviews were completed. Four thematic categories were identified, including challenges related to (1) ongoing lack of political support or policy guidance; (2) fluctuations in, and uncertainty about, future funding and associated requirements; (3) job expectations, including remote work and data-sharing capabilities; and (4) the mental health toll of sustained response and related burnout. As the public health response to the COVID-19 pandemic continues in its third year, it is crucial to identify lessons learned that can inform future investment in order to sustain a public health workforce and a public health preparedness and response system that is resilient to future disasters.

Keywords: COVID-19, Public health preparedness/response, Psychological impacts, Epidemic management/response, Resilience

Introduction

LIMITED DATA, either quantitative or qualitative, are available on best practices for supporting frontline responders to public health emergencies. A literature review conducted in 2020 identified interventions that could potentially support resilience in frontline healthcare and

social workers in epidemic and outbreak contexts at individual, organizational, and institutional levels; however, it also pointed out barriers that included a lack of awareness that interventions were needed during response and a lack of time or skills needed to implement them.¹ Subsequent reviews of studies assessing burnout in the context of the COVID-19 pandemic have primarily focused on

documenting the experiences of frontline clinical healthcare providers such as physicians and nurses, without covering public health workers or providing recommendations to prevent or reduce burnout or sustain the public health workforce postpandemic.^{2,3}

Beyond systematic reviews, several descriptive studies have identified risk factors for burnout among patient-facing healthcare workers, including long work hours, moral dilemmas, and high mortality among patients.⁴ A large-scale survey conducted among nurses in China and Taiwan found that female nurses and those working in critical care and/or COVID-19-specific hospitals or units had higher rates of indicators of burnout.⁵ In a multi-country, mixed-methods study assessing occupational burnout among physicians, the prevalence of burnout was nearly 60% among patient-facing physicians.⁶

Risk factors for burnout have also been identified among public health workers in a few studies. In the early stages of the COVID-19 pandemic response, Li et al⁷ found that factors such as working through the night for 3 or more days and concerns about workplace exposure to COVID-19 contributed to the increased prevalence of anxiety and depression among public health workers in China. In a survey of the US public health workforce conducted by the US Centers for Disease Control and Prevention (CDC), 52.8% of respondents indicated experiencing at least 1 mental health condition in the 2 weeks prior to the survey, with the prevalence of posttraumatic stress (36.8%), depression (30.8%), and anxiety (30.3%) being the highest.⁸ Similar to the Li et al study, an assessment conducted in August and September 2020 of the public health workforce by Stone et al⁹ found that the prevalence of at least 1 mental health condition within the last 2 weeks was highest among those who were unable to take time off and worked the greatest number of hours per week. That assessment found high prevalence of anxiety, depression, burnout, and poor physical health among participants. The share of participants experiencing poor mental health days within the preceding 2 weeks was more than triple that of the prevalence in the general US population, and the prevalence of anxiety and depression was highest among those who worked the most hours and days per week.¹⁰

In response to the relatively few available studies focusing on the impacts of pandemic response on the public health workforce specifically and the lack of focus in these studies on identifying lessons learned, we recognized the need to collect information that could be applied toward efforts to make the public health system more resilient to future disasters.^{9,11,12} Following our larger cross-sectional survey of US public health professionals,¹³ we conducted qualitative interviews with a subset of those professionals to learn more about the workplace experiences of public health practitioners and associated lessons learned. The objective of the current study was to obtain information about the ongoing public health operations and takeaways to improve future public health preparedness and response capacities.

MATERIALS AND METHODS

Data Collection and Study Population

Respondents from our larger cross-sectional study assessing burnout and the mental health impacts of the COVID-19 response on the US public health workforce included individuals working with local, state, tribal, and federal public health entities. These respondents were sampled from on-line platforms such as private Facebook groups for public health professionals and through professional networks such as the American Public Health Association Epidemiology Section. Respondents who indicated a willingness to be interviewed were invited to participate in our qualitative study. Twenty-four initial invitations were sent via email, and random substitutions were made until thematic saturation was reached when 17 interviews were completed. The interviews were conducted virtually using Zoom Video Communications (San Jose, CA).

A semistructured interview guide was developed to address the following areas: professional role in COVID-19 response, impacts of states ending emergency declarations, engagement with short- and long-term pandemic and postpandemic contingency planning, the role of evidence-based practice in COVID-19 response, and lessons learned from COVID-19 response. The questions used in the interview guide were informed by prior work assessing the impact of the pandemic on the public health workforce and the time point in the response when the interviews were conducted, which coincided with an operationalization of COVID-19 protocols as the public health system moved toward recovery from the highest levels of surge capacity.^{12,13} All materials were reviewed by the University of Delaware's Institutional Review Board (IRB# 1641836-2) and determined to be exempt. The interview guide is available online as Supplemental Material at www.liebertpub.com/doi/suppl/10.1089/hs.2022.0091.

Data Analysis

Interviewer notes, Zoom-generated recordings, and transcripts were analyzed by a trained graduate student researcher and 2 undergraduate students. Themes were independently identified through inductive coding (ie, codes emerged through the review process rather than being preidentified) before being discussed and reconciled by all researchers.

RESULTS

A total of 17 interviews, each lasting between 10 and 30 minutes, took place during July and August 2021. All interviews were carried out to completion, and participants were given the opportunity to provide additional information at the end of their interview. Participants represented a range of public health roles, including

epidemiologists, programmatic staff and directors, and surveillance and data system managers. Thirteen (76%) participants had 5 or more years of experience, with 7 (41%) of those individuals having 15 years or more work experience (Table). Some participants came out of retirement to support the public health workforce during the pandemic while others were starting their careers as part of training programs. Almost all (n=16, 94.1%) of the participants identified as White. The majority (n=15, 88.2%) of participants identified as female, and the remaining participants identified as male (n=1, 5.9%) or nonbinary (n=1, 5.9%). Eight of the 10 Health and Human Services Regions were represented in the study, with 5 (29.4%) of the participants representing Region 4 (ie, Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee).¹⁴

The research team identified themes that should be considered as part of lessons learned in planning for needed changes to the public health system postpandemic. Although many responses included more than a single theme, 4 themes were mentioned between 13 and 23 times total by the participants. The 4 themes were: (1) political and policy considerations (eg, lack of political support or policy guidance); (2) inconsistency of current and future funding and associated challenges; (3) future job expectations, including remote work and the need for improved data-sharing capabilities; and (4) burnout and negative mental health impacts related to sustained response.

Political and Policy Considerations

Participants uniformly mentioned the importance and influence of political bodies in pandemic response. Across the board, the general hesitancy to invoke the “precautionary principle in terms of mask[ing] and assuming aerosol [spread] unless [proven] otherwise” made it challenging to make “sure that [others] are protected.” Participants described that “the lack of adequate resources as well as political interference with decisions [the health department] tried to make” and “back of the napkin epidemiology from politicians” further exacerbated the challenge of implementing population-level control measures. Some participants highlighted the importance of “keeping politics out of public health,” while others called for the field of public health to learn to be more politically savvy to ensure future sustainability:

In some ways, public health is also politically naïve. We don't necessarily understand how to negotiate political systems, we like to focus on helping people, communities, saving lives, preventing illness. That's what we do and knowing that that's part of a political system is not necessarily where we want to put our energy. But it's the reality that the politics is about authority and it's about funding and it's about the ability to make big changes quickly. We have to be really politically savvy as we work in public health, I think.

Table. Participant Demographic and Occupational Characteristics

<i>Characteristics</i>	<i>n (%)</i>
Race	
White	16 (94.1)
More than 1	1 (5.9)
Gender	
Female	15 (88.2)
Male	1 (5.9)
Nonbinary	1 (5.9)
Age	
18 to 29 years	2 (11.8)
30 to 39 years	7 (41.2)
40 to 49 years	4 (23.5)
50 to 64 years	3 (17.6)
65 to 74 years	1 (5.9)
Household size	
1 person	5 (29.4)
2 people	8 (47.1)
3 people	1 (5.9)
4 people	3 (17.6)
Governance structure	
Centralized	3 (17.6)
Decentralized	8 (47.1)
Mixed	3 (17.6)
Shared	3 (17.6)
Experience	
Less than 1 year	1 (5.9)
1 to 4 years	3 (17.6)
5 to 9 years	5 (29.4)
10 to 14 years	1 (5.9)
15 or more years	7 (41.2)
HHS region	
Region 1	1 (5.9)
Region 2	1 (5.9)
Region 3	2 (11.8)
Region 4	5 (29.4)
Region 6	3 (17.6)
Region 8	1 (5.9)
Region 9	2 (11.8)
Region 10	2 (11.8)

Abbreviation: HHS, Health and Human Services.

Also relevant to political and policy considerations were differences between state and federal response. In some cases, “the fact that there was no federal coordination whatsoever, [made] all of our responses, no matter how good, bad, or indifferent, worse than anything I've seen,” noted one research scientist. When federal and state guidance were inconsistent, such as within and between jurisdiction guidance on nonpharmaceutical measures like masking, knowing which to follow was difficult. As 1 participant elaborated: “there's a 100% mask mandate still on all federal property even though CDC guidance has changed [for the public].”

Flexibility, communications, and engagement were consistently mentioned as positives to counteract political and policy-based inconsistencies. Making note of lessons learned,

such as “we know this worked and this didn’t work” and quickly assimilating these lessons into best practices proved to be critical for both local- and state-level response. These sentiments were summarized by a surveillance nurse:

[The State has] been outstanding in the response and even though, as with so many other states, we’ve had to build the plane as we flew it. You know, we’ve had to learn and adjust all the time, based on new data that emerges. I think the state has been phenomenal in their response.

Inconsistent Funding

The political dialogue surrounding pandemic response began to change in early 2021 as the Biden administration increased the focus on population health-related initiatives as part of the COVID-19 response. More federal funding was allocated to public health capacity building. For example, at one participant’s local health department, money allocated through the American Rescue Plan¹⁵ was being used to create up to 6 new epidemiology positions with funding for at least 2 more years.

However, the overwhelming sentiment is that public health “will always need more bodies than we will be funded for.” As seen in many prior public health emergency responses, funding is often transient while needs are persistent. This idea was reflected by a maternal and child health specialist:

In the long term, that’s always the point of contention. We don’t get the funding and the resources until there is an emergency, and then the funding goes away. You can’t maintain and sustain everything you’ve built up during an emergency to prevent or mitigate the next one.

Another participant added, “it feels disheartening. I don’t know if I can envision a scenario where there is proper investment in the workforce.” As cases plateaued before the Delta variant wave, 1 participant shared concerns about its impacts on funding and longer-term capacity:

There was some concern that with cases dropping as much as they were that we were going to have to start letting some of [the] contractors go, that there just wouldn’t be enough work to go around. But I think that’s not going to be an issue at least for a little bit. [...] I don’t know how, with Delta, how that’s going to look.

Future Job Expectations

Future job expectations encompass new obligations such as increased work hours and additional responsibilities, required in-person work versus telework, and fluid departmental and subject area assignments contingent upon both funding and COVID-19-related workloads. Public health agencies were required to rapidly change their operational and service provision methods to navigate challenges emanating from redistribution of personnel, limited and changing funding, physical distancing, and telework.

A participant noted the changes that were necessary to adapt service delivery methods: “first and foremost, we had to completely transform our [program] participants from an in-person service model to a remote service model.” Training programs also had to adapt to physical distancing and limited travel, necessitating “figure[ing] out how to go virtual very quickly” when trainings had previously been “almost all hands-on for skill development.”

Participants also noted high workloads and long work hours. A program evaluator reported working 80-hour weeks at points during the pandemic. Even well into the second year of the pandemic, plans for staffing amid case surges proved to be unsustainable. A communicable disease epidemiologist also discussed the increased work demands associated with the unpredictability of the response:

Because they’re just not sure exactly how we’re going to handle things [if there is a surge], and we’ve all been working a 7-day week schedule. We’re considering whether or not we can go to a 5-day a week schedule, or if we still have to do 6.

Given the wide-reaching impacts of the pandemic, public health practitioners from a range of subspecialties outside of communicable disease reported increases in job demands, whether reassigned to COVID-19 units or not. Further, a number of participants had switched to COVID-19-specific units at the beginning of the pandemic to provide surge capacity for staffing. When interviews were conducted, many of these individuals were in the process of transitioning back into their typical job roles, were working hybrid positions, or were picking up overtime shifts for COVID-19-specific work. However, resuming pre-pandemic work has been difficult. Participants noted concerns with the ability to recruit and retain new staff in applied public health going forward, given that they were understaffed before the pandemic and workplace environments have become more stressful over the course of the pandemic. One participant succinctly summarized these concerns with the question, “How are younger people going to stick with it?” Another participant with less than 5 years of work experience in public health noted that “this [work] is a tough thing to continue to do with no end in sight.” As another participant summarized that they “are trying to figure out [the transition to normal operations].”

Burnout and Negative Mental Health Impacts Related to Sustained Response

Nearly all participants discussed their personal experiences of poor mental health and burnout associated with being part of the pandemic response. One participant noted they chose to step away, saying, “[I] began crying every day [and] figured I had reached my limit.” Another participant shared, “I am not ashamed to admit, but I had a little bit of an emotional breakdown and asked to be removed [from

the COVID-19 unit]. It took 6 months for me to get my position handed off to somebody else because everybody was just overwhelmed.” Specific tasks such as medical record abstraction and mortality reporting were noted by 1 participant as “the hardest parts of my role in the response both emotionally and mentally.”

Changing guidance and constant demands for public-facing communication were particular challenges for a case investigator who described them as “really, really stressful.” Limited staffing and support were also cited as challenges to avoiding burnout and effectively mitigating its impacts when identified:

I never know the answer to work burnout because it is like “take time for yourself and don’t get burned out,” but also, we have like 5 staff, and we are working—at the height of it, we had events 7 days a week, on the weekend. And it was kind of expected that you would do as much as you can. So how do you maintain that if you aren’t hiring new people? If you aren’t [receiving] funding?

Further, participants noted the need for institutional-level supports that would better protect the mental wellbeing of public health practitioners moving forward. The limited instances in which workplace programs were implemented and resources were made available to address occupational burnout and stressors proved beneficial to participants. An epidemiologist said:

I do have one thing that was a fantastic help for our team. We had a staff member before the pandemic who was part time with us, part time with our local mental health center, and she really helped set up some mental health wellness things for staff every week to help with mental health. Especially with our case investigators and contact tracers [...] I think it really helped especially with their burnout [...] It was really great to have that resource on staff and definitely helped all of us to get through it a little better.

Participants also noted a sense of dread for future surges, using phrases like, “I’m waiting for the shoe to drop” and “I’m terrified that I’m going to be asked to go back.”

DISCUSSION

The impacts of the COVID-19 pandemic, while still being assessed, are clear, especially among frontline, patient-facing providers. A smaller group of studies have consistently demonstrated similar impacts of the COVID-19 response on the public health workforce. Improving our understanding of the factors influencing the capacity of the public health workforce to sustain COVID-19 response while being prepared for future public health emergencies is vital to move the field of public health toward a more resilient postpandemic future. Therefore, key considerations highlighted through this set of interviews should be used to improve the lived experience of the US public health workforce in both the immediate and long term.

Participants discussed a range of interrelated topics to characterize their lived experience throughout the COVID-19 pandemic response. Working overtime, shifting and assuming additional job roles, and “all-hands-on-deck” approaches that have outlasted their sustainability have all been part of the professional expectations for the public health workforce. Because of reductions in investments in public health following an influx of funds in response to the September 11th and subsequent anthrax attacks, the public health workforce entered the pandemic understaffed and underfunded.¹⁶⁻¹⁸ Without conscious and sustained post-pandemic investment in public health at federal, state, and local levels, the public health system will not be prepared for future systemic shocks.

Additionally, political interference has been rife throughout the pandemic, further complicating the jobs of public health practitioners.¹⁹ In response, public health leaders and the overall public health workforce must become more knowledgeable about what it takes to garner support for the policies necessary to ensure that the workforce’s needs, expertise, and position as a vital asset are not neglected in political spheres or the population at large. By proactively engaging in policy-based dialogue, public health leaders could potentially navigate challenges related to increased workloads for counteracting future challenges such as the health impacts of climate change-associated disasters and emergencies. While these qualitative results provide evidence of high levels of burnout and negative mental health impacts among the public health workforce, targeted engagement (eg, iterative evaluations, policy changes, sustained funding, mental health programs) to apply lessons learned can result in substantive, sustainable improvement for public health workers and the public health system overall going forward.^{9,12}

Over the course of the pandemic, the rationale for funding priorities has been unclear. In early 2020, shortly after the World Health Organization declared COVID-19 a public health emergency of international concern,²⁰ the Trump administration proposed a 16% budget cut to the CDC, along with substantial cuts to both foreign and domestic health programs.²¹ Because of the cumulative effects of chronic underfunding of public health in the United States for more than a decade, and the associated limits in institutional preparedness and surge capacity, federal aid has acted more as a stop-gap measure than true funding for capacity building going forward. As noted by participants throughout the interview process, preemptive investment—and now, continued investment—in public health is imperative for truly supporting a public health workforce.²² As we have seen, the costs of not sustaining funding for public health emergency preparedness are larger than the needed investments, since the lack of secure or adequate funding greatly deteriorates the ability of the public health system and its workforce to effectively respond to continuing and emerging public health emergencies.²³

Because studies of the health impacts of pandemic response have predominantly focused on patient-facing providers, it is important to consider the comparability of this study of the public health workforce with findings from studies of patient-facing providers.^{3,6,24-27} Such studies have pointed to the importance of both financial and human resource engagement across jurisdictional levels to ensure systemic resilience of the workforce in the face of future public health crises. This call is well reflected in the perspectives shared by study participants. Public health education and training programs should begin to incorporate discussions of mental health and coping mechanisms into curricula to better prepare trainees for the realities of working in the field. Notably, research assessing burnout among nursing and medical students, as well as associated interventions and mitigation strategies, can and should be integrated into preparing public health professionals.²⁸⁻³² Mental Health First Aid training programs,³³ while not providing a comprehensive solution, offer effective tools for equipping trainees in the immediate and medium term.³⁴ Further, professional, in-job support systems must be supported with dedicated funding at all levels, including in local public health agencies and organizations.

This study has several important limitations. Because individuals were invited to participate in an interview after completing a survey about burnout, response bias is possible. Selection bias is also possible given that participants were not representative of the public health workforce at large. In our study, 94.1% (n = 16) of participants were White and 88.2% (n = 15) were female, while the US public health workforce as a whole is estimated to be 55.2% White and 77.0% female.³⁵ This factor, in addition to the study population being composed of only US public health workers, could limit the generalizability of findings beyond the scope of our sample population. Nonetheless, these findings are in concurrence with other, although limited, studies.^{7,8,36} Given both the cross-sectional and qualitative components of this study, no attempt at assessing causality was made. The interview guide for this study was developed before the rapid increase in cases during the Delta variant wave, but interviews were conducted as case numbers began to increase exponentially in the United States. Because of the timing of the subsequent waves of the pandemic differed across the United States, interviews conducted in July and August of 2021 captured a range of pandemic response experiences. Accordingly, there could be variations and situational biases associated with the timing of both interview development and execution.

CONCLUSION

As the public health response to the COVID-19 pandemic continues in its third year, it is important to begin to incorporate lessons learned from the lived experiences of public health practitioners into education, practice, and policy. If the adage of “never again” that is frequently heralded in peridisaster and postdisaster contexts is to ring

true, targeted investments in many areas of public health—including workforce, infrastructure, and policy—are imperative. Such investments will ensure that public health practitioners have the tools and support needed to power a public health preparedness and response system that is resilient in future disasters.

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Address correspondence to:

Sarah E. Scales, MPH
 Epidemiology Program
 University of Delaware
 100 Discovery Blvd, Room 731
 Newark, DE 19713

Email: sescal@udel.edu