A CRISIS WITHIN A PUBLIC HEALTH CRISIS—U.S. PUBLIC HEALTH WORKERS' RACE-RELATED STRESS, TRAUMA, ANXIETY, DEPRESSION, AND BURNOUT DURING THE COVID-19 PANDEMIC: PREDICTING BURNOUT

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ABSTRACT

A CRISIS WITHIN A PUBLIC HEALTH CRISIS—U.S. PUBLIC HEALTH WORKERS' RACE-RELATED STRESS, TRAUMA, ANXIETY, DEPRESSION, AND BURNOUT DURING THE COVID-19 PANDEMIC: PREDICTING BURNOUT

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While the mental health impacts of the COVID-19 pandemic on the general U.S. public health workforce have been well described, the effects of the COVID-19 response on Black, Indigenous, and People of Color (BIPOC) working in public health have not been adequately characterized. BIPOC public health professionals may have suffered, potentially, greater stress and more negative health impacts during the pandemic due to being part of communities experiencing severe COVID-19 health inequities and the potential for racism-related stress in the workplace. This study utilized a cross-sectional design to investigate the associations between risk factors/predictors and higher levels of burnout among BIPOC public health professionals working during the COVID-19 pandemic. Survey data was collected using the Qualtrics survey platform and SPSS was used for data analysis. Survey items measured multiple domains including professional experience (i.e., years of experience, job functions, hours worked, volunteer work), mental and physical health status (i.e., co-morbidities, BMI, COVID-19 diagnosis, insomnia, anxiety, depression, trauma, burnout), professional and personal stress (before and during the pandemic), and racism-related stress (i.e., discrimination, harassment, heightened vigilance, cultural taxation).

Of the total respondents (n = 486), 80% experienced insomnia, 68.5% experienced depression, 81.7% experienced anxiety and 61.3% experienced trauma. BIPOC public health

professionals suffered a moderately high overall level of burnout (mean = 2.578, SD = 0.486, min = 1, max = 3.9) and a high level of exhaustion (mean = 2.744, SD = 0.532, min = 1, max = 4). Paired t-tests found respondents' physical and mental health status were each significantly worse during the pandemic ($p < .000$). Respondents also had significantly worse professional and personal stress during the pandemic ($p < .000$). Backward stepwise regression found higher burnout significantly predicted by: not having sought counseling; lower rating of mental health during COVID-19; higher past year mental distress (i.e., depression, anxiety, insomnia and trauma); higher past month perceived stress; and higher vigilance. These findings emerge as important in informing the public health field regarding the current and future needs of BIPOC public health professionals during the pandemic and beyond.

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DEDICATION

To my mom, Fabiola, and my sister, Samantha: Not a day goes by that I don't think of you two. Y'all would be so proud of all I've accomplished. I love you both so much.

To all the first-generation Latina college students: I am so proud of you. I wrote this with you in mind. Keep shining bright, mija.

To all BIPOC public health professionals: You are not alone in the traumas you have endured over the past two years. I hope this study helps to validate the experiences so many of us have faced. Remember that rest is a form of resistance because it disrupts and pushes back against capitalism and white supremacy. Your worth is not measured by your productivity. As public health professionals, we must make sure we are prioritizing our own health just as much as we are prioritizing the health of others.

Chapter 1

INTRODUCTION

The COVID-19 pandemic involves the global transmission of one of "the deadliest infectious diseases to have emerged in recent history" (Cubitt et al., 2o21, p. 2). In December 2019, the first cases of the novel coronavirus appeared in Wuhan, China and have since spread rapidly across the globe (Huo et al., 2021). The disease was named COVID-19 by the World Health Organization (WHO) and was designated a global pandemic in March 2020 (Sohrabi et al., 2020). The first case of COVID-19 in the United States was diagnosed on January 21, 2020 and by January 31st, the U.S. Department of Health and Human Services (HHS) Secretary declared the pandemic a U.S. public health emergency. Globally, the pandemic overwhelmed hospitals, strained healthcare workers and resulted in over 1 million deaths in 10 months, with over 215,000 of those deaths occurring in the U.S. (Silver et al. (2021). During that time, the CDC, multiple other federal agencies, state and local health departments, and local community partners were implementing public health measures to slow transmission of COVID-19 in the U.S. (Patel & Jernigan, 2020). COVID-19 has severely impacted many professionals, including the public health workers managing the implementation of control measures including testing programs, isolation and quarantine, contact tracing, and vaccination programs (Kintziger et al., 2021).

According to Stone et al. (2021), public health emergencies such as COVID-19 "not only affect those infected with the disease," they also profoundly impact the workforce tasked with leading the emergency response (p. 2). Throughout the COVID-19 outbreak, the U.S. public health workforce has been tasked with an all-hands-on-deck approach of conducting

surveillance, contact tracing, laboratory testing, community outreach, health education, and even monitoring vaccine distribution. The U.S. public health workforce may include anyone engaged in activities that "assure the conditions within which people can be healthy," which includes federal, state, and local governmental public health agencies, as well as workers in community-based organizations, public health staff in health care systems, and those working in academia (p. 2). In order to prioritize the COVID-19 pandemic response, many public health workers had to defer other public health priorities and work in incredibly stressful and increasingly politically polarized environments. Given that the COVID-19 emergency response has been lengthy and could continue for years, "the potential impact of burnout among public health workers is alarming" (Stone et al., 2021, p. 2).

The COVID-19 emergency response represents a complex situation that "negatively affects the efficacy and efficiency of regular functions" and roles of the public health workforce (Kintziger et al., 2021, p. 2). The large-scale, long-term response to the COVID-19 pandemic has placed an unsustainable burden on the U.S. public health workforce. In fact, there was a significant increase in public health professionals who have reported working overtime since the start of the pandemic. By mid-pandemic, about 67% of public health professionals said, "they were working more than 40 hours and more than five days per week", compared to 21% and 7%, respectively, pre-pandemic (p. 5). In addition to enduring longer workdays, public health leaders have also faced widespread political pressures which has led to over 20 states losing their state-level public health directors and 37 city and county health officials leaving office. This strain on the public health workforce "leaves many communities without public health leadership" at a time in the U.S. when public health guidance, expertise, and action is needed the most (Kintziger et al., 2021, p. 7).

According to Miu and Moore (2021), the COVID-19 pandemic has also brought further light to racial inequities in the US, from people of color having "higher rates of COVID-19 infections and mortality to racism" (p. 539). Systemic racism during the pandemic has led to an increase in anti-Asian hate crimes, xenophobia, murders of unarmed Black people by police, and racial profiling. In fact, "over 1500 anti-Asian hate crimes and xenophobia were reported" just one month into the start of the pandemic in the US (p. 539). Due to the increased racism during the COVID-19 pandemic, professionals of color may experience additional challenges in the workplace. Regardless of their profession, some professionals of color have experienced racism and threats, indicating that "they are just as vulnerable to racism as the broader communities of color" (Miu & Moore, 2021, p. 539).

Additionally, the COVID-19 pandemic has illustrated the "intersection of structural racism, social risk factors, and health" (Egede & Walker, 2020, p. e77(2)). Structural racism can be defined as the various ways a society perpetuates discrimination through mutually reinforcing inequitable systems. These systems can affect the health of communities of color in a variety of ways, such as through chronic exposure to discrimination and psychological trauma resulting from state-sanctioned violence such as police brutality. While structural racism has received little attention as a determinant of population health, studies have revealed that racism "is significantly associated with poorer mental and physical health" of individuals of color (p. e77(1)). The protests that occurred in summer 2020 throughout the US highlighted the history of marginalization of and discrimination against Black Americans, specifically the lack of accountability and action after police shootings and killings of unarmed Black Americans like Ahmaud Arbery, Breonna Taylor, George Floyd, and Jacob Blake. Simultaneously, the vast

inequities in COVID-19 infections and deaths in communities of color are laying bare "the underlying structural racism that protestors seek to disrupt" (Egede & Walker, 2020, p. e77(1)).

The amalgamation of the current COVID-19, economic, racial and climate-based crises highlight the need for a larger focus on "the meaning and implications of cumulative, compounding trauma exposure" (Silver et al., 2021, p. 4). These crises facilitate a perfect storm of stressors because they are all chronic events with no clear endpoint. Research on the impact of collective trauma indicates that "each of these crises may independently have mental health consequences" that can range from short-term anxiety to longer-term depression and post-traumatic stress disorder (PTSD) (p. 4). Additionally, the most systematically marginalized communities in the U.S. will likely experience a higher severity of exposure to the impacts of these crises, which just further adds to the compounding mental health effects of each. The convergence of the collective trauma being experienced in the U.S. "raises serious questions about our future" and the unknown health impact they will have on communities and individuals (Silver et al., 2021, p. 5).

Focus on Burnout and Psychological Distress

According to Shechter et al. (2020), healthcare workers are dealing with "unprecedented amounts of COVID-19-related psychological stress" both professionally and personally (p. 2). Further, 57% of healthcare workers treating patients with COVID-19 in NYC screened positive for acute stress, 48% screened positive for depressive symptoms, and 33% screened positive for anxiety. Of all the healthcare workers surveyed, nurses were more likely to screen positive for acute stress and depressive symptoms. Since nurses spend more time delivering direct patient care, this can "increase the likelihood of vicarious traumatization" (p. 5). Poor mental health

outcomes in healthcare workers have also been seen during other infectious disease outbreaks. However, in a sustained infectious disease outbreak like COVID-19, the psychological distress could have "downstream impacts on healthcare workers' physical health" as well (Shechter et al., 2020, p. 6).

According to Huo et al. (2021), burnout is as an occupational health syndrome that can be characterized by "emotional and mental exhaustion due to long-term workplace stress" (p. 2) A study comprised of Chinese medical staff found that 36.5% of staff met the criteria for burnout during the COVID-19 pandemic, highlighting a significant negative correlation between the pandemic and burnout of medical staff. The prevalence of job burnout was higher in female medical staff, as well as nurses (when compared with doctors and medical technicians). Further, findings showed that "burnout of medical staff was positively correlated with depression", as well as emotional exhaustion (p. 7). The increase is depression is likely the result of exposure to higher levels of work-related stress during the COVID-19 pandemic. Overall, the negative mental health impact of burnout in medical staff has significant implications since it "hinders the fight against the epidemic situation of COVID-19" (Huo et al., 2021, p. 7).

Another study of healthcare workers found that "a large portion of participants had symptoms of anxiety," with 28.9% of all participants experiencing mild anxiety, 11.5% experiencing moderate anxiety, and 7.4% experiencing severe anxiety (Civantos et al., 2020, p. 1600). Further, burnout was reported in over 21.8 of participants, with resident physicians experiencing higher burnout compared to attending physicians. In addition, 60.2% of participants had symptoms of distress, and 10.6% screened positive for depression symptoms. Given the uneven spread of COVID-19 throughout the US, "an association between severity of COVID-19 and mental health outcome measures" was also assessed (p. 1607). Results indicated that

healthcare workers working in states with greater than 20,000 positive cases or 1,000 deaths reported increased symptoms of distress compared to healthcare workers working in states with less than 20,00 positive cases or 1,000 deaths. Given the increased pressures during the current pandemic, these results "have raised concerns for worsening mental health" of healthcare workers (Civantos et al., 2020, p. 1606).

Before the COVID-19 pandemic, the risk of burnout and poor mental health among physicians had been recognized as "an important area of public health concern" (Ofei-Dodoo et al., 2021, p. 522). In a recent survey of family physicians, half of the respondents (50.4%) met the criteria for burnout. Further, symptoms of burnout were significantly higher in physicians who treated patients with suspected or confirmed COVID-19 cases. In addition, treating patients with suspected or confirmed COVID-19 cases was associated with "a high level of emotional exhaustion" (p. 526). Survey responses indicated that the stress level of physicians was higher after the onset of the COVID-19 pandemic. Recommendations included the need for "recognizing the deleterious effects of emotional distress" on physician emotional well-being of physicians, especially those working on the forefront of the pandemic (Ofei-Dodoo et al., 2021, p. 527).

In a survey of hospital doctors in England, almost half (47.1%) of respondents "reported a decline in their mental health" during the COVID-19 pandemic (Cubitt et al., 2o21, p. 3). A majority of the doctors surveyed saw changes in their work patterns in the form of increased working hours. The longer work schedules were described by respondents as "unhealthy, emotionally draining and adversely affecting sleep" (p. 5). Further, several respondents mentioned personal concerns of being doctors of color and the anxieties that are involved with

that. If left unchecked, the stress of the COVID-19 pandemic on doctors could "undoubtedly result in higher levels of burnout (Cubitt et al., 2021, p. 6).

Focus on Public Health Professionals

While the mental health and burnout risk among frontline healthcare professionals during COVID-19 has been well described in the literature, the effects of the COVID-19 response on the public health workforce, which has also "been impacted by the prolonged public health response to the pandemic," has not been sufficiently assessed (Stone et al., 2021, p. 1). Further, higher levels of burnout (66.2%) were found in public health workers than the levels reported in frontline health care workers during the pandemic. Also, more than 41% of respondents reported poor mental health in at least 14 of the last 30 days. A large share of respondents expressed plans of leaving or retiring in the next one to two years, which could be due to the "physical and mental health effects and levels of burnout" (p. 8). Exhaustion, low self-efficacy, and stress were all present in the current sample and have all been shown to contribute to burnout and workforce turnover. As the pandemic continues, it is likely that "symptoms of burnout will increase and be long lasting" among the public health workforce (Stone et al., 2021, p. 9).

According to Bryant-Genevier et al. (2021), over half (53%) of public health professionals "reported symptoms of depression, anxiety, PTSD, or suicidal ideation" over the past two weeks (p. 947). Further, a majority (59.2%) of public health workers worked more than 41 hours in a typical week. Public health workers who reported working long hours or not being able to take time off, were "more likely to have experienced symptoms of a mental health condition" (p. 948). Additionally, public health workers who reported experiencing traumatic events or stressors, such as experiencing stigma or discrimination because of work, had higher

PTSD symptoms than workers who did not experience these events or stressors. Finding show that increases in adverse mental health symptoms can lead to increased absenteeism, high turnover, lower productivity, and lower morale in workers. Thus, having a public health workforce that is reporting high levels of symptoms of a mental health condition could "influence the effectiveness of public health organizations during emergencies" (Bryant-Genevier et al., 2021, p. 948).

A study on the working conditions and health status of front-line public health workers in China during the COVID-19 epidemic found that "27.1 and 20.6% of the workers reported experiencing depression and anxiety, respectively" (Li et al., 2021, p. 1). Further, longer work hours and fear of infection were both associated with the workers' mental health and self-rated health status. Also, workers who were involved in non-field work such as time-consuming paperwork, data analysis, and laboratory work, were more likely to have depression and poor self-reported health. Although workers received high levels of social support from their family and colleagues, they received little support from society, suggesting that work performed by public health workers "is not widely understood and respected by the public" as much as the work of physicians or nurses (p. 10). Study results suggested the need for greater knowledge of public health workers' experiences, since they serve as the backbone of all emergency pandemic response efforts. Recommendations include increasing "our understanding of the importance of public health work" to ensure both epidemic control and the wellbeing of public health workers (Li et al., 2021, p. 10).

Racism, Prejudice, Discrimination and COVID-19

In addition to the general stressors occurring because of the COVID-19 pandemic, people of color in the United States may face additional stressors, "such as pandemic-related, racially-based prejudice and discrimination" (Lund, 2020, p. 1). Further, the racism and discrimination people of color have experienced during the COVID-19 pandemic has deep and traumatic historical roots. For example, the recent increase in anti-Asian rhetoric and hate crimes highlights the long-standing systemic racism and xenophobia in the US political system where people or communities that are perceived as non-white or "foreign" are disproportionately blamed or castigated for disease outbreaks. Additionally, mask wearing mandates created concerns from some Black males who feared wearing a facemask to protect against the spread of COVID-19 may "make them even more likely to be perceived as a criminal" and thus potentially leading to more encounters with law enforcement that could result in them being harmed or killed (p. 4). Additional stressors such as these may increase the risks for both general and traumatic stress related to the pandemic. While the immediate causes of these stressors may be new, the legacy of racism in the US is not and "contributes an already heavy psychological burden" on people of color (Lund, 2020, p. 5).

According to Kim et al. (2021), the COVID-19 pandemic has "exacerbated the experiences of racism" (p. 206). Further, people who share the same regional background as the origin of an infectious disease are more likely to experience discrimination and disease-associated stigma. Since the beginning of the COVID-19 pandemic, there have been more harmful incidents of anti-Asian sentiments. Due to the increase of xenophobia and racism, "racial discrimination and harassment at work will increase" in the forms of both physical and verbal harassment (p. 206). The stress of racist and discriminatory experiences in addition to the

stress of a global pandemic can harm the well-being and productivity of individuals. Given the coexistence of racism and the way historic inequities are intersecting with the current pandemic, the experiences of people of color "are complex and worthy of attention" when researching ways to promote equity and inclusion inside the workplace (Kim et al., 2021, p. 207).

Racial discrimination can be defined as the harmful "differential treatment of racial or ethnic minorities" by individuals, institutions, and society (Chen et al., 2020, p. e2). Further, experiences of racial discrimination have been linked to negative physical and mental health outcomes, including increased pain and higher all-cause mortality. The racialization of societal events was seen following the 9/11 attacks; i.e., Arab, Muslim, and Middle Eastern Americans faced increased Islamophobia, anti-Muslim rhetoric, and hate crimes—leading to greater psychological distress and worsened health outcomes in these communities. Similarly, anti-Asian discrimination and assaults due to the racialization of the COVID-19 virus have been associated with "increased symptoms of anxiety and depression, and suicidal ideation" in Asian American adults (p. e3). These direct racist encounters can cause severe emotional trauma to people of color and can potentially cause a posttraumatic stress response. Public health institutions, including the World Health Organization, have recognized the "dangers of the racialization of infectious disease outbreaks" and have taken measures such as adopting less-stigmatizing nomenclature when naming new human diseases (Chen et al., 2020, p. e3).

According to Liu et al. (2020), infectious disease-associated stigma and discrimination "has been seen in previous outbreaks of novel virus" (p. 481). Similar types of discrimination have taken place, as follows: against Asians during the 2003 SARS outbreak due to the virus first being discovered in China; against Latinos during the 2009 H1N1 pandemic due to the virus' link to hog farms where migrants worked; and, against Africans during the 2014 Ebola outbreak

due to the virus first being discovered in Guinea. COVID-19 associated discrimination was first seen online through various forms of anti-Chinese rhetoric; and, soon after, was seen in the accumulation of reports of in-person racist acts and hate crimes against Asians. A recent study found that non-Latino Black and Asian respondents "were more likely to perceive discrimination than other racial/ethnic groups" (p. 481). Further, mental distress was higher in respondents who perceived COVID-19 associated discrimination than those who did not. Linking COVID-19 associated discrimination to increased mental distress is "consistent with literature associating general discrimination with poorer mental health," particularly among people of color (Liu et al., 2020, p. 489).

Racism-Related Stress

Although all professionals may experience various types of stressors in the workplace, professionals of color are more likely to experience racial trauma, which refers to "perceived threats of harm and injury, humiliation, or witnessing harm to others in the community" (Miu & Moore, 2021, p. 540). Racial trauma, also known as race-based stress, can show up in the workplace in many forms, such as direct racism from work colleagues or vicarious exposure from news and other staff accounts of discrimination or microaggressions. Also, when professionals of color witness higher rates of COVID-19 infections and racism in their communities, this can reinforce implicit ideas about how they "are inferior in society and their lives do not matter as much" (p. 541). It can be challenging to heal from wounds of racial trauma when society continues to oppress communities of color. It is almost as if "a wound continues to be stabbed again while trying to heal" (Miu & Moore, 2021, p. 540).

Relevant to race-related stress, others have discussed a "minority tax," which is when professionals of color are asked to "take on extra responsibilities in the name of diversity" (Miu & Moore, 2021, p. 541). Further, in professions where there is a systemic underrepresentation of people of color, professionals of color may bear the burden of being asked to serve as the diversity experts. While leading anti-racism efforts in the workplace can be meaningful, it can also cause high levels of burnout in professionals of color "who are already stretched thin" (p. 541). In addition, engaging in activities where systemic racism and racial inequities may be discussed could further retraumatize professionals of color. At a time when self-care is paramount, "the minority tax can be detrimental" to the wellbeing of professionals (Miu & Moore, 2021, p. 541).

Secondhand racism, known as vicarious racism, also constitutes race-related stress when "hearing about or seeing racist acts committed against other members of one's racial group" (Chae et al., 2021, p. 508). This can include witnessing racially motivated attacks and other racial injustices against friends, family members or on the news. Vicarious racism also includes racism that is directed towards an entire racial group not just an individual, such as racist rhetoric from public figures or racist posts on social media. This type of secondhand racism can cause "physical, behavioral, and mental health responses beyond the immediate victim" (p. 509). For example, after the murder of George Floyd, an increase in depression and anxiety was found among Black Americans. Similarly, Chinese and Vietnamese Americans who witnessed their friends experience racial discrimination had a greater risk of having a psychiatric disorder within the past year. Even if a person is not directly involved or targeted by the injustice, experiences of vicarious racism still "may constitute a source of personal threat" (Chae et al., 2021, p. 509).

According to Chae et al. (2021), repeated direct or vicarious exposure to racism may also lead people of color to have learned hypervigilance, which involves "physical, behavioral, cognitive, and emotional attentiveness to the environment" in preparation for a potential racially discriminating event (p. 509). Further, recent research found that 91.9% of Asian and 98.1% of Black participants reported experiencing any vicarious racism; and 51.0% of Asian participants and 61.6% of Black participants reported experiencing vicarious racism more than usual during the COVID-19 pandemic. Additionally, 40% of Asian participants and 67.1% of Black participants reported experiencing vigilance about once a week or more. Hypervigilant responses can include feeling tense or "worried about being the target of racial discrimination," persistent monitoring, and avoiding places where racial discrimination could happen (p. 509). Among participants, vicarious racism and vigilance were associated with symptoms of depression and anxiety. The distress caused by witnessing racism and the amplified attentiveness to avoid or prepare for being a target of racial discrimination are cause for concern, given the need to deploy "psychologically demanding coping responses that increase the risk of depression and anxiety" (Chae et al., 2021, p. 512).

Racism-Related Stress for Professionals During COVID-19

A study on stress and burnout among US healthcare workers during the COVID-19 pandemic found that "higher stress scores were observed" in healthcare workers of color (Prasad et al., 2021, p. 2). Further, Black and Latino healthcare workers had higher rates of stress, anxiety, depression, and fear of COVID-19 exposure when compared to white healthcare workers. Also, despite increased stress and fear of exposure, Black and Latino healthcare workers had lower rates of burnout than white healthcare workers. Inconsistent burnout findings

in people of color may be due to the lack of survey questions about the systemic contexts that inform their lived experiences such as "racism, tokenism, and lack of inclusion or social support" (p. 5). Findings suggested that the increased stress and fear among Black and Latino healthcare workers could be due to the impacts of systemic racism. Recommendations included a need for future studies to re-assess the types of burnout and stress metrics used for people of color and instead "create study designs that are more inclusive" and take into consideration their lived experiences (Prasad et al., 2021, p. 5).

According to Lipscomb and Ashley (2020), the dual pandemic of COVID-19 and racism "creates a considerable emotional burden and a trauma catalyst" that can negatively impact the mental health and well-being of Black people (p. 7). Further, the weight of the racialized trauma is heavy for Black clinicians trying to stay alive by avoiding both COVID-19 and police brutality. Also, the longer work hours, higher caseloads, disruption in routine clinical practice, and perceived loss of control can lead to anxiety and depression among healthcare professionals. The duality of being Black and a clinician during the COVID-19 pandemic can make "the intrapsychic, interpersonal and professional responsibilities feel incessant" (p. 1). Yet, the heightened media coverage of the murders of unarmed Black Americans makes it nearly impossible for Black individuals to escape racialized trauma and focus on staying healthy and safe during a pandemic. Findings suggest that navigating a dual pandemic while being Black in America can be "emotionally exhausting and cumbersome for Black clinicians" and can create cumulative racial trauma (Lipscomb & Ashley, 2020, p. 13).

Qualitative findings from Miu and Moore (2021) focused on the personal experiences of Black, Indigenous, and People of Color (BIPOC) who were mental health providers to "inform the unique challenges for BIPOC professionals" during the COVID-19 pandemic (p. 539). For

Miu, an Asian-American psychologist, once politicians labeled COVID-19 as the "Chinese virus," she was afraid of going places alone and constantly feared the possibility of an anti-Asian hate crime happening to her or her friends and family. As a mental health professional during the pandemic, she was reminded of systemic racism in her therapy sessions, while silently carrying her own anxiety about xenophobia for her loved ones and herself. For Moore, a Black psychiatrist, the higher rates of COVID-19 deaths in Black communities and the growing list of Black people dying at the hands of police violence made her feel that there was "an implicit message in society that Black lives did not matter" (p. 540). After the death of George Floyd, Moore was tasked with addressing race and racism in the workplace, all while carrying a full load of patients. Findings showed that professionals of color working during the COVID-19 pandemic are finding it difficult to rest when they feel they are both needed in their communities and in the workplace to lead diversity and inclusion efforts. Recommendations covered how important it is "to address these issues at all levels—individual, institution, and system" to reach the roots of systemic racism and meet the needs of professionals of color (Miu & Moore, 2021, p. 541).

According to Mollica and Fernando (2020), the COVID-19 pandemic has highlighted "the often-overlooked impact of racial trauma on health-care workers" (p. e84). For example, Asian American health-care workers have had to deal with the trauma of racial discrimination in the form of patients refusing to be seen by Asian American providers and accusing them of causing the COVID-19 pandemic. Further, this type of racial trauma has developed into one of the chief complaints for health care workers of color during the pandemic. The "violence of racial trauma towards health-care staff is real", and the damage of these invisible wounds can be long-term (p. e84). Recommendations include supporting health care workers of color in dealing

with racial trauma as a primary concern. This type of egregious dehumanization and abuse "needs to be acknowledged and addressed" both now and in non-pandemic times (Mollica and Fernando, 2020, p. e84).

Statement of the Problem

The problem that this study addresses is the need to increase knowledge and fill the gap in the literature regarding the level of burnout and other experiences of public health workers during the COVID-19 pandemic. This enhanced knowledge and understanding of the experiences of public health workers is vital, since they serve as the backbone of all emergency pandemic response efforts—and may be at risk for burnout. This is especially the case as the COVID-19 pandemic has had many surges in cases, while lasting for two years (as of this writing) and persisting as a public health crisis. Yet, a crisis within a public health crisis is occurring—as, specifically, the U.S. public health workforce is at risk of burnout.

Not enough is known about the prevalence of public health workers' experiences performing specific COVID-19 pandemic-related public health work functions or contending with certain additional tasks and other factors during the pandemic—as potential factors related to a risk of burnout. For example, relevant may be experiences of public health workers, as follows: working long hours or overtime; working weekends; conducting time consuming tasks such as surveillance, laboratory work, data analysis, and completing time-consuming paperwork and reports; coping with higher caseloads and greater paperwork; doing community outreach and having greater contact with the public with potential more fear of contracting COVID-19; creating and updating health education—i.e., tailored messaging, materials, and dissemination

strategies to the public and specific population groups; deferring other public health priorities to focus on the pandemic; experiencing the additional factor of political pressure with the risk of receiving threats (e.g. when working vaccination sites); and, suffering negative impacts on mental health (e.g. insomnia, depression, anxiety, trauma). As a result of this collective body of potential work-related stress, many have wanted to leave their employment or retire—while some have done so.

Further, there may be stress at home or in public healthcare workers' personal lives, given varying levels of social support, and how they are also living through a pandemic and are a part of families and communities. Some have also volunteered and shared their time and/or public health expertise with not only their families, but also by volunteering in their communities (e.g., Church test sites)—as potentially more stress, contributing to burnout.

Meanwhile, Black, Indigenous, and People of Color (BIPOC) working in public health may have suffered, potentially, greater stress and more negative impacts during the pandemic; for example, given being a part of communities experiencing severe COVID-19 health inequities. Black, Latinx, and Native American populations within the U.S. have suffered from higher COVID-19 morbidity and mortality, as well as co-morbidity for prior conditions (e.g., heart disease/hypertension, asthma, diabetes, obesity, etc.). BIPOC public health workers also may have faced race-related or racism-related stress at work perceived as due to their race or ethnicity, including racism and discrimination.

Hence, by seeking to add to the literature and body of knowledge on the experiences of public health workers during the past two years of the COVID-19 pandemic in the U.S., this study will address an important problem: the need to increase knowledge and fill the gap in the

literature regarding the level of burnout and other experiences of public health workers during the COVID-19 pandemic.

Purpose of the Study

The purpose of the study is to identify significant predictors of **the study outcome variable of level of burnout.** In addition, a host of variables will permit characterizing the lives and experiences of members of the U.S. public health workforce who have worked across approximately two years of the U.S. COVID-19 pandemic.

Research Questions, Survey Parts, and Data Analysis Plan

Given a sample (N=486) of adults age 20 or above who respond to a social media campaign invitation (i.e. *Black, Indigenous, and People of Color (BIPOC) in the U.S. Public Health Workforce invited to take Short 12-15 Minute Survey on stressful experiences working during the COVID-19 pandemic. Click on* ***https://tinyurl.com/PublicHealthWorker*** *to complete survey for a chance to win a $100 Amazon Gift Card),* this study will answer the following research questions:

1-What were their **demographic characteristics** [i.e., gender, age, partner status (yes, no), number of children, race/ethnicity, skin color, U.S. born (yes, no), annual household income, education level, employment status (yes, no)]? What were their **background characteristics and experiences as a public health worker during COVID-19** [(i.e., their one particular position held for 6 months during pandemic; areas worked in (e.g., testing, vaccination, etc.); types of experiences they had (e.g. working long hours, working weekends, time-consuming paperwork, etc.); years worked in public health; and, did they also volunteer in their community—and for how many hours per week (e.g. church testing site, food bank, etc.)] ?

Part I: Basic Demographics (BD-17)

Data Analysis Plan: Inferential statistics, including via Pearson's correlations

and t-tests

2-What is their **personal health background**, including their Body Mass Index (BMI), any history of having COVID-19, common co-morbid conditions (e.g. diabetes, etc.), and any changes in their weight during the pandemic? How did they rate their physical health status and mental health status—for both before and during the pandemic, and were there any significant differences?

Part II: Personal Health Background—Current and Before Pandemic (PHB-CABP-10)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages; and, inferential statistics using paired t-tests.

3-How did they rate their stress (1) for **before** the pandemic at *work/professionally*, (2) for **during** the pandemic at *work/professionally*, (3) for **before** the pandemic at *home/personally*, and (4) for **during** the pandemic at *home/personally*—and was there any significant difference of before versus during for these stress ratings?

Part III: Rating Professional and Personal Stress for Before and During the COVID-19 Pandemic (RSE-WH-BDCP-4)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages; and, inferential statistics using paired t-tests.

4-To what extent were they at risk of providing **socially desirable responses**?

Part IV: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

5-What is their current level of **social support**?

Part V: Perceived Social Support Scale (PSSS-1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

6-To what extent did they present burnout, including for the **full burnout scale (i.e., the study outcome variable)**, as well as for the exhaustion and disengagement sub-scales?

Part VI: Mini Oldenburg Burnout Inventory (MOLBI-10)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

7-If at all, at what level (mild, moderate, severe) did they experience any **insomnia, depression, anxiety, and trauma** in the past year—and, did they receive any **counseling**?

Part VII: Retrospective Insomnia, Depression, Anxiety, and Trauma Scale (R-DATS-5)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

8-What was their current level of **perceived stress** for the past 30 days?
Part VIII: Perceived Stress Scale (PSS-4)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

9-If at all, how frequently have they experienced **discrimination and harassment at work** (e.g., unfair treatment, racial/ethnic slurs/jokes, ignored/not taken seriously, etc.)?
Part IX: Chronic Work Discrimination and Harassment Scale-Short (CWD-HS-Short-9)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

10-In coping with their experiences of discrimination and harassment at work, how often do they engage in behaviors that reflect a **heightened vigilance**?
Part X: Heightened Vigilance Scale (HVS-Short-4)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

11-To what extent do they have experiences at work reflective of a **"cultural taxation"** where there is a felt pressure for workers of color to perform extra work, and to engage in more unofficial and standard service activities—as well as cope with requests for help from work colleagues (i.e., requests made of them because of their race/ethnicity)?
Part XI: Cultural Taxation Scale (CTS-4)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

12-Were there any **significant relationships** found between **the study outcome variable of level of burnout** (i.e., full-scale score) and selected demographic and other study variables?
Data Analysis Plan: Inferential statistics, including via Pearson's correlations and t-tests

13-What were the significant predictors of **the study outcome variable of level of burnout** (i.e., full-scale score), given selected independent variables of demographic and other study variables?
Data Analysis Plan: Backward stepwise regression

Treatment of the Data

Regarding treatment of the data, after collection of data using an online survey hosted on Qualtrics, data will be transferred from Qualtrics to SPSS. Data analysis will follow the plans cited above.

Anticipated Findings

For **paired t-tests**, it is anticipated that significant differences will be found, as follows:

- **Lower** rating of **physical health** for *during* the pandemic compared to before the pandemic
- **Lower** rating of **mental/emotional** for *during* the pandemic compared to before the pandemic
- **Higher** rating of their **work/professional stress** for *during* the pandemic compared to before the pandemic
- **Higher** rating of their **home/personal stress** for *during* the pandemic compared to before the pandemic

For the **backward stepwise regression to predict the study outcome variable of level of burnout**, while controlling for social desirability, and given the independent variables from the various survey Parts, it is anticipated that the following significant predictors will be found, as follows:

The **higher the level of burnout**, then

- **Female** gender
- **Higher** age
- **Higher** number of children
- **Lower** education level
- **Higher** number of hours volunteering per week
- **Higher** Body Mass Index (BMI)
- Had COVID-19 **(yes)**
- **Lower** rating of physical health for now, during pandemic
- **Lower** rating of mental/emotional health for now, during pandemic
- **Higher** rating of work/professional stress for now, during pandemic

- **Higher** rating of home/personal stress for now, during pandemic
- **Lower** social support now, during pandemic
- **More severe** ratings for insomnia, anxiety, depression, and trauma (**mental health index**) for the past year
- Counseling past year **(no)**
- **Higher** perceived stress in the past month
- **More frequent** experiences of discrimination and harassment at work
- **Greater** heightened vigilance
- **Higher** prevalence of "cultural taxation" at work

Delimitations

The study will be delimited to those age 20 or above who worked within the U.S. public health workforce, or as a public health worker in any setting (e.g., government-affiliated, non-profit, community-based, clinic or hospital setting, university-affiliated, etc.) within the past two years as a paid employee for a minimum of 6 months (i.e., during 2020 or 2021).

Limitations

The study limitations include this being an online survey, necessitating access to a computer (smart phone, etc.) and the Internet; and individuals will need to perceive themselves as having 12-15 minutes to complete the survey. Given that it is being predicted that the U.S. will see a large surge of cases (i.e., the new highly contagious Omicron variant) in January 2022 when data collection will begin for this study, it is possible that public health workers may not perceive themselves as even having 12-15 minutes to spare. Study participation could depend on their level of work/professional and/or home/personal stress. Thus, a study limitation is that the

workers putting in the highest number of hours, or under the highest levels of stress, or with the lowest salaries, or with the highest contact with the public (i.e., testing, vaccination) may not complete the survey. This could be a serious study limitation.

Conclusion

This chapter has introduced the topic of focus for the dissertation, while offering other vital information (i.e., statement of the problem, purpose of the study, research questions, study parts, data analysis plan, study delimitations and limitations, etc.). The full dissertation will present a review of literature, details of study methods, results of data analysis, and important study implications.

Chapter II

REVIEW OF THE LITERATURE

This chapter will provide a review of the existing literature that is relevant to this dissertation. More specifically, this chapter will detail literature related to the following topics: (1) nature of the U.S. COVID-19 pandemic; (2) role of U.S. public health workforce; (3) risk factors for COVID-19 and co-morbidity; (4) burnout and mental distress symptoms of public health workers; (5) race-related stress, racism-related stress, discrimination, harassment at work; (6) stress and coping relevant to public health workers; and (7) the theoretical framework guiding the study.

I. Nature of the U.S. COVID-19 Pandemic

COVID-19 has been labeled as "the most dreadful public health threat" and deadliest infectious disease to emerge since the 1918 H1N1 influenza pandemic (Nguyen, 2021, p. 757)., The first cases of the novel coronavirus were discovered in Wuhan, Hubei province, China in December 2019 and have since spread rapidly across the globe (Huo et al., 2021). In February 2020, the disease spread by the virus, SARS-CoV-2, was named COVID-19 by the World Health Organization (WHO) and was officially designated a global pandemic on March 11, 2020 (Aruru et al., 2021). The spread of COVID-19 occurs primarily through respiratory droplets and symptoms can include "fever or chills, cough, shortness of breath, fatigue, muscle or body aches, headache, loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, and diarrhea" (Krishnamachari et al., 2021; Nguyen, 2021, p. 757). The first case of COVID-19 in

the U.S. was diagnosed on January 21, 2020, and initially entered the U.S. from infected individuals traveling from international locations (Aruru et al., 2021; Krishnamachari et al., 2021). Soon after, community spread rapidly occurred from person to person in various densely populated cities across the country and "led to a national emergency declaration in the U.S. on March 13, 2020" (Aruru et al., 2021, p. 1968).

Because the spread of COVID-19 "is largely contingent upon proximity to one another", the CDC, multiple other federal agencies, state and local health departments, and local community partners were implementing public health measures to slow transmission of COVID-19 in the U.S. (Patel & Jernigan, 2020; Krishnamachari et al., 2021, p. 1036). Unprecedented measures were taken including stay at home orders, closures of schools and non-essential businesses, restricted travel, mask mandates and social distancing (Aruru et al., 2021). As the federal government scrambled to establish national policies, "states and local governments laid out vastly heterogeneous rules" on how to prevent the spread of COVID-19 (Krishnamachari et al., 2021, p. 1036). Even with mandates in place, the pandemic continued to overwhelm hospitals, strain healthcare workers, and cause significant trauma, loss, and hardship across the country (Liu & Modir, 2020). Social distancing restrictions also left thousands of businesses closed and millions of Americans unemployed (Silver et al., 2021). In addition to the economic impact, other COVID-19 consequences include "rising inequality and acute psychological distress" (Nguyen, 2021, p. 757).

With the COVID-19 pandemic and economic recession as a backdrop, Americans also had to face the merging of "the current collective traumas compounded by race-based historical traumas" (Silver et al., 2021, p. 4). In February 2020, Ahmaud Arbery, a 25-year-old Black man, was shot and killed by three white men while jogging and Antonio Valenzuela, a 40-year-old

Latino man, died from a choking maneuver used by a police officer (Wu et al., 2021; Ayala & Irazábal, 2021). In March 2020, Breonna Taylor, a 26-year-old Black woman, was fatally shot in the crossfire of a "no-knock" apartment search by police (Wu et al., 2021). In May 2020, George Floyd, a 46-year-old Black man, died from a police officer kneeling on his neck for over 9 minutes (Wu et al., 2021). In June 2020, three Latino men, Andrés Guardado (18 years old), Sean Monterrosa (22 years old), and Erik Salgado (23 years old) were all shot and killed by police officers. In August 2020, police officers shot seven bullets into the back of Jacob Blake, a 29-year-old Black man (Silver et al., 2021). When George Floyd was murdered, the anger and grief circulating from the deaths of Arbery and Taylor sparked protests across the country, "bringing renewed attention to police brutality and racism" (Wu et al., 2021, p. 1).

Simultaneously, several extreme weather events, including devastating hurricanes, record heatwaves and disastrous wildfires were also happening across the country and were made more complicated due to physical distancing and increased safety requirements. The occurrence of so many catastrophes and horrific events, in addition to COVID-19, emphasizes the public health importance of considering "the meaning and implications of cumulative, compounding trauma exposure" (Silver et al., 2021, p. 4).

II. Role of U.S. Public Health Workforce

Public health is an organized discipline that "seeks to improve the well-being of communities" (Kass, 2001, p. 1776). Public heath protects and promotes health primarily through population-level, rather than individual-level, approaches. Public health interventions date back more than three centuries and were grounded in the epidemiological goal of preventing

and controlling disease outbreaks. Public health workers today have expanded to include a larger array of functions, in addition to epidemiology, that still take "community-wide, typically prospective, approaches to improve health" (p. 1776). The emphasis on community health highlights public health's commitment to reducing injustices that cause social, racial, and health inequities. These "social justice functions of public health" are the way the public health field affirms the value and priority of minimizing death and disability for all human life (Kass, 2001, p. 1777).

According to DeSalvo et al. (2021), the Institute of Medicine's (IOM) 1988 report on The Future of Public Health outlined the mission of public health as what we as a society do to assure "the conditions in which people can be healthy" (p. 2). The U.S public health system is comprised of various local, state, territorial, tribal, and federal agencies and authorities that work together to advance the public's health. It is the responsibility of the 59 state and territorial health departments and 2,500 local health agencies nationwide to carry out the daily essential and foundational frameworks of public health services. The essential framework for public health services was developed in 1994 and serves as the "key domains and areas of focus for the public health mission" with equity being a central component (p. 3). In 2012, the foundational framework for public health services was created to detail the skills, capabilities, and program areas that all health department should have to fully serve their communities. Although these frameworks were created to ensure the basic functions of all health departments were the same, there is still "significant variation in how health departments make decisions" and what resources are available for them to best serve their communities (DeSalvo et al., 2021, p. 3).

According to Krasna and Fried (2021), public health is a "diverse field that employs professionals in numerous job functions" with the common purpose of protecting the health of

communities (p. 1413). Public health workers can be found anywhere from government agencies (including the federal government, local health departments, state health departments, and tribal and territorial health departments) to research institutions, universities, hospitals, nonprofit organizations, and even private corporations. Some public health functions have an epidemiologic focus such as disease surveillance, disease and injury reporting, vital statistics registries, emergency response, laboratory testing, contact tracing, vaccine inventory and distribution, food safety, regulatory inspection and licensing, research, and evaluation. Other public health functions are in place to "prevent chronic diseases like cancer, diabetes, and heart disease" and focus more on community engagement, outreach, health education, and policy development (p. 1413). Further, the preventative functions of public health have shown to reduce health care costs. Recent estimates show that with every dollar spent on public health, "we save $14.30 on health care and other costs" (Krasna & Fried, 2021, p. 1413).

One of the key functions of public health workers during the COVID-19 pandemic was emergency preparedness and response, as many health departments became "the first line of response when the outbreak began" (DeSalvo et al., 2021, p. 6). Health departments across the country worked to control the spread of COVID-19 in communities by putting into action their own emergency operations and incident command systems. Public health workers developed tools for tracking and reporting data on coronavirus and even created data dashboards to display on health department websites with the latest information on COVID-19 cases, hospitalizations, and deaths. Further, public health workers coordinated "with local, state, and federal officials to support emergency planning", which included leading briefings with lawmakers and elected officials (p. 6). Also, public health workers supported COVID-19 diagnostic development and even played a major role in detecting shortcomings with the CDC's first COVID-19 diagnostic

test. This led the federal government to provide "new flexibilities to state public health laboratories", greatly expanding the nation's COVID-19 testing capacity (DeSalvo et al., 2021, p. 6).

In addition to emergency preparedness and response, other key functions of public health workers have been "of paramount importance during the COVID-19 pandemic" including policy development, community partnership development, and communications (DeSalvo et al., 2021, p. 8). The lack of a consistent, national COVID-19 response strategy led local and state officials to partner with public health leaders to develop and enforce mask wearing requirements, travel restrictions, and shelter-in-place policies. Many health departments also went "beyond their routine responsibilities to meet their community's health and social needs" by developing new community partnerships and strengthening existing ones (p. 9). In addition, public health workers were tasked with keeping their communities informed during the pandemic. COVID-19 communication from public health workers was needed not only to debunk competing policy narratives, the undermining of public health leaders, and "the dissemination of pseudoscience and conspiracy theories" but also to re-build trust in communities of color that have been harmed the most by systemic racism in the U.S. healthcare system (DeSalvo et al., 2021, p. 8).

When COVID-19 cases in the U.S. surged in early 2020, it became clear that a "large, well-trained public health workforce is needed to control COVID-19" in the short term and to address the inequities exacerbated by COVID-19 in the long run (Kilmarx et al., 2021, p. 1). Across the country, health authorities recognized the need for more public health workers to conduct testing, contact tracing, and to provide social support for people in isolation and quarantine. Although tens of thousands of new contact tracers were hired during the summer of 2020, many health departments still struggled to "hire, train, and manage contact tracers and

other new public health responders" due to limited federal funding and guidance (p. 1). Simultaneously, that same limited supply of public health workers was needed to manage and deliver the largest vaccination program in the country's history. This led to public health workers being reassigned to other COVID-19 response activities to support vaccination, or in some cases, asked to take on multiple roles at a time. The country's current COVID-19 response has highlighted the importance of a robust public health workforce to help mitigate the next disease outbreak "before public health and medical capacities are overwhelmed", as they are currently (Kilmarx et al., 2021, p. 2).

Although public health is usually conducted in the shadows, the COVID-19 pandemic has become "the moment when public health took center stage" (Galea & Vaughan, 2021, p. 350). Early in the pandemic, it became routine seeing epidemic curves on the front page of newspapers, on the local news channel, and throughout social media. A variety of epidemiologic concepts, such a R_0, that were previously only known by those in the field, "became the subject of public debate and discussion" (p. 350). This led to public health experts gaining prominence and brought an increased visibility and interest to the public health field. The new recognition of public health workers and the field's "emergence into the global limelight, stands to transform how we work" and the importance of public health (Galea & Vaughan, 2021, p. 351).

III. Risk Factors for COVID-19 and Co-morbidity

Due to the magnitude of the COVID-19 pandemic, "a need remains to understand indicators for severe illness" (Kompaniyets et al., 2021, p. 2). A cross-sectional study of over 540,000 adults hospitalized with COVID-19 in the U.S was conducted to examine the risk

factors associated with severe outcomes of COVID-19. Results indicated that there are 18 frequent underlying medical conditions among patients hospitalized with COVID-19, 9 of which are associated with severe COVID-19 illness. The highest risk of severe illness was associated with "obesity, anxiety and fear-related disorders, diabetes with complication, chronic kidney disease (CKD), and neurocognitive disorders" (p. 5). Hypertension was also a risk factor for death among patients younger than 40. Having more than one underlying medical conditions was also a strong risk factor of severe COVID-19 illness. In fact, "the percentage of the U.S. adult population known to have 2 or more underlying medical conditions ranges from approximately 38% to 64% by state", which emphasizes the high impact COVID-19 can have at the population level (Kompaniyets et al., 2021, p. 5).

Early in the pandemic, healthcare workers were deemed as frontline essential workers, as they had increase occupational risks and exposure to COVID-19 "due to the nature of their work caring for the sick" (Gaitens et al., 2021, p. 2). Further, occupational risk factors for healthcare workers may include their type of work role in the clinical settings (nursing in particular), the availability and use of personal protective equipment (PPE), amount of time working with COVID-19 patients, and extended work hours (Spilchuk et al., 2022). A study conducted by Chea et al. (2022) found that when compared with matched controls, healthcare workers that reported close contact with COVID-19 patients in the workplace has 1.6-fold higher odds of getting COVID-19 infection. Further, if a worker had possible COVID-19 infection, they could "potentially transmit the virus across teams, wards or hospitals" if their infection goes undiagnosed between shifts (Smallwood et al., 2022, p. 2). In addition, non-clinical staff in the healthcare setting were found to be more likely to get infected after a high-risk exposure than other occupational groups (Spilchuk et al., 2022). As mentioned earlier, many public health

professionals work in the healthcare setting in both clinical and non-clinical roles, thus they may also be at increased occupational risk for COVID-19.

According to Egede et al. (2021), individuals with pre-existing and recently diagnosed mental health conditions may have "a higher risk of infection, higher risk of hospitalization after infection, and an increased risk of mortality" compared to individuals without diagnosed mental health conditions (p. 91). In fact, among hospital patients with existing psychiatric disorders, the risk for testing positive for COVID-19 was 1.65 times higher compared to those without existing psychiatric disorders (Taquet et al., 2020). Even patients "who were newly diagnosed with depression or schizophrenia" had an increased risk for testing positive for COVID-19 (Egede et al., 2021, p. 94). Further, because of the high percentage of adults with physical co-morbidities in the U.S, it was also shown that individuals with combined physical and mental health diagnoses were more likely to be hospitalized compared to those with only a physical health diagnosis (Egede et al., 2021). In addition to healthcare workers and individuals with pre-existing mental illness having increased COVID-19 risks, they were also identified as vulnerable populations "most at-risk for developing mental illness as a result of the COVID-19 pandemic", further emphasizing the importance of both mental health and occupation during the pandemic (Egede et al., 2021, p. 2).

Lastly, structural racism is also a significant contributor to inequities in risk, morbidity, and mortality "from not only COVID-19 but also many other conditions" (Corbie-Smith, 2021, p. 1). This has led to minoritized groups experiencing an immense burden of COVID-19 morbidity and mortality (Holden et al., 2022). Further, structural racism is what drives the systemic differences in both repeat exposure to COVID-19 via overrepresentation of people of color in low-wage essential jobs, and case fatality via prevalence of underlying health conditions

"that increase the likelihood of severe disease" (Holden et al., 2022, p. 2). In fact, people of color are overrepresented in the U.S. frontline health care industry with over half of medical assistants, facility cleaning service workers, and custodial workers identifying as non-White (50.1%, 56.6%, and 62.5%, respectively) (Adler & Bhattacharyya, 2021). Racism is deeply rooted and pervasive in society's structures, policies, and practices, so much so that race and ethnicity are consistent predictors of a cycle of unequal access to care and "disproportionate exposure to health risks, as evident in the COVID-19 pandemic (Corbie-Smith, 2021, p. 1).

IV. Burnout and Mental Distress Symptoms of Public Health Workers

The magnitude and longevity of the COVID-19 emergency response in the U.S. has placed "an unsustainable burden on the U.S. public health workforce" (Kintziger et al., 2021, p. 6). Further, the size and scope of the emergency response may negatively impact the provision of regular public health services and capabilities of public health workers. A sample (N = 298) of public health professionals during the ongoing COVID-19 pandemic response was surveyed to assess the impacts of the response on the "public health workforce's program areas, job functions, and work hours" (p. 2). Measures included professional experience, mental and physical health status, and career plans. For this study, the public health workforce was defined as anyone with "either an academic degree in a field related to public health or a professional role in an academic or governmental public health department" (Kintziger et al., 2021, p. 2).

Findings showed that numerous "essential public health functions and tasks have been limited or eliminated" because the current public health workforce cannot maintain essential services while simultaneously responding to the COVID-19 pandemic (Kintziger et al., 2021, p.

2). Program evaluation and health education were the services with the most significant declines in their functions. Further, the public health areas of occupational health, chronic disease, and injury saw the greatest proportion of content experts reassigned from their regular duties to work on the COVID-19 response. Despite efforts to ensure public health professionals were not engaging in their regular work in addition to working on the COVID-19 response, the "average days worked per week increased by 0.8 days and average hours worked per week increased by 11.2" (p. 6). Qualitative findings showed that working more than 40 hours and more than five days per week on the COVID-19 response placed a great burden on public health workers. This burden is "likely to impact the public health workforce, and by extension, public health, for years to come" (Kintziger et al., 2021, p. 9).

Using data from the same survey, Stone et al. (2021) focused on "the mental and physical health of the U.S. public health workforce" as a result of working on the COVID-19 response (p. 2). Specific measures included burnout, generalized anxiety, depression, and number of poor physical and mental health days. Findings showed that two thirds (66.2%) of the total sample (N = 225) reported symptoms of burnout. Burnout was highest in White, non-Hispanic respondents and respondents that identified as other (including multiple) races (70.1% and 71.4%, respectively). Results also indicated that "age and years of experience were associated with high levels of burnout" (p. 6). Respondents aged 40–49 were 2.3 times as likely to report high levels of burnout compared to respondents that were 18–29 years. Similarly, respondents with 10–14 years of experience were 4.3 times as likely to report high burnout compared to respondents with less than 1 year of experience. With regard to conclusions and implications, it is likely that "symptoms of burnout will increase and be long lasting" among U.S. public health workers as the pandemic continues (Stone et al., 2021, p. 9).

Further, in the same sample of public health workers, "41.0% reported symptoms of anxiety and 29.1% reported symptoms of depression" (Stone et al., 2021, p. 8). Out of the last 30 days, 13.6% of respondents reported poor physical health for an average of 5 days, 41.4% reported poor mental health for an average of 12.4 days, and 19.7% reported reduced activity due to poor physical or mental health for an average of 6.7 days. When comparing across gender, male public health workers reported more poor mental health days than females, whereas female public health workers reported more poor physical health days and more days where activities were impacted due to poor health than males. When comparing across race/ethnicity, Black public health workers "reported more days of poor physical health" (8.2 days), Latino public health workers had the highest number of poor mental health days (15.3 days), and Asian public health workers reported the highest number of days of activity that were impacted by poor health (8.3 days) (p. 6). Lastly, variation was also found by professional experience, with public health workers with the most professional experience reporting fewer poor mental health days than public health workers with the least professional experience. Recommendations highlighted how a larger public health workforce is needed to not only reduce the strain on current public health workers but also for "the long-term sustainability of public health preparedness and response" (Stone et al., 2021, p. 9).

Bryant-Genevier et al. (2021) discussed how the U.S. public health workforce could be at similar risk as healthcare workers for negative mental health outcomes due to the "prolonged demand for responding to the pandemic" (p. 947). They conducted the largest study to date (N = 26,174) on the mental health conditions of public health workers in state, tribal, local, and territorial public health departments. Measures included self-reported mental health symptoms in the past 2 weeks for depression, anxiety, post-traumatic stress disorder (PTSD), and suicidal

ideation, as well as questions on traumatic events or stressors experienced since March 2020. Over half of respondents (53%) reported symptoms of at least one mental health condition, "including depression (32.0%), anxiety (30.3%), PTSD (36.8%), or suicidal ideation (8.4%)" (p. 947). The prevalence of depression and anxiety symptoms among public health workers was similar to percentages previously reported for healthcare workers. However, study results indicated that PTSD symptoms among public health workers were "10%–20% higher than that previously reported among health care workers, frontline personnel, and the general public" (Bryant-Genevier et al., 2021, p. 948).

Findings showed that the "highest prevalence of symptoms of a mental health condition" were among respondents 29 years and older, transgender or nonbinary persons, and respondents that identified as multi-racial (Bryant-Genevier et al., 2021, p. 947). Further, inflexible work schedules and long work hours impacted the prevalence of all four mental health outcomes for public health workers. As workers spent more time working directly on COVID-19 response activities and increasing their number of weekly work hours, they saw an increase in severity of both depression and PTSD. In fact, respondents that did not take time off of work when they needed to were "nearly twice as likely to report symptoms of an adverse mental health condition" than respondents that did take time off of work when needed (p. 948). Only 18.2% of respondents reported that their employer did not allow time off from work. More commonly, public health workers did not take time off because of "concern about falling behind on work (64.4%), no work coverage (60.6%), and feeling guilty (59.0%) (Bryant-Genevier et al., 2021, p. 948).

Of the traumatic events or stressors experienced by respondents since March 2020, a majority (72.0%) mentioned "feeling overwhelmed by workload or family/work balance"

(Bryant-Genevier et al., 2021, p. 948). Other prominent stressors included receiving work-related threats, being bullied, threatened or harassed because of work, and having received a positive COVID-19 diagnosis. Further, PTSD symptoms disproportionately impacted public health workers "who experienced work-related traumatic stressors", especially stressors that affected their personal lives, such as feeling disconnected from friends and family because of workload (p. 948). Although respondents were able to document traumatic stressors that happened since March 2020, they were only able to report symptoms that were experienced in the 2 weeks preceding the survey. It is also important to note that "not all traumatic stressors or events experienced by public health workers" were examined by the survey, including larger social-economic stressors like financial insecurity or racism (Bryant-Genevier et al., 2021, p. 948).

Expanding on the topic of traumatic events and stressors, Cody (2021), Halverson et al. (2021), Stone et al. (2021) and Mello et al. (2020) have all discussed the "unprecedented level of professional and personal attacks and harassment" that state and local health officials have experienced during the COVID-19 pandemic (Cody, 2021, p. 432). The intensely divisive political climate of the U.S. has led to increased scrutiny and criticism of any science-based recommendations and decisions made by public health officials (Halverson et al., 2021). Across the country, public health workers are being physically attacked, harassed and demeaned on social media, subject to doxing (publishing private information to facilitate harassment), are receiving death threats, and even having their personal residences vandalized by protesters (Mello et al., 2020). The stress of the undue harassment and politicization of their work – in addition to the trauma of the pandemic - has prevented many committed public health workers "from serving their communities to the fullest extent" (Cody, 2021, p. 432). There has been a rise in the number of state and local health officials that have resigned or been removed from office

due to the politicization of public health and increased challenges with decision-making power (Stone et al., 2021). The abuse, harassment, personal threats, and fear experienced by state and local health officials has likely "increased the potential for anxiety, depression, and burnout" among anyone working in public health (Stone et al., 2021, p. 9).

According to Stone et al. (2021), leadership turnover may be an "additional contributor to burnout in the U.S. public health workforce" (p. 9). Since the beginning of the pandemic, over 250 state and local public health officials have resigned from their role or have been fired (Cody, 2021). Health departments across the country "are experiencing disruptions in leadership" during a time when their responsibility of protecting the public's health is greater than ever (Halverson et al., 2021, p. S12). State and local health department staff are working non-stop and have spent months being in a reactive mode without any time to slow down to manage their own health (Cody, 2021). It is "hard to sprint a marathon" and when there is no light at the end of tunnel, it can make it that much harder (Halverson et al., 2021, p. S13).

Throughout the entirety of the COVID-19 pandemic, public health workers have tirelessly and courageously "contributed to the daunting tasks of protecting the communities that they serve" (Wiesman & Baker, 2022, p. 95). The longevity of their relentless work has led public health professionals to experience COVID fatigue, which can be defined as a sense of being overwhelmed with too much to do and not enough time and energy to do all that needs to be done. Further, moral injury is a term that is distinct from burnout and has also been used to characterize the mental health crisis of public health workers. With many public health workers under constant stress, moral injury results from "systemic forces that compromise the ability of public health professionals to serve their communities" (p. 95). Further, the disruption of daily routines during the COVID-19 pandemic may also be negatively impacting the resilience and

stamina of the public health workforce. This has raised concerns about long COVID in public health workers, as common symptoms of long COVID are decreased stamina and brain fog. Recommendations covered how leaders must begin "acknowledging that a crisis exists with far-reaching consequences" and the mental health conditions experienced by public health workers could impact their ability to function in the workplace in the long-term (Wiesman & Baker, 2022, p. 95).

V. Racism-related Stress at Work

Although all professionals may experience various types of stressors in the workplace, BIPOC professionals are more vulnerable to "racism and racial trauma, increased burnout and vicarious trauma, and systemic burden" (Miu & Moore, 2021, p. 539). Racial trauma, also known as racism-related stress, happens when the interactions steeped in racism that occur between individuals and their environment are perceived as taxing and threatening to one's wellbeing (Harrell, 2000). BIPOC professionals can be exposed to several forms of racism-related stress including racism-related life stress**,** vicarious racism, and microaggressions (Harrell, 2000). Racism-related stress can "show up in the workplace in many forms", such as direct racism from work colleagues, patients' discrimination, or vicarious exposure from news and other BIPOC staff accounts of racism (Miu & Moore, 2021, p. 540). Being a BIPOC professional in America during a global pandemic is stressful enough; however, coupled with a coinciding racial pandemic, the interpersonal and professional responsibilities can feel never-ending. The dual pandemic of COVID-19 and racism "creates a considerable emotional burden

and a trauma catalyst" that can negatively impact the mental health and well-being of BIPOC professionals (Lipscomb & Ashley, 2020, p. 7).

Racism-related life stress – major incidents of racism that are time-limited but have a long-lasting impact – increased in Asian American communities once politicians and media "blamed Asian Americans for spreading the virus" (Harrell, 2000; Miu & Moore, 2021, p. 539). Asian American healthcare workers had to deal with the trauma of racial discrimination in the form of patients refusing to be seen by Asian American providers and accusing them of causing the COVID-19 pandemic. In fact, this type of racism-related stress was one of the chief complaints for health care workers of color during the pandemic (Mollica & Fernando, 2020). When working in the community, healthcare workers have also been called "racial epithets, and even physically assaulted" (Mollica & Fernando, 2020, p. e84). In a qualitative interview, an Asian American mental health provider described how the increase in Asian hate crimes put her in a constant state of fear for herself, family, friends, and community. She explained that behind the masks worn during COVID-19, BIPOC mental health professionals "are still identifiable as people of color" and just as vulnerable to racism as the broader community (Miu & Moore, 2021, p. 540).

Secondhand racism, known as vicarious racism, is a type of racism-related stress that occurs when "hearing about or seeing racist acts committed against other members of one's racial group" (Chae et al., 2021, p. 508). This can include witnessing racially motivated attacks and other racial injustices against friends, family members or on the news. Vicarious racism also includes racism that is directed towards an entire racial group not just an individual, such as racist rhetoric from public figures or racist posts on social media. This type of secondhand racism can cause "physical, behavioral, and mental health responses beyond the immediate

victim" (p. 509). In fact, research showed an increase in depression and anxiety among Black Americans after the murder of George Floyd. Similarly, Chinese and Vietnamese Americans who witnessed their friends experience racial discrimination had a greater risk of having a psychiatric disorder within the past year. Even if a person is not directly involved or targeted by the injustice, experiences of vicarious racism still "may constitute a source of personal threat" (Chae et al., 2021, p. 509).

According to Lipscomb and Ashley (2020), navigating a dual pandemic while being Black in America can be "emotionally exhausting and cumbersome for Black clinicians" (p. 13). For example, Black clinicians found it nearly impossible to escape the vicarious trauma of unarmed Black Americans being murdered and focus on staying healthy and safe during a pandemic (Lipscomb & Ashley, 2020). In addition, the higher COVID-19 infections and deaths in BIPOC communities led to higher rates of depression, grief, and distress among these groups (Miu & Moore, 2021). In a qualitative interview, a Black psychiatrist explained how the higher rates of COVID-19 deaths in Black communities and the growing list of Black people dying at the hands of police violence made her feel that there was "an implicit message in society that Black lives did not matter" (Miu & Moore, 2021, p. 540). Further, BIPOC professionals may be exposed to vicarious racism if they work with patients of color. Listening to patients recall stories of racism, their difficulties with social distancing inside close quarters, or their concerns about sending their kids to school as they continue high-risk essential work can lead to BIPOC professionals experiencing "greater burnout from compassion fatigue and vicarious trauma" (Miu & Moore, 2021, p. 540).

Another form of racism-related stress experienced in the workplace are microaggressions, defined as "any subtle insult or informal degradation of a member of any socially marginalized

group" (Parikh & Leschied, 2022, p. 1). Although blatant acts of racism may not be tolerated and may happen less often in the workplace, the subtlety of microaggressions can still impact the daily interactions for BIPOC professionals. Further, research shows that microaggressions can be "detrimental to the physical and mental health of the recipient" (p. 2). For example, BIPOC medical professionals that have experienced microaggressions have been shown to develop depression, anxiety and hypertension. Experiences of microaggressions may also "lead to increased burnout" among BIPOC professionals and cause individuals to leave their profession (Parikh & Leschied, 2022, p. 2).

According to Duerme et al. (2021), the lack of clear policies to mitigate microaggressions and other persistent interpersonal racism experiences at work, supports "the continued implicit manifestations of institutional racism" (p. 366). Due to the insidious nature of microaggressions, it is often extremely challenging to categorize them as clear violations of anti-discrimination policies, making them harder to address through Human Resources channels, such as Equal Employment Opportunity (EEO). The ongoing incidences of microaggressions coupled with the slow-moving progress on policies to prevent such racial inequities, can likely cause "increased stress and experiences of burnout for BIPOC staff" (p. 370). Further, the burden of mitigating such incidents often falls on the BIPOC staff member who experienced the microaggression. Results based on individual experiences of institutional racism within a large public health organization showed that "microaggressions are disruptive in occupational settings" and oppressive to BIPOC professionals impacted by these incidences (Duerme et al., 2021, p. 366)

Also relevant to race-related stress is the "minority tax," which is when professionals of color are asked to "take on extra responsibilities in the name of diversity" (Miu & Moore, 2021, p. 541). Further, in professions where there is a systemic underrepresentation of people of color,

professionals of color may bear the burden of being asked to serve as the diversity experts. Results of a qualitative analysis showed that after the death of George Floyd, Black mental health providers were tasked with addressing race and racism in the workplace, all while carrying a full load of patients. Although leading anti-racism efforts in the workplace can be meaningful, it can also cause high levels of burnout in professionals of color "who are already stretched thin" (p. 541). Findings showed that BIPOC professionals working during the COVID-19 pandemic found it difficult to rest when they felt they were both needed in their communities and in the workplace to lead diversity and inclusion efforts. In addition, engaging in activities where systemic racism and racial inequities may be discussed could further retraumatize them. At a time when self-care is paramount, "the minority tax can be detrimental" to the wellbeing of BIPOC professionals (Miu & Moore, 2021, p. 541).

VI. Stress and Coping Relevant to Public Health Workers

According to Bryant-Genevier et al. (2021), employee assistance programs "were available to nearly two thirds (66.1%) of respondents" to provide mental health related support to public health workers (p. 948). However, only 11.7% of respondents with access to employee assistance programs utilized their services. Further, "nearly one in five (19.6%) respondents" that were in need of mental health counseling/services in the last 4 weeks did not receive these services (p. 948). Findings suggest that employee assistance programs were not commonly accessed in part because over one in four public health workers (27.3%) did not even know if their employer offered such services. Recommendations included restructuring employee assistance programs to be more accessible and unacceptable to public health workers by ensuring

workplaces promote mental wellness and "destigmatize requests for mental health assistance" (Bryant-Genevier et al., 2021, p. 948).

Similarly, Pinho-Gomes et al. (2021) found that only 16% of public health faculty "accessed formal mental health and wellbeing support" with many being unsure of what support was available to them (p. 1). Thankfully, public health faculty and trainees found a wide range of coping mechanisms for support. Such coping mechanisms included walking and hiking, watching TV, and speaking to friends and family. In addition, over half of participants "asked for extended annual leave and flexible working" to cope with the sustained increase in workload (p. 1). Having a clear focus on a healthy work-life balance and offering flexible working patterns are just two of the ways organizations can create a more sustainable lifestyle for public health workers. Of most importance, organizations must "allow public health professionals time to recover" so they have the bandwidth to tackle the public health challenges ahead (Pinho-Gomes et al., 2021, p. 2).

VII. Theoretical Framework Guiding the Study

Multiple theories provide a foundation for this research study. More specifically, the theories providing the theoretical framework guiding the study are, as follows: Original Burnout Theory (Freudenberger, 1974; 1986; 1989); Stress and Coping Theory (Lazarus and Folkman, 1984; 1986; 1987); Theory and Model of Racism-Related Stress (Harrell, 2000); and The Original Theory of Racism (Pierce et al., 1977). The next section will highlight each of these and their contribution to this study.

Original Burnout Theory

Burnout was first introduced by Freudenberger (1974) who defined burnout as becoming "exhausted by making excessive demands on energy, strength, or resources" in the workplace (Freudenberger, 1974, p. 159). Burnout became a way to describe a physical and psychological experience in the workplace before it became clinically relevant condition. Freudenberger observed firsthand by "working intensively in the free clinic movement" how the combination of demanding work responsibilities and workplace atmosphere or climate can produce burnout (p. 159). It also became clear that the concept of burnout usually occurred in a context where a substantial amount of emotional work and empathy is needed but little pay is provided. The type of workplaces that have staff who "are seeking to respond to the recognized needs of people" are typically found in the health care sector, social work, and education (Freudenberger, 1974, p. 161).

The process of burnout comes about "as a consequence of a depletion of energies" that can be characterized by both physical and behavioral indicators (Freudenberger, 1986, p. 247). Physical signs of burnout include exhaustion, fatigue, inability to shake a lingering cold, frequent headaches and gastrointestinal disturbances, sleeplessness, and shortness of breath (Freudenberger, 1974). Behavioral signs can include irritation, frustration, quickness to anger, a suspicious attitude, feelings of omnipotence or overconfidence, cynicism, and signs of depression (Freudenberger, 1974). It is primarily "the dedicated and the committed" who are most likely to burn out (Freudenberger, 1974, p. 161). Often, a dedicated and committed person feels internal pressure to work and help others, as well as an external pressure to give more, causing them to work too much, too long and too intensely (Freudenberger, 1974). The best way for an individual to overcome burnout is with support but to address the root causes of burnout

the "(1) the values, ethics, and morality of society; (2) the organization; and (3) the individual worker within the institution" must all be examined (Freudenberger, 1989, p. 1).

The Original Burnout Theory was applied to this study's survey to examine the level of burnout in public health workers. In the study survey, the section titled: Mini Oldenburg Burnout Inventory (MOLBI-10) in Chapter III provides more details.

Transactional Theory of Stress and Coping

The present study is grounded in the work of Lazarus and Folkman's (1986) theory that describes psychological stress as something that occurs when general life events in a person's environment are perceived and appraised by that individual to be harmful but "the demands tax or exceed available coping resources" (Lazarus & Folkman, 1986, p. 63). Lazarus and Folkman (1984) emphasized how the relationship between the individual and the environment is mediated by two key processes: (a) cognitive appraisal, and (b) coping. Cognitive appraisal is an individuals' evaluation of what is happening to them "from the standpoint of its significance for their well-being" (Lazarus & Folkman, 1987, p. 145). During cognitive appraisal, a person will first assess the situation to see what is at stake (primary appraisal) and if the situation should be categorized as a threat, challenge, or a loss (Lazarus & Folkman, 1984). Then, they will assess their coping resources (secondary appraisal) to see if they have enough resources to cope with the situation (Lazarus & Folkman, 1984). Emphasis is placed on the importance of cognitive appraisal because it is the perception that an event is stressful, rather than the event itself, that determines whether coping strategies are commenced and whether the stressor is ever fully resolved (Lazarus & Folkman, 1984).

Coping is the second process in the transactional theory of stress and coping and can be defined as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141). Thus, coping is a mechanism by which individuals understand, reframe, or react to the experience of a situation. How an individual chooses to cope with that situation will then determine whether they are stressed by the experience. This theory frames coping as "process-oriented rather than trait-oriented", involving conscious, purposeful actions that are used when an individual appraises a situation as stressful (p. 141). Further, coping strategies aim to either directly manage or alter the stressor (problem-focused coping, PFC) or regulate emotional responses to the stressor (emotion focused coping, EFC). PFC forms of coping mostly occur when conditions can be appraised as amendable to change, whereas EFC forms of coping occur when an appraisal shows that "nothing can be done to modify harmful, threatening, or challenging environmental conditions" (Lazarus & Folkman, 1984, p. 150).

Stress and Coping Theory was applied to this study's survey to examine how stress effects public health workers and how they cope with stressful events. In the study survey, the sections titled: Professional and Personal Stress for Before and During the COVID-19 Pandemic (RSE-WH-BDCP-4) and Perceived Stress Scale (PSS-4) in Chapter III provide more details.

Theory and Model of Racism-Related Stress

The present study is also rooted in Harrell's (2000) "multidimensional conceptualization of the ways that racism is experienced" and the potential pathways through which racism affects the well-being of people of color (p. 43). Drawing on Lazarus and Folkman's stress and coping framework, the theory of racism-related stress argues that the life stress experienced by people of

color must take into consideration the way racism is embedded into interpersonal, collective, cultural-symbolic, and sociopolitical contexts and serves as its own source of stress. Specifically, racism-related stress is defined as "the race-related transactions between individuals or groups and their environment that emerge from the dynamics of racism, and that are perceived to tax or exceed existing individual and collective resources or threaten well-being" (p. 44). Racism and perceived discrimination are differentiated from racism-related stress in that the former may precede the latter. Additionally, there are six different types of racism-related stress people of color may experience: (a) racism-related life stress, that is, major incidents of racism that are time-limited but have a long-lasting impact; (b) vicarious racism and stress, that is, the impact of observing a racist incident; (c) daily racism microstressors (microaggressions), that is, chronic racial slights and degradations such as being overlooked or ignored; (d) chronic contextual racism and stress, that is, the impact of having to cope with the larger social structure, political dynamics, and institutional racism; (e) collective racism and stress, that is, an understanding of the impact of racism on one's racial group; and (f) transgenerational racism and stress, that is, an understanding of historical racial trauma and how it impacts "the relationship between the group and wider American society" (Harrell, 2000, p. 46).

Racism "has the potential to affect well-being" when an individual is unable to respond to direct or indirect experiences of a racist event (Harrell, 2000, p. 47). Further, racism-related stress could result in higher levels of psychological, physiological, social, or functional problems for people of color. Harrell proposed that the relation between racism-related stress and well-being is shaped by cultural processes such as familial and socialization influences, interactions with other generic and status-related stressors (such as sexism, religious discrimination, disability discrimination, ageism, or classism), and sociocultural variables. Thus, the stress, and

potential harm, of racism reside not only in the specific incident, but also in "the resistance of others to believing and validating the reality or significance" of someone else's personal experience (p. 45). The theory and model of racism-related stress acknowledges that the link between racism and well-being is multifaceted and occurs within a larger social, historical, and cultural context to influence health over time. Through "identification, validation, and discussion of racism-related experiences", mental health practitioners and researchers can play a critical role in understanding and intervening in racism (Harrell, 2000, p. 53).

The Theory and Model of Racism-Related Stress was applied to this study's survey to examine how racism-related stress affects public health workers. In the study survey, the sections titled: Heightened Vigilance Scale (HVS-Short-4) and Cultural Taxation Scale (CTS-4**)** in Chapter III provide more details.

Original Theory of Racism

Racism is a key foundational concept of this study and is defined by Pierce et al. (1977) as "a mental and public-health illness" based on the premise that skin color dictates whether someone can operate from an inferior or superior vantage point in the United States (p. 64). Further, it was argued that racism does not just manifest in the form of overt discrimination, but also through the negative representation of individuals by their stereotyped group characteristics. It was believed that both Black and white people are proracist because "they permit, insist, encourage, and sustain" that Black people must be dependent, obedient, and respectful to white people in any interpersonal interactions (p. 65). To test this belief, a qualitative study was conducted on interracial behaviors and how they contribute to racism in television commercials. Thus, the purpose for the Original Theory of Racism was to develop a reliable and valid

objective method of assessing the role played by television commercials in "reinforcing or promoting racist attitudes and behavior" (Pierce et al., 1977, p. 63).

According to Pierce et al. (1977), the outcome of the research findings indicated excessive negative representation of people of color in tv commercials and found microaggressions to be "frequently and spontaneously demonstrated, all of which were avoidable" (p. 86). The primary way of displaying proracist behavior is the use of microaggressions, as they are what translate and deliver racist behavior and attitudes. Microaggressions differ from overt discrimination in terms of frequency of exposure. Dr. Pierce first defined microaggressions in 1977 as "subtle, stunning, often automatic, and non-verbal exchanges" that act as indirect attacks on Black people (p. 65). The word was initially created to describe the often-witnessed insults and dismissals inflicted on Black people by non-Black people. Now, TV has become just one of the many sources that consistently display microaggressions towards Black people. Pierce et al. (1977) advocated for the creation of a simple index that could assess the quality of television programming and commercials and that changing the content of these representations could "lead to healthier and more effective interracial attitudes and behaviors" (Pierce et al., 1977, p. 86).

The Original Theory of Racism was applied to this study's survey to examine how racism is affecting public health workers. In the study survey, the section titled: Chronic Work Discrimination and Harassment Scale-Short (CWD-HS-Short-9) in Chapter III provides more details.

Conclusion

This chapter provided a review of literature on the following topics: (1) nature of the U.S. COVID-19 pandemic (2) role of U.S. public health workforce; (3) risk factors for COVID-19 and co-morbidity; (4) burnout and mental distress symptoms of public health workers; (5) race-related stress, racism-related stress, discrimination, harassment at work; (6) stress and coping relevant to public health workers; and (7) the theoretical framework guiding the study. The next chapter, III, will present the study methods.

Chapter III

METHODS

This chapter presents the methods and procedures utilized in this study. More specifically, this includes an overview of the study design and procedures, description of the study participants, description of research instrumentation, the data treatment plan, and the data analysis plan.

Overview of the Study Design and Procedures

This study utilized a cross-sectional design. An online survey hosted on the Qualtrics platform was administered to a convenience sample of Black, Indigenous, and People of Color (BIPOC) in the U.S. public health workforce. This section provides an overview of all procedures that were followed in this investigation.

IRB Approval

On March 9, 2022, this study received approval under the category exempt from the Teachers College, Columbia University Institutional Review Board (IRB) as Protocol # 22-129 (see Appendix A for IRB Approval Letter). The collection of data within this investigation followed this receipt of IRB approval.

Recruitment of Study Participants

Recruitment for this study occurred primarily online via a social media campaign that included the use of Twitter, LinkedIn, as well as the extensive use of text messaging and emails. The social media campaign for this study consisted of sending out a core message that invited Black, Indigenous, and People of Color (BIPOC) in the U.S. public health workforce to volunteer for participation in the study, while also succinctly describing the opportunity to win the prize of an Amazon gift card. The core message in this social media campaign was, as follows:

> ***"Black, Indigenous, and People of Color (BIPOC) in the U.S. Public Health Workforce invited to take Short 12-15 Minute Survey on stressful experiences working during the COVID-19 pandemic. Click on https://tinurl.com/PublicHealthWorker to complete survey for a chance to win a $100 Amazon Gift Card"***

The recruitment campaign permitted snowball sampling in this study, as the email for the study invited BIPOC public health workers to share the study opportunity with others. More specifically, emails were sent to known public health contacts working in health departments and academia, while asking them to share the study link with colleagues and across their networks. The survey was shared with several local, state, and tribal and territorial health departments by accessing publicly available employee directories on their websites. For example, the invitation by email was sent to various employees at health departments including, but not limited to the following: New York City Department of Health and Mental Hygiene, North Carolina Department of Health and Human Services, Oregon Health Authority, New Jersey Department of Health, New Mexico Department of Health, Washington State Department of Health, Schuyler County Public Health, Franklin County Public Health, Graham County Department of Health, and Mariposa County Health and Human Services. The email invitation was also sent to federal

government employees of the United States Department of Health and Human Services using the same method.

Regarding other details, the survey link was posted on LinkedIn and Twitter. The link was specifically shared in various public health groups on social media such as the following: American Public Health Association (APHA), Public Health Institute, Women in Public Health, Official NCHEC CHES/MCHES Group, CDC Center for Preparedness and Response, Black Ladies in Public Health, APHA Latino Caucus for Public Health, Health Education and Promotion Policy Advocates, Health Equity Knowledge Network, APHA Health Administration Section, APHA Environmental Health Section, and APHA Food and Nutrition Section. In order to post in several of the groups, requests were submitted to the group administrator(s) for approval; once permission was granted, the invitation was posted for group members to access. The survey link was also shared through direct messages to a variety of public health professionals on LinkedIn. To reach a larger audience within these social media groups, hashtags such as #publichealth #surveyresearch #bipoc #mentalhealth #healthequity #racismandhealth and #survey, were included in the posts.

Other Study Procedures

Participants who were interested in participating in the study were able to click an electronic link to begin the survey on Qualtrics. Once directed to the study, participants were asked to read the IRB approved informed consent (see Appendix D), which included the participants' rights. To electronically consent to participate, participants had to check a box within the Qualtrics online survey.

Study Inclusion/Exclusion Criteria

After electronically signing the informed consent, participants then completed a short screening questionnaire (see Appendix F) in order to determine if they met the inclusion criteria for the study, as follows:

1. Have you worked for a city, state, or federal department of health—or within the U.S. public health workforce, or as a public health worker in any setting (e.g. government-affiliated, non-profit, community-based, clinic or hospital setting, university-affiliated, etc.) within the past two years as a paid employee? Specifically, in total, did you work for **a minimum of 6 months during 2020 or 2021**? ___Yes ___No

2. Are you at least 20 years of age? ___Yes ___No

3. Some people believe that COVID-19 is a hoax, or is not real, so they would NOT be able to answer questions about COVID-19, as something that does not exist for them. Do you feel able to answer questions about your experiences during the COVID-19 Pandemic"? ___Yes ___No

Participants who answered "yes" to all of the questions met the study's inclusion criteria, being permitted to proceed with access to the full study questionnaire (see Appendix G). Participants who did not meet these criteria were disqualified from the study and were thanked for their interest in the study and told they did not qualify for study participation; and, finally, they could share the link that allowed them to access the study opportunity with others who might qualify for study participation.

Generating Prizes: The Study Incentive for Participation

Participants who completed the entire study survey were directed to a webpage where they could enter their email address—thereby officially entering the lottery for a one in three chance to win a $100 Amazon gift card. Data collection for the study began on March 10, 2022 and closed on March 19, 2022, as the point at which the lottery drawing occurred. Upon closing

the study, participants who entered the lottery and won were notified by email of winning and told how to redeem the gift card. The prize lottery webpage was created by the Research Group on Disparities in Health (RGDH) webmaster, Dr. Rupananda Misra, as the administrator who operated the program for selecting the Amazon gift card winners, which kept all participant's email data encrypted. As a result, the principal investigator was not able to view any identifying participant data (i.e., their individual email addresses) and associate them with the study results. This allowed for participants' privacy to be maintained.

Description of the Study Participants

The study recruited participants using a convenience sampling technique, which resulted in a final sample of N=830. After removing duplicate computer IP addresses, 664 participants remained. However, 96 participants were eliminated because they did not meet all the inclusion criteria, such as not working within the U.S. public health workforce within the past two years as a paid employee, not being at least 20 years of age, or believing COVID-19 was a hoax. Of the 568 participants remaining, 82 were subsequently ineligible as they did not complete the entire survey, or they lacked data for the primary outcome variable. As a result, the final number of completed surveys was 486.

A comparison was made of the study completers (N = 486) to the study non-completers (N = 82). Findings showed that the completers were significantly older than the non-completers.

See Table 1.

Table 1. Comparing Survey Completers (N = 486) to Non-Completers (N = 82), Independent T-Tests

					t-tests		
	Has Primary Outcome Variable? Yes=Completer No=Non-Completer						
		N	M	SD	*T*	df	P
					-3.791	566	0.000***
Age	Yes	486	32.86	7.571			
	No	82	29.57	5.046			
					-1.301	531	0.194
Skin Color	Yes	486	5.29	1.319			
	No	47	5.02	1.567			
					-0.751	525	0.453
Income	Yes	480	6.48	2.336			
	No	47	6.21	2.358			
					-1.877	531	0.061
Education	Yes	486	4.49	1.333			
	No	47	4.89	1.391			
					-0.531	522	0.595
Years in Public Health	Yes	486	3.05	1.508			
	No	38	2.92	1.050			

*p<.05, **p<.01, ***p<.001

Note: All p values above .05 are considered non-significant, and those below .05 are considered statistically significant.

The final group of study participants (N = 486) were a convenience sample of BIPOC public health professionals who completed the study survey. Of note, the screening criteria for this study were presented earlier in this chapter, and also appears in Appendix F.

Description of Research Instrumentation

This study used a survey developed by the Principal Investigator, April Aviles, in conjunction with her dissertation sponsor, Professor of Health Education, Dr. Barbara Wallace, Director of the Research Group on Disparities in Health (RGDH), Teachers College, Columbia University. Additionally, sections of the study were adapted from surveys previously used by fellows of the RGDH. In addition, the survey includes many parts that are adapted from well-established and validated tools that have generated findings published in the literature. This section will describe each of the parts of the survey in detail (see Appendix G for the full study measure).

Part I: Basic Demographics (BD-17)

The Basic Demographics (BD-17) scale was developed by Professor Barbara Wallace for use by the Research Group on Disparities in Health (RGDH) and was adapted for this study's BIPOC public health professional population. The Basic Demographics scale has been used by previous fellows in the RGDH (Laryea, 2019) and was modified to eliminate an item asking nurses to write in their position title. The BD-17 scale created for this study contains 17 questions, such as: gender, age, marital status, race/ethnicity, skin color, country of birth, annual household income, highest educational level, employment status, years working in the field of

public health, and type of work setting. Items at the end were taken from Laryea (2019) regarding where public health professionals worked, while a new question on areas worked in during the pandemic was added; and, an item on number of children they have was added, as well as a question about volunteering in the community during the pandemic. This is shown, below:

4-How many children do you have? [Drop down menu 1-10]

12-During the COVID-19 pandemic, the ONE particular position I held in the U.S. Public Health Workforce for a minimum of 6 months—that I am keeping in mind, as I answer questions in this survey—was located within
__a city health department
__a state health department
__a federal health department (e.g., U.S. Department of Health & Human Services, etc.—or any
federal division or office)
__some other government-affiliated setting
__a non-profit organization
__a community-based organization
__a clinic or hospital setting
__a university affiliated setting
__other (please explain_____)

13-During the COVID-19 pandemic, I worked in the following areas or situations: (check all that apply)
__COVID-19 testing/contact tracing-related work
__COVID-19 vaccination-related work
__Dedicated COVID-19 unit set up for pandemic
__Isolation area (i.e., created for COVID-19 positive patients)
__Special Field Hospital Established for Pandemic
__Travelled out of state to assist with COVID-19 patients
__ Other (please explain_____)

14- During the COVID-19 pandemic, I experienced as part of my work, as follows: (check all that apply)
___working long hours, or overtime (greater than 40 hours 5 days a week)
___working weekends (beyond a 5 day work week)
___conducting surveillance
___laboratory work
___data analysis
___time-consuming paperwork

___higher caseloads
___community outreach
___health education—messages, materials, dissemination to public
___forced to defer other public health priorities to focus on pandemic
___political pressure
___threats
___wanting to quit / stop working, or retire
___actually quitting/ stopping work, or retiring

15-For how many years have you been working within the field of public health (i.e. for a city, state, or federal department of health—or within the U.S. public health workforce, or as a public health worker in any setting [e.g. non-profit agency, community organization, hospital system, university-affiliated position, etc.]?

a. 1 year or less
b. 2-4 years
c. 5-7 years
d. 8-10 years
e. 11-15 years
f. 16-20 years
g. 21-25 years
h. 26-30 years
i. more than 30 years
j. Not applicable/I do not work in the field of public health or within the U.S. Public Health Workforce

16-During the COVID-19 pandemic, did you also volunteer in the community—or do pro bono work as your service? For example, did you volunteer at a church testing site, or food bank, or do grocery shopping for neighbors, or help get funding/wrote a grant (e.g. for a non-profit to become a testing site), etc.? 1__Yes 0__No. If Yes→,

17-How many hours per week did you volunteer, on average, during the COVID-19 pandemic or at the height of a surge? [Drop down menu 1-100]

Part II: Personal Health Background—Current and Before Pandemic (PHB-CABP-11)

The Personal Health Background—Current and Before Pandemic (PHB-CABP-11) scale was also created by Professor Barbara Wallace for use by the RGHD and has been previously used by its fellows (Liss, 2015). This scale asks participants to answer 10 questions related to their health, such as: reporting of their height and weight for determining Body Mass Index (BMI). There is also a question about weight having stayed about the same, or if they lost

weight, or gained weight (or combinations of these) during the pandemic. A question about additional chronic health conditions were listed as choices in light of the population; and, also added was a rating of mental/emotional health; ratings for before and now/during the pandemic were provided for physical and mental health status—as an innovation, given the pandemic. Some ending questions were also eliminated. The present study further modifies this tool by adding options for before and currently during the COVID-19 pandemic. This permits a paired t-test to compare ratings of: physical health before pandemic versus currently; mental/emotional health before pandemic versus currently.

Part III: Rating Professional and Personal Stress for Before and During the COVID-19 Pandemic (RSE-WH-BDCP-4)

This is a new tool created for first time use in this study by the Principal Investigator, April Aviles, and Dr. Barbara Wallace, Director of the Research Group on Disparities in Health (RGDH)—and for use by the RGDH. It follows a common format used for scales in research during the pandemic. Data analysis will permit obtaining mean, standard deviation, minimum, and maximum scores.

Part IV: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)

This is a new single item scale created for first time use by Dr. Barbara Wallace in studies in 2018 conducted by the Research Group on Disparities in Health (RGDH), and for ongoing use by the RGDH. This tool was used by Laryea (2019), who found that the new one item measure of social desirability was one of two significant predictors of nurses' higher personal skill/ability rating for managing patients' pressure ulcers. This was noteworthy, as the

well-known 13-item measure of social desirability (Crowne & Marlowe, 1960) was found to be the sole significant predictor of nurses' ratings for a higher personal skill/ability for managing patients' pressure ulcers. Hence, there is value in reducing the burden of time on study participants and using in this study the new one item measure of social desirability, especially, given the stress of the pandemic. The one item measure uses a Likert Scale that ranges from 0=*I am not like this at all*, to 10=*I am like this all the time,* permitting obtaining mean, standard deviation, minimum, and maximum scores.

Part V: Perceived Social Support Scale (PSSS-1)

This is a common tool used by the Research Group on Disparities in Health (RGDH) that was created by Professor Barbara Wallace and used for the first time in the Lian (2017) study. For this study, to reduce the burden of time during the stress of the ongoing pandemic, a new one item version of the scale was created by combining the essence of 5 questions into one description of what it means to have social support. Participants then indicate the number of people they have in their life who provide such social support, using the following 5-option Likert scale: none= 0 people; low=at least 1 person; mid=at least 2 people; high=3-5 people; and very high=6 or more people. Data analysis will permit obtaining mean, standard deviation, minimum, and maximum scores.

Part VI: Mini Oldenburg Burnout Inventory (MOLBI-10)

The Oldenburg Burnout Inventory (OBI-16) tool was presented in the work of Demerouti and Nachreiner (1998) in German, and later in English in Demerouti et al. (2001). The full 16-item measure produces a *disengagement sub-total, an exhaustion sub-total,* and a full-scale

score, using the following 5-option Likert scale: 1= Strongly Agree; 2=Agree; 3=Disagree; 4=Strongly Disagree. The Disengagement items are questions 1, 3, 6, 7, 9, 11, 13, 15, and the Exhaustion items are questions 2, 4, 5, 8, 10, 12, 14, 16—with questions 2, 3, 4, 6, 8, 9, 11, 12 reverse scored, as follows: 4=strongly agree answers and 1=strongly disagree answers.

To reduce participant response burden and time, this study will follow Mészáros et al. (2020) in using the Mini Oldenburg Inventory, which has 10 items, eliminating 6 items from the original version. The 10 items used from the original version are: 2, 4, 5, 7, 9, 3 (Exhaustion Scale from Factor Loading) and 1, 6, 7, 10, and also 3 (Disengagement Scale Factor Loading). The reliability and validity of this shortened tool "can be used as valid alternative" to other tools commonly utilized in the literature (Ogunsuji et al., 2021, p. 6). For the shortened Mini version (MOLBI-10): "The reliability of the two scales in the sample was exhaustion α = 0,870; disengagement α = 0,740, which also underlines the adequacy of the structure" (Mészáros et al., 2020, p. 332). They found the "MOLBI is a suitable instrument for measuring global burnout and specific disengagement subscale, so the questionnaire contains elements specific to disengagement and contains global burnout elements as well. However, exhaustion factor does not provide much specific information" (p. 333).

Data analysis will permit obtaining mean, standard deviation, minimum, and maximum scores.

Part VII: Retrospective Insomnia, Depression, Anxiety, and Trauma Scale (R-DATS-5)

The Retrospective Insomnia, Depression, Anxiety, and Trauma Scale (R-DATS-5) is a shorter version of a scale that was developed by Professor Barbara Wallace, while extensively used in research conducted by fellows of the RGDH, such as in Tirhi (2019). For this study,

subjects were only asked about any depression or anxiety in the past year, and not in the past 3 months or 6 months as in Lian (2017). Also, added for this study is a question about past year trauma. The counseling question appears just once.

New scoring was introduced by Professor Barbara Wallace in 2022, and is included in this study. A new Likert rating scale is being used: 0-No__; 1-Yes, was a very mild level__; 2-Yes, was a moderate level___; 3-Yes, was a severe level___; 4-Yes, was a very severe level___. In addition, scoring can permit creation of the **Overall Mental Health Index** that combines the ratings for depression, anxiety and trauma by creating a mean score that combines them.

Data analysis will permit obtaining mean, standard deviation, minimum, and maximum scores, as well as internal consistency.

Part VIII: Perceived Stress Scale (PSS-4)

The Perceived Stress Scale (PSS-4) is a short version of the PSS-10 created by Cohen et al. (1983) and discussed in Cohen (1994). For the shorter PSS-4 utilized for this study and scoring, please see: https://ohnurses.org/wp-content/uploads/2015/05/Perceived-Stress-Scale-4.pdf. According to Karam et al. (2012), in a study with pregnant women, while examining stress, depression, and quality of life, they found acceptable internal consistency (Cronbach's alpha coefficient = .79) and alternate forms stability reliability with the 10-item PSS (Pearson correlation coefficient $r = .63$; $p < .001$), concluding it was a valid and useful tool. The PSS-4 scores are obtained by reverse coding the positive items, e.g., 0=4, 1=3, 2=2, etc. and then summing across all 4 items. It should be noted items 2 and 3 are considered to the positively stated items.

Data analysis will permit obtaining mean, standard deviation, minimum, and maximum scores, as well as internal consistency.

Part IX: Chronic Work Discrimination and Harassment Scale-Short (CWD-HS-Short-9)

This tool was originally developed for the YES study and adapted from two sources: McNeilly et al. (1996) and Bobo & Suh (2000). The tool was reduced from 12 to 9 items—as 1 new item #4 was created to cover racial slurs and jokes at work, replacing four original items on this topic: 4, 5, 6, 7. The new item is as follows:

> 4-How often do you hear racial or ethnic slurs or jokes at work, including any that may be directed at you?
> ___*1=once a week or more* ___*2=a few times a month* ___*3= a few times a year*
> ___*4=less than once a year* ___*5=never*

Data analysis will permit obtaining mean, standard deviation, minimum, and maximum scores, as well as internal consistency.

Part X: Heightened Vigilance Scale (HVS-Short-4)

This tool was originally developed for the 1995 Detroit Area Study (DAS). However, it has been used in subsequent studies assessing the influence of vigilance on health (Clark et al., 2006; Hicken et al., 2013). An abbreviated version of the scale was created by the Chicago Community Adult Health Study. The 4-item abbreviated version uses questions 2, 3, 4 and 6 and found acceptable internal consistency (Cronbach's alpha coefficient = .72). The present study similarly creates a Short 4 item scale, but with different selections; for this study, the Short version will use 4 of 6 items—but, in this case, items: 1, 2, 4 and 5. The 5-option Likert scale ranges from 5=once a week or more to 1=never and will be scored with 5 being high vigilance and 1 being low to no vigilance.

Data analysis will permit obtaining mean, standard deviation, minimum, and maximum scores, as well as internal consistency for the new 4 item Short tool.

Part XI: Cultural Taxation Scale (CTS-4)

This scale was originally presented in Anantachai and Chesley (2018). The original scale was a 5-question scale that asked respondents to answer questions based on their "race and/or gender identity". The present study modifies this tool by removing one question that asked only about gender identity and modifying the other four questions to only ask about racial identity. The tool was further modified to align with the sample population for the current study by removing and/or altering text that is only specific to the academic setting, such as references to "students". The 5-option Likert scale ranges from 1=strongly disagree to 5=strongly agree and will be scored with 5 being high cultural taxation and 1 being no or low cultural taxation.

Data analysis will permit obtaining mean, standard deviation, minimum, and maximum scores, as well as internal consistency.

The Data Treatment Plan

Given a sample (N = 486) of adults age 20 or above who respond to a social media campaign invitation (i.e. *Black, Indigenous, and People of Color (BIPOC) in the U.S. Public Health Workforce invited to take Short 12-15 Minute Survey on stressful experiences working during the COVID-19 pandemic. Click on* ***https://tinyurl.com/PublicHealthWorker*** *to complete survey for a chance to win a $100 Amazon Gift Card),* this study will answer the following research questions—**using the data analysis plans indicated**:

1-What were their demographic characteristics [i.e., gender, age, partner status (yes, no), number of children, race/ethnicity, skin color, U.S. born (yes, no), annual household income, education level, employment status (yes, no)]? What were their background characteristics and experiences as a public health worker during COVID-19 [(i.e., their one particular position held for 6 months during pandemic; areas worked in (e.g., testing, vaccination, etc.); types of experiences they had (e.g. working long hours, working weekends, time-consuming paperwork, etc.); years worked in public health; and, did they also volunteer in their community—and for how many hours per week (e.g. church testing site, food bank, etc.)] ?

Part I: Basic Demographics (BD-17)

Data Analysis Plan: Inferential statistics, including via Pearson's correlations and t-tests

2-What is their personal health background, including their Body Mass Index (BMI), any history of having COVID-19, common co-morbid conditions (e.g. diabetes, etc.), and any changes in their weight during the pandemic? How did they rate their physical health status and mental health status—for both before and during the pandemic, and were there any significant differences?

Part II: Personal Health Background—Current and Before Pandemic (PHB-CABP-10)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages; and inferential statistics using paired t-tests

3-How did they rate their stress (1) for before the pandemic at *work/professionally*, (2) for during the pandemic at *work/professionally*, (3) for before the pandemic at *home/personally*, and (4) for during the pandemic at *home/personally*—and was there any significant difference of before versus during for these stress ratings?

Part III: Rating Professional and Personal Stress for Before and During the COVID-19 Pandemic (RSE-WH-BDCP-4)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages; and inferential statistics using paired t-tests

4-To what extent were they at risk of providing socially desirable responses?

Part IV: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

5-What is their current level of social support?

Part V: Perceived Social Support Scale (PSSS-1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

6-To what extent did they present burnout, including for the full burnout scale (i.e., the study outcome variable), as well as for the exhaustion and disengagement sub-scales?

Part VI: Mini Oldenburg Burnout Inventory (MOLBI-10)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

7-If at all, at what level (mild, moderate, severe) did they experience any insomnia, depression, anxiety, and trauma in the past year—and did they receive any counseling?

Part VII: Retrospective Insomnia, Depression, Anxiety, and Trauma Scale (R-DATS-5)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

8-What was their current level of perceived stress for the past 30 days?

Part VIII: Perceived Stress Scale (PSS-4)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

9-If at all, how frequently have they experienced discrimination and harassment at work (e.g., unfair treatment, racial/ethnic slurs/jokes, ignored/not taken seriously, etc.)?

Part IX: Chronic Work Discrimination and Harassment Scale-Short (CWD-HS-Short-9)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

10-In coping with their experiences of discrimination and harassment at work, how often do they engage in behaviors that reflect a heightened vigilance?

Part X: Heightened Vigilance Scale (HVS-Short-4)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

11-To what extent do they have experiences at work reflective of a "cultural taxation" where there is a felt pressure for workers of color to perform extra work, and to engage in more unofficial and standard service activities—as well as cope with requests for help from work colleagues (i.e., requests made of them because of their race/ethnicity)?

Part XI: Cultural Taxation Scale (CTS-4)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

12-Were there any significant relationships found between the study outcome variable of level of burnout (i.e., full-scale score) and selected demographic and other study variables?

Data Analysis Plan: Inferential statistics, including via Pearson's correlations and t-tests

13-What were the significant predictors of the study outcome variable of level of burnout (i.e., full-scale score), given selected independent variables of demographic and other study variables?

Data Analysis Plan: Backward stepwise regression

Data Management

Data were downloaded from www.Qualtrics.com. Thereafter, the data were transferred to SPSS and analyzed using SPSS 27.0.

Conclusion

This chapter described in detail the methods used in the present study. This included an overview of the study design, study procedures, recruitment of participants, and description of research instrumentation. The chapter concluded with how data was managed and analyzed. The following chapter, IV, will provide the results of data analysis.

Chapter IV

RESULTS

This chapter provides a detailed presentation of the study results. Findings are presented by research question and table format.

Data Analysis Results by Study Question

Results for Research Question #1

What were their demographic characteristics [i.e., gender, age, partner status (yes, no), number of children, race/ethnicity, skin color, U.S. born (yes, no), annual household income, education level, employment status (yes, no)]? What were their background characteristics and experiences as a public health worker during COVID-19 [(i.e., their one particular position held for 6 months during pandemic; areas worked in (e.g., testing, vaccination, etc.); types of experiences they had (e.g. working long hours, working weekends, time-consuming paperwork, etc.); years worked in public health; and, did they also volunteer in their community—and for how many hours per week (e.g. church testing site, food bank, etc.)]? **(BD-17)**

Part I: Basic Demographics (BD-17). The study sample used for final data analysis was comprised of 486 BIPOC public health professionals over the age of 20 (N = 486). Chapter III provided details on how this final sample emerged, including a comparison of survey completers (N = 486) versus non-completers (N = 82).

The sample was 58.4% female (n = 284) and 39.9% male (n = 194). Reported age ranged from 20-67 with a mean age of 32.86 (SD = 7.571, min = 20, max = 67). Among the study's sample, reported race/ethnicity was 58% Black/African American (n = 282), 16.5% Hispanic/Latino/Latinx (n = 30), 10.7% Asian (n = 52), 9.1% American Indian/Alaska Native (n = 44), 4.1% Multi-racial/Mixed Race (n = 20), 1% Middle Eastern/North African (n = 5), 0.4%

Native Hawaiian/Pacific Islander (n = 2), and 0.2% a race/ethnicity not listed (n = 1). Some 92.6% reported that they were born in the United States (n = 450). Of the sample, 14.8% identified as single (n = 72) and 51.9% were married (n = 252), with 64.3% (n = 313) having children.

See Table 2.

Table 2. Basic Demographics (BD-17) (N = 486)

	N	%		N	%
Gender ***(N = 486)***			**Race/Ethnicity** ***(N = 486)***		
Female	284	58.4	American Indian/Alaska Native	44	9.1
Male	194	39.9	Asian	52	10.7
Transgender	4	0.8	Black/African American	282	58
Non-binary/Gender non-conforming	2	0.4	Hispanic/Latino/Latinx	80	16.5
A gender identity not listed	2	0.4	Middle Eastern/North African	5	1
			Multi-racial/Mixed Race	20	4.1
Age ***(N = 486)***			Native Hawaiian/Pacific Islander	2	0.4
20-25	67	13.7	A race/ethnicity not listed	1	0.2
26-30	140	28.8			
31-35	152	31.3	**Skin Color (*N=486)***		
36-40	68	14.1	**7)** Very Dark	95	19.5
41-45	28	5.7	**6)** Dark	139	28.6
46-50	12	2.4	**5)** Medium to Dark	119	24.5
51-55	8	1.6	**4)** Medium to Light	101	20.8
56-60	6	1.2	**3)** Light	16	3.3
61-65	5	1	**2)** Very Light	8	1.6
66+	0.2	1	**1)** White	8	1.6
[Mean age = 32.86; SD = 7.571; Min = 20; Max = 67]			***[Mean skin color = 5.29; SD =1.319; Min = 1; Max = 7]***		
Marital Status ***(N = 486)***			**Born in the US** ***(N = 486)***		
Single	72	14.8	Yes	450	92.6
Married	252	51.9	No	36	7.4
Separated	5	1			
Divorced	9	1.9	**Top 2 Non-US Born Countries**		
In Domestic Partnership	5	1	India	4	0.8
Living w/ Significant Other	13	2.7	Nigeria	3	0.6
Missing	130	26.7			

Table 2 (continued)

	N	%		N	%
Children *(N = 486)*			**Employment Status *(N = 486)***		
0	173	35.6	Full Time	314	64.6
1-2	274	56.3	Part Time	33	6.8
3-4	38	7.8	Per Diem	2	0.4
5+	1	0.2	Currently Unemployed	5	1
			Currently Retired	2	0.4
			Missing	130	26.7

The mean household yearly income was 6.48, which is category 6 for $100,000 to $199,999 (SD = 2.336, min = 1, max = 11). The majority of participants were employed full time (64.6%, n = 314), and worked for a city, state, or federal health department (50.1%, n = 243). The mean number of years working in public health was 3.05, or category 3, which equates to 5-7 years (SD = 1.508, min = 1, max = 9). Further, the top two areas of work for those sampled were COVID-19 vaccination (51%, n = 241) and COVID-19 testing/contact tracing (46.5%, n = 226). The top three work experiences among participants during the COVID-19 pandemic included working long hours or overtime (67.3%, n = 327), providing health education to the public (47.7%, n = 232), and being forced to defer other public health priorities to focus on the pandemic (35.4%, n = 172).

A majority of the sample said that they participated in weekly volunteer work during the COVID-19 pandemic (79.2%, n = 385). The average number of hours volunteered each week was 20.42 (SD = 22.084, min = 1, max = 100).

See Table 3.

Table 3. Background Characteristics (N = 486)

	N	%
Household yearly income *(N = 486)*		
1) Less than $10,000	3	0.6
2) $10,000 to $19,000	15	3.1
3) $20,000 to $39,000	28	5.8
4) $40,000 to $49,000	29	6.0
5) $50,000 to $99,000	111	22.8
6) $100,000 to $199,000	97	20.0
7) $200,000 to $299,000	48	9.9
8) $300,000 to $399,999	29	6.0
9) $400,000 to $499,999	45	9.3
10) $500,000 to $799,999	57	11.7
11) $800,000 or more	18	3.7
0) I don't know	6	1.2
[Mean yearly income = 6.48;		
SD = 2.336; Min = 1; Max = 11]		
Location of Work (N= 486)		
1) City Health Department	114	23.5
2) State Health Department	79	16.3
3) Federal Health Department	50	10.3
4) Other Government Setting	30	6.2
5) Non-Profit Organization	51	10.5
6) Community-Based Organization	46	9.5
7) Clinic or Hospital	71	14.6
8) University	32	6.6
9) Other	13	2.7
Area of Work (N= 486)*		
1) COVID-19 Testing/ Contact Tracing	226	46.5
2) COVID-19 Vaccination	248	51
3) Dedicated COVID-19 Unit	150	30.9
4) COVID-19 Isolation Area	139	28.6
5) Special Field Hospital	54	11.1
6) Out of State Patient Travel to Assist COVID-19 Patients	20	4.1
7) Other	72	14.8

	N	%
Educational Level (N= 486)		
1) Some high school or less	10	2.1
2) High school graduate or GED	22	4.5
3) Some college credit, no degree	57	11.7
4) Associate or technical degree	59	12.1
5) Bachelor's degree	152	31.3
6) Master's degree	148	30.5
7) Doctoral or professional degree	38	7.8
[Mean education = 4.89;		
SD = 1.391; Min = 1; Max =79]		
Years in Public Health (N= 486)		
1) 1 year or less	53	10.9
2) 2-4 years	156	32.1
3) 5-7 years	120	24.7
4) 8-10 years	80	16.5
5) 11-15 years	48	9.9
6) 16-20 years	14	2.9
7) 21-25 years	9	1.9
8) 26-30 years	2	0.4
9) More than 30 years	4	0.8
[Mean years = 3.05; SD = 1.508;		
Min = 1; Max = 9]		
Volunteer Work (N= 486)		
1) Yes	385	79.2
2) No	101	20.8
Hours Volunteering Per Week (N= 486)		
1) 1-10 hours	160	32.9
2) 11-20 hours	53	10.9
3) 21-30 hours	19	3.9
4) 31-40 hours	29	5.9
5) 41-50 hours	60	12.3
6) 51-60 hours	42	8.4
7) 61-70 hours	17	3.4
8) More than 70 hours	5	1
[Mean volunteering hours = 20.42;		
SD = 22.084; Min = 1; Max = 100]		

Table 3 (continued)

	N	%
Work Experiences *(N = 486)**		
1) Working long hours or overtime (>40 hours 5 days a week)	327	67.3
2) Working weekends (beyond a 5-day work week)	238	49
3) Conducting surveillance	131	27
4) Laboratory work	73	15
5) Data analysis	168	34.6
6) Time-consuming paperwork	104	21.4
7) Higher caseloads	79	16.3
8) Community outreach	88	18.1
9) health education – messages, materials, dissemination to public	232	47.7
10) Forced to defer other public health priorities to focus on pandemic	172	35.4
11) Political pressure	95	19.5
12) Threats	42	8.6
13) Wanting to quit/stop working, or retire	131	27
14) Actually quitting/stopping work, or retiring	31	6.4
15) Other	14	2.9

Note: ***** represents where participants were able to select multiple answer options

Results for Research Question #2

What is their personal health background, including their Body Mass Index (BMI), any history of having COVID-19, common co-morbid conditions (e.g., diabetes, etc.), and any changes in their weight during the pandemic? How did they rate their physical health status and mental health status—for both before and during the pandemic, and were there any significant differences? **(PHB-CABP-10)**

Part II: Personal Health Background—Current and Before Pandemic (PHB-CABP-10). Regarding responses on the Personal Health Background – Current and Before Pandemic (PHB-CABP-10) scale, 60.9% BIPOC public health professionals (n = 296) indicated that they did not have an underlying health condition. During the COVID-19 pandemic, 39.1% (n = 190) reported gaining weight while 34.8% (n = 169) reported that they lost weight. The mean body mass index (BMI) was 21.95 (SD = 9.945, min = 4.11, max = 52.43) for a normal weight. During

the past two years, 25.3% (n = 123) reported they had COVID-19, and 8.8% (n = 43) indicated that they had long COVID-19.

See Table 4.

Table 4. Personal Health Background—Current and Before Pandemic (PHB-CABP-10) (N = 486)

	N	%		N	%
Health Conditions *(N = 486)**			**Past 2 years, had or currently**		
Lung disease	54	11.1	**have COVID-19 *(N =486)***		
Heart disease	53	10.9	Yes	123	25.3
Diabetes	47	9.7	No	343	70.6
Obesity	75	15.4	Not Sure	20	4.1
Cancer	14	2.9			
HIV/AIDS	6	1.2	**Currently have or had**		
Not applicable/None apply	296	60.9	**long COVID-19 *(N =486)***		
			Yes	43	8.8
During COVID-19, in past year *(N = 486)* *			No	404	83.1
Weight stayed about the same	158	32.5	Not Sure	39	8
Gained weight	190	39.1			
Lost weight	169	34.8			

Note: * represents where participants were able to select multiple answer options

For overall physical health before the pandemic, the mean was 4.53 (SD = 1.041, min = 1, max = 6), or between good and very good. However, for now/during the pandemic, the mean was 3.97 (SD = 1.204, min = 1, max = 6), or closest to good. For overall mental/emotional health status before the pandemic, the mean was 4.41 (SD = 1.21, min = 2, max = 6), or between good and very good. And, for now/during the pandemic the mean overall mental/emotional health was 3.76 (SD = 1.312, min = 1, max = 6), or between fair and good.

See Table 5.

Table 5. Health Status Before and During Pandemic (N = 486)

	N	%
Before COVID-19 Pandemic – Overall Physical Health *(N = 486)*		
1) Very Poor	2	0.4
2) Poor	16	3.3
3) Fair	58	11.9
4) Good	142	29.2
5) Very Good	184	37.9
6) Excellent	84	17.3
[Mean physical health before pandemic = 4.53; SD = 1.041; Min = 1; Max = 6]		
Now/During COVID-19 Pandemic – Overall Physical Health *(N = 486)*		
1) Very Poor	10	2.1
2) Poor	51	10.5
3) Fair	97	20
4) Good	165	34
5) Very Good	113	23.3
6) Excellent	50	10.3
[Mean physical health during pandemic = 3.97; SD = 1.204; Min = 1; Max = 6]		
Before COVID-19 Pandemic – Overall Mental/Emotional Health *(N = 486)*		
1) Very Poor	6	1.2
2) Poor	25	5.1
3) Fair	59	12.1
4) Good	147	30.2
5) Very Good	173	35.6
6) Excellent	76	15.6
[Mean mental health before pandemic = 4.41; SD = 1.21; Min = 1; Max = 6]		
Now/During COVID-19 Pandemic – Overall Mental/Emotional Health *(N = 486)*		
1) Very Poor	15	3.1
2) Poor	84	17.3
3) Fair	104	21.4
4) Good	125	25.7
5) Very Good	115	23.7
6) Excellent	43	8.8
[Mean mental health during pandemic = 3.76; SD = 1.312; Min = 1; Max = 6]		

Findings showed statistically significant differences (t = 11.04, df = 485, p = .000) in the paired sample t-tests comparing overall physical health status before the pandemic (mean = 4.53, SD = 1.041) versus overall physical health status for now/during the pandemic (mean = 3.97, SD = 1.204), indicating better overall physical health before COVID-19. In addition, when comparing overall mental/emotional health status, there was a significant difference (t = 10.313, df = 485, p = .000) between overall mental/emotional health status before the pandemic (mean = 4.41, SD = 1.121) versus overall mental/emotional health status for now/during the pandemic (mean = 3.76, SD = 1.312), indicating a reduced mental/emotional health status for BIPOC public health professionals now/during the COVID-19 pandemic.

See Table 6.

Table 6. Comparison of Health Status Before and During Pandemic (N = 486)

	Before Versus During COVID-19 Pandemic			t-tests		
Personal Health Background	N	M	SD	T	df	p
Physical Health				11.040	485	.000***
Before COVID-19	486	4.53	1.041			
During COVID-19	486	3.97	1.204			
Mental/Emotional Health				10.313	485	.000***
Before COVID-19	486	4.41	1.121			
During COVID-19	486	3.76	1.312			

*p<.05, **p<.01, ***p<.001

Note: All p values above .05 are considered non-significant, and only those below .05 are considered statistically significant.

Results for Research Question #3

How did they rate their stress (1) for before the pandemic at work/professionally, (2) for during the pandemic at work/professionally, (3) for before the pandemic at home/personally, and (4) for during the pandemic at home/personally—and was there any significant difference of before versus during for these stress ratings? **(RSE-WH-BDCP-4)**

Part III: Rating Professional and Personal Stress for Before and During the COVID-19 Pandemic (RSE-WH-BDCP-4). Regarding responses about the professional and personal stress of BIPOC public health professionals before and during the COVID-19 pandemic, findings showed the average work/professional stress before the pandemic was 5.77 (SD = 2.103, min = 0, max = 10) on a scale from zero to ten, where zero is no stress and ten is maximum/extreme stress. However, work/professional stress during the pandemic was 7.14 (SD = 1.9, min = 1, max = 10). For home/personal life stress before the pandemic, the mean was 5.26 (SD = 2.34, min = 0, max = 10). For home/personal life stress during the pandemic, the mean was 6.69 (SD = 2.04, min = 0, max = 10).

See Table 7.

Table 7. Stress Before and During Pandemic (N = 486)

	N	%
Stress Before COVID-19 Pandemic – Work/Professional *(N = 486)*		
0 - No Stress	5	1.0
1	9	1.9
2	17	3.5
3	43	8.8
4	56	11.5
5	80	16.5
6	85	17.5
7	82	16.9
8	69	14.2
9	28	5.8
10 - Maximum/Extreme Stress	12	2.5
[Mean work/professional stress before pandemic = 5.77; SD = 2.103; Min = 0; Max = 10]		

Table 7 (continued)

	N	%
Stress During COVID-19 Pandemic – Work/Professional *(N = 486*)		
0 - No Stress	0	0
1	2	0.4
2	8	1.6
3	7	1.4
4	33	6.8
5	43	8.8
6	70	14.4
7	87	17.9
8	119	24.5
9	67	13.8
10 - Maximum/Extreme Stress	50	10.3
[Mean work/professional stress during pandemic = 7.14; SD = 1.9; Min = 1; Max = 10]		
Stress Before COVID-19 Pandemic – Home/Personal Life *(N = 486*)		
0 - No Stress	12	2.5
1	22	4.5
2	34	7
3	47	9.7
4	52	10.7
5	83	17.1
6	84	17.3
7	71	14.6
8	35	7.2
9	38	7.8
10 - Maximum/Extreme Stress	8	1.6
[Mean home/personal life stress before pandemic = 5.26; SD = 2.340; Min = 0; Max = 10]		
Stress During COVID-19 Pandemic – Home/Personal Life *(N = 486*)		
0 - No Stress	2	0.4
1	7	1.4
2	12	2.5
3	17	3.5
4	26	5.3
5	55	11.3
6	84	17.3
7	95	19.5
8	101	20.8
9	56	11.5
10 - Maximum/Extreme Stress	31	6.4
[Mean home/personal life stress during pandemic = 6.69; SD = 2.04; Min = 0; Max = 10]		

Findings showed statistically significant differences (t = -12.136, df = 485, p = .000) in the paired sample t-tests comparing work/professional stress before the pandemic (mean = 5.77, SD = 2.103) versus work/professional stress during the pandemic (mean = 7.14, SD = 1.9), indicating an increase in work/professional stress levels during the COVID-19 pandemic. Similarly, there was a significant difference (t = -13.256, df = 485, p = .000) between home/personal stress before the pandemic (mean = 5.26, SD = 2.34) versus home/personal stress during the pandemic (mean = 6.67, SD = 2.04), indicating an increase in home/personal stress levels as well during the COVID-19 pandemic.

See Table 8.

Table 8. Comparison of Stress Before and During Pandemic (N = 486)

	Before Versus During COVID-19 Pandemic			t-tests		
Location/Type of Stress	N	M	SD	T	df	p
Work/Professional				-12.136	485	.000***
Before COVID-19	486	5.77	2.103			
During COVID-19	486	7.14	1.9			
Home/Personal Life				-13.256	485	.000***
Before COVID-19	486	5.26	2.34			
During COVID-19	486	6.69	2.04			

*p<.05, **p<.01, ***p<.001

Note: All p values above .05 are considered non-significant, and only those below .05 are considered statistically significant.

Results for Research Question #4

To what extent were they at risk of providing socially desirable responses? **(SIR-RPSDR-1)**

Part IV: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1). The mean risk of providing socially desirable responses was 5.56 (SD = 2.455, min = 0, max = 10), indicating a moderate level of social desirability.

See Table 9.

Table 9. Risk of Providing Socially Desirable Responses (N = 486)

	N	%
I sometimes say things that I think will please people, or what I think they want to hear—versus the honest truth, which might be difficult or painful for other people to hear and accept, or might lead them to judge me harshly… (N = 486)		
0 - I am not like this at all	17	3.5
1	18	3.7
2	25	5.1
3	41	8.4
4	45	9.3
5	80	16.5
6	75	15.4
7	74	15.2
8	57	11.7
9	34	7
10 - I am like this all the time	20	4.1
[Mean risk of providing socially desirable responses = 5.56; SD = 2.455; Min = 0; Max = 10]		

Results for Research Question #5

What is their current level of social support? **(PSSS-1)**

Part V: Perceived Social Support Scale (PSSS-1). Responses to the Perceived Social Support Scale (PSSS-1) resulted in a mean of 3.33 (SD = 1.14, min = 0, max = 5). This means that BIPOC public health professionals have a mid- to high-level of social support. For example, 54.7% (n = 266) of respondents have at least 2 people providing social support in their life.

See Table 10.

Table 10. Perceived Social Support (N = 486)

	N	%
Having SOCIAL SUPPORT means having people in your life who provide the following kinds of support and assistance: you can ask them for advice, or receive words of encouragement; get money or get food in an emergency; or have a place to temporarily wait for help, or stay or live in an emergency. (N = 486)		
1 = I have no one like this in my life right now	19	3.9
2 = I have at least 1 one person like this in my life right now	112	23
3 = I have at least 2 people like this in my life right now	135	27.8
4 = I have 3-5 people like this in my life right now	128	26.3
5 = I have 6 or more people like this in my life right now	92	18.9
[Mean social support = 3.33; SD = 1.14; Min = 0; Max = 5]		

Results for Research Question #6

To what extent did they present burnout, including for the full burnout scale (i.e., the study outcome variable), as well as for the exhaustion and disengagement sub-scales? **(MOLBI-10)**

Part VI: Mini Oldenburg Burnout Inventory (MOLBI-10). The full Mini Oldenburg Burnout Inventory (MOLBI-10) had a Cronbach's Alpha of .801, indicating good internal consistency. The Disengagement Sub-Scale (items 1, 3, 6, 7, 10) had a Cronbach's Alpha of .721, indicating acceptable internal consistency. Similarly, the Exhaustion Sub-Scale (items 2, 3, 4, 5, 7, 9) had a Cronbach's Alpha of .735, also indicating acceptable internal consistency. The full MOLBI-10 scale had a Global mean of 2.578 (SD = 0.486, min = 1, max = 3.9), signifying a moderately high overall level of burnout. The Disengagement Sub-Scale mean was 2.41 (SD = 0.573, min = 1, max = 4), signifying a moderate level of disengagement. However, the Exhaustion Sub-Scale mean was 2.744 (SD = 0.532, min = 1, max = 4), which signifies a high level of exhaustion. For example, 71.2% (n = 346) of respondents agreed or strongly agreed to the item (#9) "After my work, I usually feel worn out and weary" and 79.4% (n = 386) agreed or

strongly agreed to the item (#4) “After work, I tend to need more time than in the past in order to relax and feel”, indicating a high level of exhaustion.

See Table 11.

Table 11. Mini Oldenburg Burnout Inventory (N = 486)

	N	%
Full Scale MOLBI-10/Burnout Cronbach's Alpha (10 items) = 0.801		
[Full Scale MOLBI-10/Burnout Global Mean = 2.578; SD = 0.486; min = 1; max = 3.9]		
Disengagement Sub-Scale (items 1, 3, 6, 7, 10) Cronbach's Alpha = .721;		
[Mean = 2.41; SD = 0.573, min = 1, max = 4]		
Exhaustion Sub-Scale (items 2, 3, 4, 5, 7, 9) Cronbach's Alpha = .735;		
[Mean = 2.744; SD = 0.532; min = 1; max = 4]		
The 10 Mini Oldenburg Burnout Inventory Items		
1 – I always find new and interesting aspects in my work (N=486)		
1 = Strongly agree	104	21.4
2 = Agree	294	60.5
3 = Disagree	78	16
4 = Strongly disagree	10	2.1
2 – There are days when I feel tired before I arrive at work (N=486)*		
4 = Strongly Agree	156	32.1
3 = Agree	230	47.3
2 = Disagree	87	17.9
1 = Strongly disagree	13	2.7
3 – It happens more and more often that I talk about my work in a negative way (N=486)*		
4 = Strongly agree	93	19.4
3 = Agree	144	29.6
2 = Disagree	199	40.9
1 = Strongly disagree	50	10.3
4 – After work, I tend to need more time than in the past in order to relax and feel better (N=486)*		
4 = Strongly agree	144	29.6
3 = Agree	242	49.8
2 = Disagree	85	17.5
1 = Strongly disagree	15	3.1

Table 11 (continued)

	N	%
5 – I can tolerate the pressure of my work very well (N=486)		
1 = Strongly Agree	96	19.8
2 = Agree	268	55.1
3 = Disagree	109	22.4
4 = Strongly disagree	13	2.7
6 – Lately, I tend to think less at work and do my job almost mechanically (N=486)*		
4 = Strongly agree	66	13.6
3 = Agree	168	34.6
2 = Disagree	208	42.8
1 = Strongly disagree	44	9.1
7 – Over time, one can become disconnected from this type of work (N=486)*		
4 = Strongly agree	88	18.1
3 = Agree	224	46.1
2 = Disagree	127	26.1
1 = Strongly disagree	47	9.7
8 – After working, I have enough energy for my leisure activities (N=486)*		
4 = Strongly agree	52	10.7
3 = Agree	179	36.8
2 = Disagree	184	37.9
1 = Strongly disagree	71	14.6
9 – After my work, I usually feel worn out and weary (N=486)*		
4 = Strongly agree	125	25.7
3 = Agree	221	45.5
2 = Disagree	123	25.3
1 = Strongly disagree	17	3.5
10 – I feel more and more engaged in my work (N=486)		
1 = Strongly agree	98	20.2
2 = Agree	210	43.2
3 = Disagree	145	29.8
4 = Strongly disagree	33	6.8

Note: * indicates a reverse scored item

Results for Research Question #7

If at all, at what level (mild, moderate, severe) did they experience any insomnia, depression, anxiety, and trauma in the past year—and did they receive any counseling? **(R-DATS-5)**

Part VII: Retrospective Insomnia, Depression, Anxiety, and Trauma Scale (R-DATS-5). In the past year, 80% (n = 389) of respondents experienced insomnia, 68.5% (n = 333)

experienced depression, 81.7% (n = 397) experienced anxiety, and 61.3% (n = 298) experienced trauma. For the Retrospective Insomnia, Depression, Anxiety, and Trauma Scale (R-DATS-5), answers for the four items (i.e., insomnia, depression, anxiety, trauma) were combined to create a **mental health index/mental distress variable**—with a mean of 1.3 (SD = 1.888, min = 0, max = 4), indicating a mild to moderate level of overall mental distress. Additionally, 59.3% (n = 288) of BIPOC public health professionals sought out counseling (of any kind) in the past year.

See Table 12.

Table 12. Past Year Mental Distress (i.e., Insomnia, Depression, Anxiety And Trauma Scale) (N = 486)

	N	%
Symptoms Experienced in the Past Year		
1 – Do you think you experienced any insomnia in the past year or 12 months? (N = 486)		
0 = No	97	20
1 = Yes, a very mild level	181	37.2
2 = Yes, a moderate level	148	30.5
3 = Yes, a severe level	43	8.8
4 = Yes, a very severe level	17	3.5
2 – Do you think you experienced any depression in the past year or 12 months? (N = 486)		
0 = No	153	31.5
1 = Yes, a very mild level	167	34.4
2 = Yes, a moderate level	110	22.6
3 = Yes, a severe level	37	7.6
4 = Yes, a very severe level	19	3.9
3 – Do you think you experienced any anxiety in the past year or 12 months? (N = 486)		
0 = No	89	18.3
1 = Yes, a very mild level	167	34.4
2 = Yes, a moderate level	131	27
3 = Yes, a severe level	70	14.4
4 = Yes, a very severe level	29	6

Table 12 (continued)

	N	%
4 – Do you think you experienced any trauma in the past year or 12 months? (N = 486)		
0 = No	188	38.7
1 = Yes, a very mild level	155	31.9
2 = Yes, a moderate level	88	18.1
3 = Yes, a severe level	35	7.2
4 = Yes, a very severe level	20	4.1
Counseling Received		
5 – In the past year, did you seek out any kind of counseling or advice for any insomnia, depression, anxiety, or trauma—such as from a mental health professional or other helper? (N = 486)		
1 = Yes	288	59.3
0 = No	171	35.2
Not Applicable/ No experience of depression/anxiety/trauma	27	5.6
[Mean experience of Insomnia, Depression, Anxiety and Trauma = 1.296; SD = 0.888; Min = 0; Max = 4]		

Results for Research Question #8

What was their current level of perceived stress for the past 30 days? **(PSS-4)**

Part VIII: Perceived Stress Scale (PSS-4). The Perceived Stress Scale (PSS-4) had a Cronbach's Alpha was .622, indicating an acceptable level of internal consistency. The past month perceived stress mean score was 1.752 (SD = 0.659, min = 0.00, max = 3.75), which denotes a moderate level of stress. For example, regarding *"In the last month, how often have you felt that you were unable to control the important things in your life,"* almost half (46.3%, n = 225) expressed feeling that way "sometimes".

See Table 13.

Table 13. Past Month Perceived Stress (N = 486)

	N	%
Perceived Stress Scale Cronbach's Alpha (4 items) = .622		
[Mean = 1.752; SD = 0.659; min = 0.0; max = 3.75]		
Past Month Perceived Stress Items		
1 – In the last month, how often have you felt that you were unable to control the important things in your life? (N=486)		
0 = Never	43	8.8
1 = Almost never	98	20.2
2 = Sometimes	225	46.3
3 = Fairly often	83	17.1
4 = Very often	37	7.6
2 – In the last month, how often have you felt confident in your ability to handle your personal problems? (N=486)*		
4 = Never	5	1
3 = Almost never	44	9.1
2 = Sometimes	170	35
1 = Fairly often	194	39.9
0 = Very often	73	15
3 – In the last month, how often have you felt that things were going your way? (N=486)*		
4 = Never	13	2.7
3 = Almost never	53	10.9
2 = Sometimes	215	44.2
1 = Fairly often	151	31.1
0 = Very often	486	11.1
4 – In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? (N=486)		
0 = Never	35	7.2
1 = Almost never	105	21.6
2 = Sometimes	201	41.4
3 = Fairly often	104	21.4
4 = Very often	41	8.4

Note: * indicates a reverse scored item

Results for Research Question #9

If at all, how frequently have they experienced discrimination and harassment at work (e.g., unfair treatment, racial/ethnic slurs/jokes, ignored/not taken seriously, etc.)?

(CWD-HS-Short-9)

Part IX: Chronic Work Discrimination and Harassment Scale-Short (CWD-HS-Short-9). Cronbach's Alpha for the Chronic Work Discrimination and Harassment Scale-Short (CWD-HS-Short-9) was .843, indicating good internal consistency. The mean score was 3.001 (SD = 0.82, min = 1, max = 5) which signifies a moderate level of chronic work discrimination and harassment, meaning respondents experience discrimination and harassment in the workplace at an average of a few times a year. Of note, the frequency of experiencing Chronic Work Discrimination and Harassment was examined by combining the responses for *once a week or more, a few times a month, and a few times a year* – in order to better capture experiences of discrimination and harassment in the workplace. Findings are below:

- 63.8% of respondents (n = 310) reported that they are unfairly given jobs that no one else wants to do *a few times a year to once a week or more*;
- 70.2% of respondents (n = 341) reported that when different opinions would be helpful, their opinion was not asked for a few times a year to once a week or more;
- 76.5% of respondents (n = 372) reported that they are watched more closely than others a few times a year to once a week or more;
- 55.8% of respondents (n = 271) reported that they hear racial or ethnic slurs or jokes at work (including any that may be directed at them) a few times a year to once a week or more;
- 87.9% of respondents (n = 427) reported that they feel that they have to work twice as hard as others work a few times a year to once a week or more;
- 66.9% of respondents (n = 325) reported that they feel they are ignored or not taken seriously by their boss a few times a year to once a week or more;
- 65.5% of respondents (n = 318) reported that they feel others assume that they work in a lower status job than they do and treat them as such a few times a year to once a week or more;
- 54.5% of respondents (n = 265) reported that they feel a coworker with less experience and fewer qualifications has gotten promoted before them a few times a year to once a week or more;
- 51.1% of respondents (n = 248) reported that they have been unfairly humiliated in front of others at work a few times a year to once a week or more.

See Table 14.

Table 14. Chronic Work Discrimination and Harassment Among BIPOC Public Health Professionals (N = 486)

	N	%
Chronic Work Discrimination and Harassment Scale-Short		
Cronbach's Alpha (9 items) = 0.843		
[Mean = 3.001; SD = 0.82; min = 1; max = 5]		
The 9 Chronic Work Discrimination and Harassment Inventory Items		
1 – How often are you UNFAIRLY given the jobs that no one else wants to do? (N=486)		
5 = Once a week or more	44	9.1
4 = A few times a month	145	29.8
3 = A few times a year	121	24.9
2 = Less than once a year	98	20.2
1 = Never	344	15.8
2 – At work, when different opinions would be helpful, how often is your opinion not asked for? (N=486)		
5 = Once a week or more	68	14
4 = A few times a month	138	28.4
3 = A few times a year	135	27.8
2 = Less than once a year	89	18.3
1 = Never	55	11.3
3 – How often are you watched more closely than others? (N=486)		
5 = Once a week or more	122	25.1
4 = A few times a month	158	32.5
3 = A few times a year	92	18.9
2 = Less than once a year	48	9.9
1 = Never	65	13.4
4 – How often do you hear racial or ethnic slurs or jokes at work, including any that may be directed at you? (N=486)		
5 = Once a week or more	51	10.5
4 = A few times a month	104	21.4
3 = A few times a year	116	23.9
2 = Less than once a year	91	18.7
1 = Never	123	25.3
5 – How often do you feel that you have to work twice as hard as others work? (N=486)		
5 = Once a week or more	160	32.9
4 = A few times a month	133	27.4
3 = A few times a year	134	27.6
2 = Less than once a year	40	8.2
1 = Never	18	3.7

Table 14 (continued)

	N	%
6 – How often do you feel that you are ignored or not taken seriously by your boss? (N=486)		
5 = Once a week or more	70	14.4
4 = A few times a month	124	25.5
3 = A few times a year	131	27
2 = Less than once a year	84	17.3
1 = Never	76	15.6
7 – How often do others assume that you work in a lower status job than you do and treat you as such? (N=486)		
5 = Once a week or more	71	14.6
4 = A few times a month	114	23.5
3 = A few times a year	133	27.4
2 = Less than once a year	77	15.8
1 = Never	90	18.5
8 – How often has a coworker with less experience and fewer qualifications gotten promoted before you? (N=486)		
5 = Once a week or more	34	7
4 = A few times a month	74	15.2
3 = A few times a year	157	32.3
2 = Less than once a year	138	28.4
1 = Never	82	16.9
9 – How often have you been unfairly humiliated in front of others at work? (N=486)		
5 = Once a week or more	33	6.8
4 = A few times a month	79	16.3
3 = A few times a year	136	28
2 = Less than once a year	101	20
1 = Never	136	28

Results for Research Question #10

In coping with their experiences of discrimination and harassment at work, how often do they engage in behaviors that reflect a heightened vigilance? **(HVS-Short-4)**

Part X: Heightened Vigilance Scale (HVS-Short-4). Cronbach's Alpha for the Heightened Vigilance Scale (HVS-Short-4) was .673, indicating an acceptable internal consistency. The mean score was 3.641 (SD = 0.771, min = 1, max = 5) which signifies a moderately high level of vigilance among BIPOC public health professionals.

Of note, the frequency of experiencing Heighted Vigilance was examined by combining the responses for *not too often, fairly often, and very often* (i.e., "*not too often to very often*")– in order to better capture experiences of heightened vigilance. Findings are below:

- 87% of respondents (n = 423) reported that they think in advance about the kinds of problems they are likely to experience *not too often to very often*;
- 66.7% of respondents (n = 324) reported that they try to prepare for possible insults before leaving home not too often to very often;
- 87% of respondents (n = 423) reported that they carefully watch what they say and how they say it not too often to very often;
- 91.2% of respondents (n = 443) reported that they carefully observe what happens around them not too often to very often.

See Table 15.

Table 15. Heightened Vigilance Among BIPOC Public Health Professionals (N = 486)

	N	%
Heightened Vigilance Scale Cronbach's Alpha (4 items) = 0.673		
[Mean = 3.641; SD = 0.771; min = 1; max = 5]		
The 4 Heightened Vigilance Inventory Items		
…How often do you:		
1 – Think in advance about the kinds of problems you are likely to experience? (N=486)		
5 = Very often	130	26.7
4 = Fairly often	173	35.6
3 = Not too often	120	24.7
2 = Hardly ever	50	10.3
1 = Never	11	2.3
2 – Try to prepare for possible insults before leaving home? (N=486)		
5 = Very often	63	13
4 = Fairly often	123	25.3
3 = Not too often	138	28.4
2 = Hardly ever	84	17.3
1 = Never	76	15.6

Table 15 (continued)

	N	%
3 – Carefully watch what you say and how you say it? (N=486)		
5 = Very often	140	28.8
4 = Fairly often	177	36.4
3 = Not too often	106	21.8
2 = Hardly ever	50	10.3
1 = Never	11	2.3
4 – Carefully observe what happens around you? (N=486)		
5 = Very often	173	35.6
4 = Fairly often	187	38.5
3 = Not too often	83	17.1
2 = Hardly ever	31	6.4
1 = Never	10	2.1

Results for Research Question #11

To what extent do they have experiences at work reflective of a "cultural taxation" where there is a felt pressure for workers of color to perform extra work, and to engage in more unofficial and standard service activities—as well as cope with requests for help from work colleagues (i.e., requests made of them because of their race/ethnicity)? **(CTS-4)**

Part XI: Cultural Taxation Scale (CTS-4). Cronbach's Alpha for the Cultural Taxation Scale (CTS-4) was .785, indicating acceptable internal consistency. The mean score was 3.129 (SD = 0.921, min = 1, max = 5) which signifies that BIPOC public health professionals experience a moderate level of cultural taxation.

Of note, the frequency of experiencing Cultural Taxation was examined by combining the responses for agree and strongly agree. Findings are below:

- 35% of respondents (n = 170) *agree to strongly agree* that they feel pressured to take on other extra work that is uncompensated because of their racial identity;
- 47.9% of respondents (n = 233) agree to strongly agree that they have been approached by colleagues for help because of their racial identity;
- 37% of respondents (n = 180) agree to strongly agree that they are involved in more 'unofficial' service activities than their colleagues because of their racial identity;
- 47.1% of respondents (n = 229) agree to strongly agree that they take on more service activities than their colleagues because of their racial identity.

See Table 16.

Table 16. Cultural Taxation Among BIPOC Public Health Professionals (N = 486)

	N	%
Cultural Taxation Scale Cronbach's Alpha (4 items) = 0.785		
[Mean = 3.129; SD = 0.921; min = 1; max = 5]		
The 4 Cultural Taxation Inventory Items		
At work, I feel or have felt:		
1 – Pressured to take on other extra work that is uncompensated because of my racial identity. (N=486)		
1 = Strongly disagree	63	13
2 = Disagree	124	25.5
3 = Neither agree nor disagree	127	26.1
4 = Agree	120	24.7
5 = Strongly agree	50	10.3
2 – I have been approached by colleagues for help because of my racial identity. (N=486)		
1 = Strongly disagree	39	8
2 = Disagree	92	18.9
3 = Neither agree nor disagree	120	24.7
4 = Agree	160	32.9
5 = Strongly agree	73	15
3 – I am involved in more 'unofficial' service activities (e.g., mentoring colleagues, advising colleagues, etc.) than my colleagues because of my racial identity. (N=486)		
1 = Strongly disagree	53	10.9
2 = Disagree	111	22.8
3 = Neither agree nor disagree	140	28.8
4 = Agree	126	25.9
5 = Strongly agree	54	11.1
4 – I take on more service activities (e.g., committee assignments, diversity-related work, etc.) than my colleagues because of my racial identity. (N=486)		
1 = Strongly disagree	41	8.4
2 = Disagree	95	19.5
3 = Neither agree nor disagree	119	24.5
4 = Agree	155	31.9
5 = Strongly agree	74	15.2

Results for Research Question #12

Were there any significant relationships found between the study outcome variable of level of burnout (i.e., full-scale score) and selected demographic and other study variables?

The question was answered by utilizing independent t-tests and Pearson Correlations. The results for each set of analyses are presented below.

Independent t-tests Comparing Groups on the Outcome Variable of Higher Burnout. In total, five groups were compared on the outcome variable of a higher score for burnout on the Mini Oldenburg Burnout Inventory (MOLBI-10). Thus, the Bonferroni Adjustment Significance (.05/5, p = .01) level was p < .01. The following group comparisons were significant:

- When comparing survey respondents who were female (mean = 2.63, SD = 0.492) to those who were male (mean = 2.49, SD = 0.447), there was a significant difference (t = 3.283, df = 439.5, p = .001), where *females had significantly higher burnout* (p < .01, Bonferroni Adjustment Significance level).
- When comparing survey respondents who have no children (mean = 2.77, SD = 0.494) to those who do have children (mean = 2.47, SD = 0.448), there was a significant difference (t = 6.635, df = 326.9, p = .000), where *survey respondents with no children had significantly higher burnout* (p < .01, Bonferroni Adjustment Significance level).
- When comparing survey respondents who were not diagnosed with COVID-19 in the past two years (mean = 2.55, SD = 0.493) to those who were diagnosed with COVID-19 (mean = 2.66, SD = 0.457), survey respondents who had a COVID-19 diagnosis within the past 2 years had higher burnout – but this failed to achieve significance (t = -2.142, df = 484, p = .033), (p <. 006, Bonferroni Adjustment Significance level).

- When comparing survey respondents who did not receive any type of counseling within the past year (mean = 2.5, SD = 0.488) to those who did receive counseling (mean = 2.63, SD = 0.479), there was a significant difference (t = -2.823, df = 484, p = .005), where *survey respondents who received counseling of any kind in the past year had significantly higher burnout* (p < .01, Bonferroni Adjustment Significance level).

  See Table 17.

Table 17. Independent T-tests Comparing Groups on the Burnout Outcome Variable

	Higher Burnout			t-tests		
	N	M	SD	T	df	p
Gender				3.283	439.5[a]	.001***
Female	286	2.63	0.492			
Male	196	2.49	0.447			
Race (Black)				0.789	464.2 [a]	.422
No	204	2.60	0.452			
Yes	282	2.56	0.510			
Children				6.635	326.9 [a]	.000***
No	173	2.77	0.494			
Yes	313	2.47	0.448			
COVID-19 Diagnosis				-2.142	484	.033*
No	360	2.55	0.493			
Yes	126	2.66	0.457			
Counseling in Past Year				-2.823	484	.005**
No	198	2.50	0.488			
Yes	288	2.63	0.479			

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/5, p = .01)
Note: All p values above .01 are considered non-significant, and only those below .01 are considered statistically significant.
[a] df scores are lower than expected due to missing data.

Pearson's Correlations Examining Associations with the Outcome Variable of Higher Burnout: Correlations between 22 independent variables were examined with the primary outcome variable of a higher score for burnout on the Mini Oldenburg Burnout Inventory (MOLBI-10). Thus, the Bonferroni Adjustment Significance (.05/22, p = .002) was p < .002.

Significant correlations showed that the **higher the level of burnout**, then the:

- **Lighter** the skin color of an individual (r = -0.183, p = .000)
- **Lower** the level of income (r = -0.163, p = .000)
- **Lower** the number of years worked in public health (r = -0.038, p = .000)
- **Lower** the rating for physical health before COVID-19 (r = -0.281, p = .000)
- **Lower** the rating for physical health during COVID-19 (r = -0.435, p = .000)
- **Lower** the rating for mental health before COVID-19 (r = -0.208, p = .000)
- **Lower** the rating for mental health during COVID-19 (r = -0.556, p = .000)
- **Higher** the level of work stress during COVID-19 (r = -0.332, p = .000)
- **Higher** the level of home stress during COVID-19 (r = -0.213, p = .000)
- **Higher** the past year mental distress (i.e., symptoms of insomnia, depression, anxiety, and trauma) (r = 0.535, p = .000)
- **Higher** the past month perceived stress (r = 0.549, p = .000)
- **Higher** the level of chronic work discrimination (r = 0.235, p = .000)
- **Higher** the level of vigilance (r = 0.549, p = .000)

See Table 18.

Table 18. Correlations for Selected Independent Variables with Burnout

	Higher Burnout	
	Pearson's R	p
Selected Variables		
Age	-0.067	.138
Skin Color	-0.183	.000***
Income	-0.163	.000***
Education	0.011	.811
Years Worked in Public Health	-0.038	.000***
Weekly Volunteering During COVID-19	-0.338	.811
BMI (Body Mass Index)	0.108	.017*
Physical Health Before COVID-19	-0.281	.000***
Physical Health During COVID-19	-0.435	.000***
Mental Health Before COVID-19	-0.208	.000***
Mental Health During COVID-19	-0.556	.000***
Work Stress Before COVID-19	0.046	.312
Work Stress During COVID-19	0.332	.000***
Home Stress Before COVID-19	-0.081	.075
Home Stress During COVID-19	0.213	.000***
Risk of Providing Socially Desirable Responses	0.051	.264
Extent of Social Support	-0.021	.649
Past Year Mental Distress (Insomnia, Depression, Anxiety, Trauma)	0.535	.000***
Past Month Perceived Stress	0.549	.000***
Level of Chronic Work Discrimination	0.235	.000***
Level of Vigilance	0.549	.000***
Level of Cultural Taxation	0.069	.132

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/22, p = .002)
Note: All p values above .002 are considered non-significant, and only those below .002 are considered statistically significant.

Results for Research Question #13

What were the significant predictors of the study outcome variable of level of burnout (i.e., full-scale score), given selected independent variables of demographic and other study variables?

For the purposes of this study, the outcome variable of interest was higher burnout, which was explored via backward stepwise regression analysis, while controlling for socially desirable responses.

Independent variables. After reviewing descriptive statistics, including dichotomizing some variables, where indicated (e.g., if has children or not). The following **22 independent variables** were selected for inclusion in the backwards stepwise regression model: 1-gender; 2-Black race (yes/no, Black/non-Black—dichotomous variable); 3-children (yes/no—dichotomous variable); 4-if had COVID-19 in past 2 years (yes/no—dichotomous variable); 5-if sought counseling in past year (yes/no—dichotomous variable); 6-age (continuous variable); 7-skin color (continuous variable); 8-annual household income (continuous variable); 9-education (continuous variable); 10-years working in public health (continuous variable); 11- if volunteered during the pandemic (yes/no—dichotomous variable); 12-Body Mass Index (BMI—continuous variable); 13-physical health status during the pandemic (continuous variable); 14-mental/emotional health status during the pandemic (continuous variable); 15-work stress during the pandemic (continuous variable); 16-home stress during the pandemic (continuous variable); 17-extent of social support (continuous variable); 18-past year mental health distress (continuous variable); 19-past month perceived stress (continuous variable); 20-level of chronic work discrimination (continuous variable); 21-level of vigilance (continuous variable); 21-level of cultural taxation (continuous variable)

This list was shortened from a potential 23 independent variables, as follows. The list of independent variables was shortened by selecting Body Mass Index and not selecting self-rating of weight for inclusion in the regression model, as these variables were likely highly intercorrelated.

Backwards stepwise regression. The model began with the above (shortened) list of 22 independent variables in one regression model. Each time the model was re-run, the variable with the weakest association with the outcome variable (i.e., burnout) was removed. Using the p

< .05 level of statistical significance, the backward stepwise program repeated the elimination process, doing so until only those variables that were statistically significant were left in the regression model.

According to Borboudakis and Tsamardinos (2019), forward and backward stepwise regressions are "some of the oldest, simplest and most commonly employed" statistical methods (p.2). One attractive aspect of using stepwise regression is how general they are and how they can be applied to various types of data. For example, the stepwise method can be directly applied to continuous, categorical, "nominal, ordinal or time-to-event outcomes, among others" (Borboudakis & Tsamardinos, 2019, p. 2).

Another advantage to the stepwise regression method is "that it is easy to apply in statistical software" and is faster than other automatic model-selection methods (Chowdhury & Turin, 2020, p. 5). When using backward stepwise regression, researchers can examine models with a variety of variable combinations that may be overlooked in other statistical methods. Further, since the same variables are selected from the same dataset every time the model is run, it "helps reproduce the results and validate in model" (Chowdhury & Turin, 2020, p. 5).

Although the stepwise procedure is still used often in research, there are several problems with the technique that can "threaten their ability to correctly identify independent risk factors" (Livingston et al., 2010, p. 1039). The stepwise regression procedure has two well-known key flaws. First, the procedure "may underestimate the importance of certain combinations of variables" (p. 1039). This means that when variables are subtracted during backward stepwise regression, some important combinations of variables may never be tested. Secondly, stepwise regression could lead to model overfitting, overemphasizing false associations between independent and dependent variables. When using the backward stepwise regression procedure,

it is imperative to consider the order of the variables subtracted from the model equation and "evaluate whether the selected model provides an adequate model fit", as failure to do so could substantially influence analysis outcomes (Livingston et al., 2010, p. 1040).

Controlling for social desirability. An exception was made during the backward stepwise regression process to not eliminate the "risk of providing socially desirable responses" variable. Instead, the variable was forced into the model as a control variable, regardless of the significance level. This decision allows the regression model to effectively control for social desirability.

Backward stepwise regression results. The results of the backwards stepwise regression for this study yielded the following, while controlling for social desirability, finding **higher burnout** was significantly predicted by:

- **Not Having** a Child (B = -0.165, p = .000)
- **Not Having** Sought Counseling (B = -0.079, p = .02)
- **Higher** Level of Household Income (B = 0.023, p = .003)
- **Fewer** Hours Volunteering (B = -0.137, p = .031)
- **Lower** BMI (B = -0.004, p = .022)
- **Lower rating of** Mental Health During COVID-19 (B = -0.114, p = .000)
- **Higher** Past Year Mental Distress (i.e., Depression, Anxiety, Insomnia and Trauma) (B = 0.101, p = .000)
- **Higher** Past Month Perceived Stress (B = 0.184, p = .000)
- **Higher** Vigilance (B = 0.102, p = .000).

It was found that, according to this model, 50.9% of the variance was predicted (R^2 = 0.533, Adjusted R^2 = 0.509) by the factors above.

See Table 19.

Table 19. Backwards Stepwise Regression Predicting Higher Levels of Burnout

Variables	B	SE of B	P
Not Having a Child	-0.165	0.037	.000***
Not Having Sought Counseling	-0.079	0.034	.020*
Higher Income	0.023	0.008	.003**
Fewer Hours Volunteering	-0.137	0.031	.000***
Lower BMI	-0.004	0.002	.022*
Lower Rating of Mental Health During COVID-19	-0.114	0.014	.000***
Higher Past Year Mental Stress (i.e., insomnia, depression, anxiety, and trauma)	0.101	0.024	.000***
Higher Past Month Perceived Stress	0.184	0.030	.000***
Higher Vigilance	0.102	0.022	.000***

*p<.05, **p<.01, ***p<.001; R^2 *(0.533); Adjusted* R^2 *(0.509) – meaning 50.9% of variance was explained by this model*
F = 22.264, p =.000

Conclusion

This chapter has presented the results of quantitative data analyses through text and tables.

Next, Chapter V will present a discussion of the results, along with a summary of the study—including discussions of demographic findings and conclusion.

Chapter V

DISCUSSION, IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSION

This chapter will present a discussion of findings, implications of the findings, and recommendations for future research. The limitations of this study and the final conclusion will also be included in this chapter.

Discussion of Results

Discussion of Findings on Demographic Characteristics

The online cross-sectional research study used an email invitation and social media recruitment strategy to investigate predictors of burnout among BIPOC public health professionals working during the COVID-19 pandemic. The online convenience sample (n = 486) of BIPOC public health professionals were 58.4% female (n = 284) and 87.9% were 40 years or younger, with a mean age of 32.86 years (SD = 7.571, min = 20, max = 67). Of the BIPOC public health professionals in the sample, a majority identified as Black (58%, n = 282).

When compared to other pandemic era studies with a public health worker focus, this present study had less individuals who identify as female and an overall younger sample. For example, Kintziger et al. (2021), Stone et al. (2021) and Bryant-Genevier et al. (2021) all had a high percentage of females in their studies (82%, 84.8, and 83.1, respectively). According to Yassine et al. (2022), nearly three-fourths of people with public health degrees identify as female and females represent “well over half of the US government public health workforce” (p. E390). Kintziger et al. (2021), Stone et al. (2021) and Bryant-Genevier et al. (2021) also had a

lower percentage of public health workers under 40 in their samples (60%, 60.4%, and 40.1%, respectively). The current study only sampled public health professionals that identify as Black, Indigenous, or People of Color, making it non-comparable to the other three studies that had majority white sample populations (74%, 76.4%, and 74.1%, respectively).

In the present study, half of respondents worked for a city, state, or federal health department (50.1%, n = 243). Stone et al. (2021) reported, in comparison, that a majority (78.9%) of respondents currently worked in governmental public health agencies and Bryant-Genevier et al. (2021) only surveyed public health professionals that worked within a governmental public health agency. This study also found that the mean number of years working in public health was between 5-7 years (category 3.05, SD = 1.508, min = 1, max = 9) and 73.3% of the total sample had between 2 and 10 years of experience in public health. In comparison, Kintziger et al. (2021) reported that 51% of their sample had between 1 and 9 years of experience in public health and over one-third had 10 or more years of experience (38%).

Several similarities were found with previous research studies in regard to the work experiences of public health professionals. In the present study, 67.3% of respondents experienced working long hours or overtime (>40 hours/week). In comparison, Kintziger et al. (2021) found that two-thirds of respondents said they were working more than 40 hours and more than five days per week. And, Bryant-Genevier et al. (2021) found that 59.2% of respondents worked ≥41 hours in a typical week since March 2020. In this study, 35.4% of respondents experienced being forced to defer other public health priorities to focus on the pandemic. Similarly, Kintziger et al. (2021) found that public health workers with a variety of content expertise were being reassigned to focus on the pandemic; and, qualitative data showed that “many routine duties and services were no longer able to be done due to the burden of

COVID-19 response" (p. 6). Other experiences BIPOC public health professionals faced in the present study were: threats (8.6%); wanting to quit/stop working, or retire (27%); and actually quitting/stopping work, or retiring (6.4%). In comparison, Bryant-Genevier et al. (2021) found that 11.8% of respondents received job-related threats because of their work. Further, Stone et al. (2021) found that 4.6% of respondents were planning to leave or retire in 2020 and 12% were planning to leave or retire in the next 1 to 2 years.

Discussion of Findings on Physical Health

Additional findings from the present study provided a depiction of the physical health experiences of BIPOC public health professionals during the COVID-19 pandemic. Over the past two years, 25.3% of respondents reported being diagnosed with COVID-19. In comparison, Bryant-Genevier et al. (2021) found that 12.6% of respondents reported having received a diagnosis of COVID-19. The higher percentage of respondents with a COVID-19 diagnosis in this study could be due to the time frame of the present study that included the Omicron wave during Winter 2021.

Further, the present study found that 12.6% of respondents indicated having poor or very poor physical health during COVID-19 pandemic. Findings showed a statistically significant difference ($t = 11.040$, $df = 485$, $p = .000$) using paired sample t-tests comparing overall physical health status before the pandemic (mean = 4.53, SD = 1.041) versus during the pandemic (mean = 3.97, SD = 1.204), indicating worse physical health during the COVID-19 pandemic. This aligns with the anticipated findings described in Chapter 1. Similarly, a study assessing burnout among nurses working with COVID-19 patients during the pandemic found a statistically significant difference ($t = 10.885$, $df = 248$, $p = .000$) between overall physical health status of

nurses before the pandemic (mean = 4.66, SD = 0.945) versus during the pandemic (mean = 4.02, SD = 1.037), also indicating worse physical health during the COVID-19 pandemic (Harry, 2021). Stone et al. (2021), in comparison, found that the proportion of respondents reporting poor health at least 14 out of the last 30 days was 13.6% for physical health.

Discussion of Findings on Mental Health

This current study found a significant difference (t = 10.313, df = 485, p = .000) between mental/emotional health status before the pandemic (mean = 4.41, SD = 1.121) versus during the pandemic (mean = 3.76, SD = 1.312), indicating a diminished mental/emotional health status during the COVID-19 pandemic. This aligns with the anticipated findings described in Chapter I. Harry (2021) also found a statistically significant difference (t = 12.886, df = 248, p = .000) for the overall mental/emotional health status of nurses before (mean = 4.68, SD = 0.964) versus during (mean = 3.66, SD = 1.149) the COVID-19 pandemic. Stone et al. (2021), in comparison, found that the proportion of respondents reporting poor health at least 14 out of the last 30 days was 41.4% for mental health (mean = 12.4 days). Of note, in this study, results indicate a higher proportion of public health professionals experiencing poorer mental health than physical health during the pandemic.

Also, regarding mental health, the current study found that, in the past year, 80% (n = 389) of respondents experienced insomnia, 68.5% (n = 333) experienced depression, 81.7% (n = 397) experienced anxiety, and 61.3% (n = 298) experienced trauma. Our findings were inconsistent with the findings of previous studies, which reported much lower percentages. For example, Harry (2021) found that 61.0% of nurses reported insomnia, 57.4% anxiety, 39% depression, and 35.7% trauma. Bryant-Genevier et al. (2021) found that 30.8% of public health

professionals reported symptoms of depression, 30.3% reported symptoms of anxiety, and 36.8% reported symptoms of PTSD. Stone et al. (2021) found that 46.7% of males and 39.9% of females reported experiencing anxiety and 33.3% of males and 28.2% of females reported experiencing anxiety. Further, a study on the working conditions and health status of public health workers in China during the COVID-19 epidemic found that "27.1 and 20.6% of the workers reported experiencing depression and anxiety, respectively" (Li et al., 2021, p. 1).

Providing a composite picture of the respondents' experience of any mental distress, the findings from the Retrospective Insomnia, Depression, Anxiety, and Trauma Scale (R-DATS-5) were combined to create a mental distress variable. This survey found a mean of 1.3 (SD = 1.888, min = 0, max = 4), indicating a mild to moderate level of overall mental distress. Harry (2021) used the same mental distress variable and found a mean of 1.93 (SD = 1.502, min = 0, max = 4) among nurses, indicating a moderate level of mental distress.

The higher prevalence of anxiety, depression, and trauma in the current study may be due to the sample being comprised of only BIPOC public health professionals—unlike the other studies (i.e. Harry, 2021; Bryant-Genevier et al., 2021; Stone et al., 2021) finding lower rates. However, a study on the mental health of U.S. healthcare workers during the COVID-19 pandemic found that "higher stress scores were observed" in healthcare workers of color (Prasad et al., 2021, p. 2). Further, Black and Latino healthcare workers had higher rates of anxiety, depression, and fear of COVID-19 exposure when compared to white healthcare workers (Prasad et al., 2021).

Discussion of Findings on Stress

This current study found a significant difference (t = -12.136, df = 485, p = .000) between work/professional stress *before* the pandemic (mean = 5.77, SD = 2.103) versus *during* the pandemic (mean = 7.14, SD = 1.9), indicating a higher level of work/professional stress during the COVID-19 pandemic. A significant difference (t = -13.256, df = 485, p = .000) was also found between home/personal stress before the pandemic (mean = 5.26, SD = 2.34) versus during the pandemic (mean = 6.69, SD = 2.04), further indicating a higher level of stress being experienced during the pandemic by BIPOC public health professionals. Weisman et al. (2022) mentioned how many public health workers are "under constant stress working in an atmosphere characterized by distrust and threats" (p. 95). Further, Bryant-Genevier et al. (2021) stated that the stressful work experiences public health workers have endured during the COVID-19 pandemic may elevate their risks for experiencing symptoms of PTSD.

In addition, the Perceived Stress Scale (PSS-4) was used, having a Cronbach's Alpha of .622, indicating an acceptable level of internal consistency; the past month perceived stress mean score was 1.752 (SD = 0.659, min = 0.00, max = 3.75), which denotes a moderate level of stress in the past month. Harry (2021) found similar results among nurses, with a perceived stress mean score of 1.873 (SD = 0.596, min = 0.00, max = 3.75) for past month stress, also indicating a moderate level of stress. The Harry (2021) Cronbach's Alpha score also showed acceptable internal consistency (.633).

Discussion of Findings on Social Support

This study found with regard to perceived social support that BIPOC public health professionals had a mid- to high-level of social support, with a mean of 3.33 (SD = 1.14, min =

0, max = 5) on a 5-item Likert scale. Similarly, Harry (2021) found that nurses negotiated the pandemic with moderate social support. Another study in China found that the more social support nurses had, the lower their depression, anxiety, and fear (Hu et al., 2020).

Social support has been shown to be a protective factor for healthcare workers during the pandemic. Pinho-Gomes et al. (2021) found that public health faculty and trainees utilize a wide range of coping mechanisms for support, including speaking to friends and family. Hennein et al. (2021) found that healthcare workers that needed more social support had significantly higher odds of probable depression, anxiety, PTSD, and alcohol use disorder (AUD).

In anticipation of the presentation of additional findings, it may be noted that the results from this study appear to indicate that social support may not be as protective for BIPOC individuals in the U.S., as traditionally found in the literature. Perhaps, the role of racism-related stress, trauma, discrimination and other work-place contextual factors must be taken into consideration.

Discussion of Findings on Racism-Related Stress, Trauma, Discrimination

The present study is the first study to date that focuses on the impact and experiences of racism-related trauma and stress from discrimination among BIPOC public health professionals working during the COVID-19 pandemic and its association to burnout. The study found that respondents experienced a moderate level of chronic work discrimination and harassment, meaning respondents experienced discrimination and harassment in the workplace at an average of a few times a year (category 3.001, SD = 0.82, min = 1, max = 5). The Chronic Work Discrimination and Harassment Scale-Short (CWD-HS-Short-9) survey tool had a Cronbach's Alpha of 0.843, for good internal consistency. Similarly, Sternhal et al. (2011) used their own

abbreviated version of the Chronic Work Discrimination and Harassment Scale, finding acceptable Cronbach's Alphas of 0.76 for the job harassment subscale and 0.73 for the job discrimination subscale.

A study conducted by Moody et al. (2005) used the same questions as the current study's Chronic Work Discrimination and Harassment Scale-Short (CWD-HS-Short-9) with a sample of Black patients (50 years or older) with Type 2 diabetes. When compiling an "ever" score (participants reporting any experience of racism), Moody et al. found that the percent of participants who "ever" experienced any of the nine work discrimination and harassment questions ranged from 38-62%. This differed from the current study's results where participants who "ever" experienced any of the work discrimination and harassment questions ranged from 71-96%, being much higher.

While seeking to capture an additional dimension of the potentially stressful experiences related to the race of BIPOC professionals, this study utilized a four-item abbreviated version of the Heightened Vigilance Scale, finding an acceptable Cronbach's alpha of 0.67. Similarly, Hicken et al. (2013) created a three-item abbreviated version of the Heightened Vigilance Scale, resulting in a Cronbach's alpha of 0.66. Of note, the original (Clark et al., 2006) six-item scale had an acceptable Cronbach's alpha of 0.72; and, similarly, using this original scale, Himmelstein et al. (2015) reported a Cronbach's alpha of 0.77.

The current study also found that respondents experienced a moderately high level of vigilance (category 3.641, SD = 0.771, min = 1, max = 5). Himmelstein et al. (2015) also found a moderately high level of vigilance among respondents (mean = 3.60). Hicken et al. (2013) found an overall mean vigilance index score of 2.67 but found a higher vigilance score among their Black participants (mean = 3.84) and lower score among Latino participants (mean = 2.52).

Hicken et al. only scored respondents that reported their vigilance was due to their race/ethnicity, while the current study did not ask respondents if their heightened vigilance was specifically due to their race/ethnicity. Although a mean score was not provided, Chae et al. (2021) found that 40% of Asian and 67.1% of Black participants reported experiencing vigilance about once a week or more during the pandemic.

The current study also found a significant correlation between higher burnout and higher vigilance ($r = 0.549$, $p = .000$). Backward stepwise regression found higher burnout significantly predicted by vigilance ($B = 0.102$, $p = .000$) as well. Results from Himmelstein et al. (2015) found that vigilance mediated the relationship between discrimination and stress (.07, .20). Hicken et al. (2013) found a positive association between sleep difficulty and vigilance. These results cannot be compared to the current study, since this study did not analyze vigilance against insomnia, work/professional stress, home/personal stress, or perceived stress.

Lastly, as an additional approach to the race-related stress potentially impacting BIPOC public health professionals, this study examined cultural taxation, finding a moderate level of cultural taxation (category 3.129, SD = 0.921, min = 1, max = 5) among respondents. The current study adapted the Cultural Taxation Scale from Anantachai, and Chesley (2018), who created it to assess the burden of care and cultural taxation of service activities that librarian women of color shouldered because of their race and/or gender identity. Their results showed that over half of respondents (56.6%) felt that they took on more service activities because of their racial identity, and 52.9% indicated that they were involved in more "unofficial" service activities than colleagues because of their race and/or gender identity. The current study also found a high percentage of respondents that took on more official and "unofficial" service activities [71.6% (n = 351) and 65.8% (n = 320), respectively]. However, in the current study,

when respondents were asked whether they felt pressured to take on extra, uncompensated work because of their racial identity, 61.1% (n = 297) admitted to feeling that way, whereas only 35.2% of the Anantachai, and Chesley (2018) respondents admitted to feeling that way. The difference in populations (BIPOC librarians as women of color versus BIPOC public health professionals of all genders) may be the reason for the variation in responses.

Discussion of Findings on Burnout

The present study found that BIPOC public health professionals had a **moderately high overall level of burnout** (category 2.578, SD = 0.486, min = 1, max = 3.9), a **moderate level of disengagement** (category 2.41, SD = 0.573, min = 1, max = 4), and a **high level of exhaustion** (category 2.744, SD = 0.532, min = 1, max = 4). Results also found significant correlations, indicating that the **higher the level of burnout** then the: higher level of work stress during the pandemic (r = -0.332, p = .000), higher level of home stress during the pandemic (r = -0.213, p = .000), higher level of past year mental distress (i.e., symptoms of insomnia, depression, anxiety, and trauma) (r = 0.535, p = .000), higher level of past month perceived stress (r = 0.549, p = .000), higher level of chronic work discrimination (r = 0.235, p = .000). Further, females in the study were shown to have significantly higher levels of burnout than men (t = 3.283, df = 439.5, p = .001). Similarly, Stone et al. (2021) found that females had more symptoms of burnout than men (68.3% vs. 60%); and, more symptoms of burnout were reported by those with more years of experience in public health (15 years of experience: 63.5% vs. < 1-year experience: 38.1%). Stone et al. (2021) also found an association between age and burnout, with public health workers aged 40–49 being 2.3 times (95% CI = 1.2–4.4) more likely to report higher levels of burnout compared to public health workers aged 18–29 years. These results were inconsistent

with this study's findings, which associate high levels of burnout with a lower number of years working in public health (r = -0.038, p = .000) and a lower level of income (r = -0.163, p = .000). The present study did not find any associations between age and burnout.

Backward stepwise regression, while controlling for social desirability, found **higher burnout** significantly predicted by: not having a child (B = -0.165, p = .000); not having sought counseling (B = -0.079, p = .02); higher level of household income (B = 0.023, p = .003); fewer hours volunteering (B = -0.137, p = .031); lower BMI (B = -0.004, p = .022); lower rating of mental health during COVID-19 (B = -0.114, p = .000); higher past year mental distress (i.e., depression, anxiety, insomnia and trauma) (B = 0.101, p = .000); higher past month perceived stress (B = 0.184, p = .000); and higher vigilance (B = 0.102, p = .000)—with 50.9% of the variance predicted (R^2 = 0.533, Adjusted R^2 = 0.509; F = 22.264, p = .000). The regression results for number of children, counseling in the past year, mental health status during COVID-19, mental distress, perceived stress, and vigilance all aligned with the anticipated findings described in Chapter 1.

Previous studies have shown inconsistencies in the level of burnout among BIPOC individuals in the public health field and healthcare workforce. For example, Stone et al. (2021) indicated that minority race appeared to be somewhat protective for burnout, and Prasad et al. (2021) found that Black and Latino healthcare workers had lower rates of burnout than white healthcare workers. Although the present study found that higher burnout levels were associated with higher levels of workplace discrimination and vigilance, no conclusions can be made due to the lack of a comparison group (i.e., white public health professionals). According to Prasad et al. (2021), inconsistent burnout findings in people of color may be due to the lack of survey questions about the systemic contexts that inform their lived experiences such as "racism,

tokenism, and lack of inclusion or social support" (p. 5). Although the present study did not find a significant association between cultural taxation and burnout, qualitative data from other research has shown that leading anti-racism efforts in the workplace can cause high levels of burnout in professionals of color "who are already stretched thin" (Miu & Moore, 2021, p. 541).

Implications and Recommendations for Research, Practice, and Improving the Field of Public Health

As the first study of its kind, to date, this study sought to identify significant predictors of burnout for Black, Indigenous, and People of Color (BIPOC) public health professionals working during the COVID-19 pandemic in the U.S. Using an all BIPOC sample (N=486), this study contradicts the findings of prior studies that indicated minority race appeared to be somewhat protective for burnout (i.e., Stone et al., 2021), as in findings that Black and Latino healthcare workers had lower rates of burnout than did their white counterparts (Prasad et al., 2021). This study examined BIPOC public health professionals' experience of burnout and predictors of burnout, while taking a sufficiently broad approach so as to permit considering the role of racism-related stress, trauma, mental distress, discrimination and other work-place contextual factors. This broad approach permitted the inclusion of such independent variables, allowing the regression model to account for 50.9% of the variance.

As this study suggests, BIPOC public health professionals served this country during a once in a century global pandemic, as essential workers—with findings documenting the nature of the detrimental impact upon them. This detrimental impact goes well beyond 25.3% having contracted COVID-19 and 8.8% having long-COVID-19. It encompasses how the BIPOC public

health professionals suffered significant declines in physical and mental health from before the pandemic to currently, during the pandemic; and, the decline in mental health status was more substantial than that for physical health status. Of concern, and necessitating interventions for BIPOC public health professionals' mental health, were findings of high rates of past year insomnia (80%, n = 389), depression (68.5%, n = 333), anxiety (81.7%, n = 397), and trauma (61.3%, n = 298)—that far exceed what was found in other studies. Potentially helping to explain these findings were high rates of chronic work discrimination and harassment; for example, 87.9% of respondents reported that they feel that they have to work twice as hard as others work (i.e., a few times a year to once a week or more); 70.2% reported that when different opinions would be helpful, their opinion was not asked for (i.e. a few times a year to once a week or more). Further, 63.8% are unfairly given jobs that no one else wants, 76.5% reported they are watched more closely than others, 55.8% have heard racist jokes, 66.9% are not taken seriously by their boss, and 51.1% have been unfairly humiliated by others at work.

The study findings have important implications for practice and future research, including recommendations for meeting the current and future needs of BIPOC professionals, given their experiences of burnout and racism-related stress—as well as for improving the field of public health. The study findings justify the following:

- Given the individual mental and physical health findings of this study, measures should be put into place to reduce the experiences of burnout and mental distress currently experienced by BIPOC public health professionals. Some have recommended individual-level attention to self-care, as a priority (Miu & Moore, 2021). On the institutional level, others have recommended establishing healthy workplace routines, including flexible work schedules, additional time for self-care, re-examining the length of the normal workday, and more

control over workload (Bryant-Genevier et al., 2021; Weisman & Baker, 2022); and, also recommended is the creation of healthy institutional norms that may encourage workers to avoid overworking, taking more time off, taking regular breaks, and "offer a respite from the "always-on" dynamic of the COVID-19 response" (Weisman & Baker, 2022, p. 96). However, what has emerged from this study is how preventing burnout among BIPOC public health professionals cannot happen without addressing the racism-related trauma and disproportionate burden placed on them – as highlighted by the chronic work discrimination and harassment, heightened vigilance, and cultural taxation findings of this study.

- Specifically, there is a need for interventions designed for BIPOC public health professionals to address the current and any ongoing future impact from pandemic-era burnout, mental distress with high rates of depression, anxiety, insomnia, and trauma—as well as racism-related stress—inclusive of work stress from the pandemic, home/personal life stress from the pandemic, chronic work discrimination and harassment, heightened vigilance, and cultural taxation. These interventions should be designed to meet the needs of working professionals, including the provision of treatment for burnout and mental distress by licensed mental health professionals, including via Zoom. Stress management workshops and webinars are needed that seek to enhance coping with racism-related and other stress. Given the importance of having a fully functioning and effective public health workforce, and likelihood of future public health crises which require such a workforce, these types of interventions are vital for the post-pandemic restoration of the public health workforce.
- Special attention needs to be paid to women, given female respondents were shown to have significantly higher levels of burnout than men ($p = .001$). Tailored interventions for women may be needed. Additional research is needed, ideally qualitative, which may assist in

identifying factors that may be operating for women that contribute to their higher levels of burnout.

- There is also a need to provide the entirety of the public health workforce with the kind of cultural diversity training that will reduce incidents occurring in the workplace that facilitate BIPOC public health professionals reporting disturbing rates for experiencing race-related stress, discrimination, harassment, heightened vigilance, and cultural taxation—as well as burnout. This kind of cultural diversity training should be provided during workplace hours, be a required training, and can be standardized and packaged via a webinar format. Study findings underscore how imperative it is for BIPOC public health professionals to feel psychologically safe within the workplace. It is imperative to create an environment where oppressive rhetoric of BIPOC professionals is countered by recognizing their value and ensuring they are part of decision-making processes. Hence, training is needed, which will improve the field of public health by improving the conditions in which BIPOC public health professionals work.
- With 67.3% of BIPOC public health professionals working overtime and 49% working weekends, it is also recommended that there are broad and long-lasting investments in public health. This will allow public health workplaces to expand staffing size, reducing the currently unsustainable workload that is being experienced during the COVID-19 pandemic. Additional funding will also allow investments in workforce development, including anti-racism trainings, workshops, and the hiring of equity-specific public health positions.
- It is also recommended that efforts be made to enhance social support structures for BIPOC public health professionals. This study found that BIPOC public health professionals have a mid- to high-level of social support. Results also appear to indicate that social support may not be as protective for BIPOC individuals in the U.S., as traditionally found in the literature.

Again, this may be due to the deleterious impact of racism-related stress, trauma, discrimination, and other work-place contextual factors must be taken into consideration. Still, since social support may serve as a buffer to prevent mental distress, it is recommended that BIPOC professionals connect with communities of support that can help them heal from the "racial injustices that continue to take place in America" (Lipscomb and Ashley, 2020, p. 14).

- The research used a package of tools that are recommended for future use in studies. The Mini Oldenburg Burnout Inventory (MOLBI-10) had a Cronbach's Alpha of .843, indicating good internal consistency, while as the study outcome variable, it served as a valid choice for conducting research with BIPOC public health professionals during the pandemic. Other recent research has also supported the use of the Oldenburg Burnout Inventory due to its high internal consistency and reliability, naming it as a valid alternative to the widely used, yet much longer, Maslach Burnout Inventory (MBI) (Ogunsuji et al., 2021). Future research should continue to use this tool, along with other tools. For example, the newer and shorter four-item version of the Perceived Stress Scale (PSS-4) had a Cronbach's Alpha was .622 for acceptable internal consistency. Utilizing shorter scales can help to reduce the burden of time upon public health professionals working during a pandemic.
- To further reduce the burden of time, this study also shortened several other tools, including the Chronic Work Discrimination and Harassment Scale (CWD-HS-Short-9) and the Cultural Taxation Scale (CTS-4). Each scale had an acceptable or good internal consistency score. These tools may also be used in future research with BIPOC professionals in any setting or field. These short tools may also be used by workplaces to better asses their internal work climate and the wellbeing of their BIPOC staff, suggesting a role for them in practice.

- Strongly recommended is future research using the same package of measures and study methodology and procedures—as in this study (detailed in Chapter III). Future research should seek a larger sample to better disaggregate data by race/ethnicity, gender identity, ability, and nativity status. A larger sample may also allow for more robust, intersectional analysis of burnout and racism-related stress among transgender and non-binary BIPOC public health professionals. A larger sample may also permit further investigation into the association between cultural taxation and burnout, a non-significant trend found in this study. If this finding were substantiated and found to be significant with a larger sample—and ideally a nationally representative sample in a grant-funded study—then, targeted workplace interventions might result for BIPOC public health professionals. Also, a larger sample might substantiate the significant correlation between income and a higher level of burnout, since the results from the Pearson's correlations and backward stepwise regression provided inconsistent findings. Finally, accessibility should also be taken into account, ensuring a wider array of public health professionals – including those with disabilities – are able to participate in the study.

In sum, findings from this current study show that racism-related stress is a major public health concern. However, it is important to note that the recommendations provided here are not enough to dismantle systemic racism. BIPOC public health professionals "can only heal as much as the larger society allows for them to;" and, as long as injustice continues, BIPOC professionals will not be able to fully heal from the continued racism-related trauma and stress they experience in the workplace (Lipscomb & Ashley, 2020, p. 14).

Limitations of the Study

This study utilized a cross-sectional design to investigate the associations between risk factors/predictors and the outcome of interest—higher levels of burnout of BIPOC public health professionals working during the COVID-19 pandemic. The study used a nonprobability–based convenience sample which suffers from selection bias. In the absence of a known sampling frame and random sampling, the inherent bias in convenience sampling means that the sample is unlikely to be representative of the population being studied. This may introduce some level of sampling error and undermines the ability to make generalizations from the study sample to the study population as a whole. In addition, public health professionals' workplaces vary widely in terms of their staffing, programs, and level of governance, which also limits the generalizability of any findings.

Additionally, since the survey was shared through professional organizations and networks via social media and email directories, self-selection bias may have resulted in BIPOC public health professionals who were experiencing the most burnout or racism-related stress being more likely to respond. The study also used self-reported data with the possibility of participants providing socially desirable responses—even as this was controlled for in the regression. Recall bias in another limitation, as the questionnaire asked respondents to rate themselves on variables for *before and during* COVID-19. Participants may have minimized or exaggerated their responses. Moreover, the study was also conducted online which requires access to electronic devices such as computers, smart phones, or tablets. Internet access was also needed to complete the study survey. Potential participants who did not have internet access

were excluded from the study whereas those who wanted to volunteer might have been overrepresented.

It is possible that BIPOC public health professionals experiencing less stress at work were those able to complete the survey, since they had the time or inclination to volunteer. BIPOC public health professionals suffering the highest levels of burnout may have found it impossible to volunteer even 10-12 minutes of their time. A grant funded study might permit conducting a more robustly designed observational study with higher internal and external validity—as an important study component.

Other study limitations involved the use of backward stepwise regression, while Chapter IV provided a discussion of the pros and cons, including the potential for over-fitting the sample. Lastly, the use of a study incentive (i.e., a $100 gift cards for use on www.amazon.com) may have attracted respondents who were willing to complete the study for the possibility of receiving one of three gift cards. Results may be biased, due to the reasons why some people choose to take part in the survey and some did not.

Conclusion

The problem that this study addressed is the need to increase knowledge and fill the gap in the literature regarding the level of burnout and other experiences of BIPOC public health workers in the U.S. during the COVID-19 pandemic.

The intent was to uncover the predictors of burnout. In documenting the needs of BIPOC public health professionals, this study aimed to investigate their experiences during the COVID-

19 pandemic, in order to arrive at recommendations for meeting their current and future needs associated with any experience of burnout or racism-related stress.

The research was framed by numerous theories, including Freudenberger's (1974; 1986; 1989) original burnout theory; the stress and coping theory of Lazarus and Folkman (1984; 1987); Harrell's (2000) theory and model of racism-related stress; and Pierce's original theory of racism (Pierce et al, 1977). This framework emerged as having value, given it directed the creation of the survey tool.

Findings showed the online convenience sample (n = 486) of BIPOC public health professionals were 58.4% female (n = 284) with a mean age of 32.86 years (SD = 7.571, min = 20, max = 67). Of the BIPOC public health professionals in the sample, a majority identified as Black (58%, n = 282). Most participants experienced working long hours or overtime (67.3%, n = 327), nearly half experienced working weekends (49%, n = 238), and over one in three respondents experienced being forced to defer other public health priorities to focus on the pandemic (35.4%, n = 172)

Using paired t-tests comparing scores for before versus during the pandemic, the physical health status and mental/emotional status of respondents were each significantly worse during the pandemic ($p < .000$). Both their work/professional stress and home/personal stress were also significantly worse during the pandemic ($p < .000$). BIPOC public health professionals suffered a moderately high overall level of burnout (mean = 2.578, SD = 0.486, min = 1, max = 3.9), a moderate level of disengagement (mean = 2.41, SD = 0.573, min = 1, max = 4), and a high level of exhaustion (mean = 2.744, SD = 0.532, min = 1, max = 4). Past month mean Perceived Stress Scale scores were moderate (mean = 1.752, SD = 0.659, min = 0.00, max = 3.75), They reported moderate mental distress over the past year (mean= 1.3, SD = 1.888, min = 0, max = 4), while

80% (n = 389) of respondents experienced insomnia, 68.5% (n = 333) experienced depression, 81.7% (n = 397) experienced anxiety, and 61.3% (n = 298) experienced trauma, and 59.3% (n=288) received counseling.

Results found significant correlations, indicating that the **higher the level of burnout** then the: higher level of work stress during the pandemic (r = -0.332, p = .000), higher level of home stress during the pandemic (r = -0.213, p = .000), higher level of past year mental distress (i.e., symptoms of insomnia, depression, anxiety, and trauma) (r = 0.535, p = .000), higher level of past month perceived stress (r = 0.549, p = .000), higher level of chronic work discrimination (r = 0.235, p = .000), and higher the level of vigilance (r = 0.549, p = .000). Additionally, female respondents were shown to have significantly higher levels of burnout than men (t = 3.283, df = 439.5, p = .001).

Backward stepwise regression found **higher burnout** significantly predicted by: not having a child (B = -0.165, p = .000); not having sought counseling (B = -0.079, p = .02); higher level of household income (B = 0.023, p = .003); fewer hours volunteering (B = -0.137, p = .031); lower BMI (B = -0.004, p = .022); lower rating of mental health during COVID-19 (B = -0.114, p = .000); higher past year mental distress (i.e., depression, anxiety, insomnia and trauma) (B = 0.101, p = .000); higher past month perceived stress (B = 0.184, p = .000); and higher vigilance (B = 0.102, p = .000)—with 50.9% of the variance predicted (R^2 = 0.533, Adjusted R^2 = 0.509; F = 22.264, p = .000).

This survey serves as a starting point for future research exploring the implications of racism-related stress and burnout among BIPOC public health professionals during a long-term response to a pandemic. A larger sample—ideally a nationally representative sample in a grant-funded study— may allow for a more robust, intersectional analysis of public health workers

disaggregated by race/ethnicity, gender identity, ability, and nativity status. A larger sample may also permit further investigation into the association between cultural taxation and burnout, a non-significant trend found in this study.

These findings highlight opportunities for the public health workforce to acknowledge the additional stressors that BIPOC public health professionals are facing. Recommendations include implementing measures to reduce the experiences of burnout, mental distress, and workplace discrimination. Public health institutions must commit to cultural diversity training and anti-racist internal reform efforts to ensure a psychologically safe work environment for BIPOC staff. Broad and long-lasting investments in public health may also help with expanding staffing size and reducing the currently unsustainable workload that public health professionals are experiencing during the COVID-19 pandemic.

Although there were several limitations noted, the study findings from this first of its kind study emerge as important in informing the public health field regarding the current and future needs of BIPOC public health professionals during the pandemic and beyond.

References

Adler, S., & Bhattacharyya, S. (2021). Beyond the Nurses and Doctors: Structural Racism and the Unseen Frontline Service Workers During the COVID-19 Pandemic. *Psychiatric Services*, *72*(5), 594-596.

Anantachai, T. & Chesley, C. (2018). The Burden of Care: Cultural Taxation of Women of Color Librarians on the Tenure-Track. In Chou, R. & Pho, A. (Eds.), Pushing the Margins: Women of Color and Intersectionality in LIS. (pp. 301-327). Sacramento, CA: Library Juice Press.

Aruru, M., Truong, H.-A., & Clark, S. (2021). Pharmacy Emergency Preparedness and Response (PEPR): a proposed framework for expanding pharmacy professionals' roles and contributions to emergency preparedness and response during the COVID-19 pandemic and beyond. *Research in Social and Administrative Pharmacy*, *17*(1), 1967–1977.

Ayala, J., & Irazábal, C. (2021). Black lives matter! Latinx and POC lives matter! *Crítica urbana: revista de estudios urbanos y territoriales.*, *4*(16), 4.

Borboudakis, G., & Tsamardinos, I. (2019). Forward-backward selection with early dropping. *The Journal of Machine Learning Research*, *20*(1), 276-314.

Bryant-Genevier, J., Rao, C. Y., Lopes-Cardozo, B., Kone, A., Rose, C., Thomas, I., Orquiola, D., Lynfield, R., Shah, D., Freeman, L., Becker, S., Williams, A., Gould, D. W., Tiesman, H., Lloyd, G., Hill, L., & Byrkit, R. (2021). Symptoms of Depression, Anxiety, Post-Traumatic Stress Disorder, and Suicidal Ideation Among State, Tribal, Local, and Territorial Public Health Workers During the COVID-19 Pandemic — United States, March–April 2021. *MMWR. Morbidity and Mortality Weekly Report*, *70*(26), 947–952.

Chae, D. H., Yip, T., Martz, C. D., Chung, K., Richeson, J. A., Hajat, A., Curtis, D. S., Rogers, L. O., & Laveist, T. A. (2021). Vicarious Racism and Vigilance During the COVID-19 Pandemic: Mental Health Implications Among Asian and Black Americans. *Public Health Reports*, *136*(4), 508–517.

Chea, N., Brown, C. J., Eure, T., Ramirez, R. A., Blazek, G., Penna, A. R., Li, R., Czaja, C. A., Johnston, H., Barter, D., Miller, B. F., Angell, K., Marshall, K. E., Fell, A., Lovett, S., Lim, S., Lynfield, R., Davis, S. S., Phipps, E. C., … Grigg, C. T. (2022). Risk Factors for SARS-CoV-2 Infection Among US Healthcare Personnel, May–December 2020. *Emerging Infectious Diseases*, *28*(1), 96–104.

Chen, J. A., Zhang, E., & Liu, C. H. (2020). Potential impact of COVID-19–related racial discrimination on the health of Asian Americans. *American Journal of Public Health*, *110*(11), 1624-1627.

Chowdhury, M. Z. I., & Turin, T. C. (2020). Variable selection strategies and its importance in

clinical prediction modelling. *Family medicine and community health*, *8*(1).

Civantos, A. M., Byrnes, Y., Chang, C., Prasad, A., Chorath, K., Poonia, S. K., Jenks, C. M., Bur, A. M., Thakkar, P., Graboyes, E. M., Seth, R., Trosman, S., Wong, A., Laitman, B. M., Harris, B. N., Shah, J., Stubbs, V., Choby, G., Long, Q., … Rajasekaran, K. (2020). Mental health among otolaryngology resident and attending physicians during the COVID-19 pandemic: National study. *Head & Neck*, *42*(7), 1597–1609.

Clark, R., Benkert, R. A., & Flack, J. M. (2006). Large arterial elasticity varies as a function of gender and racism-related vigilance in black youth. *Journal of Adolescent Health*, *39*(4), 562-569.

Cody, S. H. (2021). Dealing With Harassment in Public Health. *Journal of Public Health Management and Practice*, *27*(4), 432-433.

Corbie-Smith, G. (2021). Vaccine hesitancy is a scapegoat for structural racism. In *JAMA Health Forum* (Vol. 2, No. 3, pp. e210434-e210434). American Medical Association.

Cubitt, L. J., Im, Y. R., Scott, C. J., Jeynes, L. C., & Molyneux, P. D.. (2021). Beyond PPE: a mixed qualitative–quantitative study capturing the wider issues affecting doctors' well-being during the COVID-19 pandemic. *BMJ Open*, *11*(3), e050223.

Desalvo, K., Hughes, B., Bassett, M., Benjamin, G., Fraser, M., Galea, S., Gracia, J. N., & Howard, J. (2021). Public Health COVID-19 Impact Assessment: Lessons Learned and Compelling Needs. *NAM Perspectives*.

Duerme, R., Dorsinville, A., Mcintosh-Beckles, N., & Wright-Woolcock, S. (2021). Rationale for the Design and Implementation of Interventions Addressing Institutional Racism at a Local Public Health Department. *Ethnicity & Disease*, *31*(Suppl), 365–374.

Egede, C., Dawson, A. Z., Walker, R. J., Garacci, E., Campbell, J. A., & Egede, L. E. (2021). Relationship between mental health diagnoses and COVID-19 test positivity, hospitalization, and mortality in Southeast Wisconsin. *Psychological Medicine*, 1-9.

Egede, J., Campbell, J. A., Walker, R. J., Garacci, E., Dawson, A. Z., & Egede, L. E. (2021). Relationship between physical and mental health comorbidities and COVID-19 positivity, hospitalization, and mortality. *Journal of Affective Disorders*, *283*, 94-100.

Egede, L. E., & Walker, R. J. (2020). Structural racism, social risk factors, and COVID-19—A dangerous convergence for Black Americans. *New England Journal of Medicine*, *383*(12), e77.

Freudenberger, H. J. (1974). Staff burn-out. *Journal of Social Issues, 30*(1), 159-165.

Freudenberger, H. J. (1986). The issues of staff burnout in therapeutic communities. *Journal of Psychoactive Drugs*, *18*(3), 247-251.

Freudenberger, H. J. (1989) Burnout. *Loss, Grief & Care*, *3*(1-2), 1-10.

Gaitens, J., Condon, M., Fernandes, E., & McDiarmid, M. (2021). COVID-19 and essential workers: A narrative review of health outcomes and moral injury. *International Journal of Environmental Research and Public Health*, *18*(4), 1446.

Galea, S., & Vaughan, R. (2021). Preparing the Public Health Workforce for the Post–COVID-19 Era. *American Journal of Public Health*, *111*(3), 350–352.

Haleem, A., Javaid, M., & Vaishya, R. (2020). Effects of COVID-19 pandemic in daily life. *Current Medicine Research and Practice*, *10*(2), 78–79.

Halverson, P. K., Yeager, V. A., Menachemi, N., Fraser, M. R., & Freeman, L. T. (2021). Public health officials and COVID-19: Leadership, politics, and the pandemic. *Journal of Public Health Management and Practice*, *27*, S11-S13.

Harrell, S. P. (2000). A multidimensional conceptualization of racism-related stress: Implications for the well-being of people of color. *American journal of Orthopsychiatry*, *70*(1), 42-57.

Hennein, R., Mew, E. J., & Lowe, S. R. (2021). Socio-ecological predictors of mental health outcomes among healthcare workers during the COVID-19 pandemic in the United States. *PloS one*, *16*(2), e0246602.

Hicken, M. T., Lee, H., Ailshire, J., Burgard, S. A., & Williams, D. R.. (2013). "Every Shut Eye, Ain't Sleep": The Role of Racism-Related Vigilance in Racial/Ethnic Disparities in Sleep Difficulty. *Race and Social Problems*, *5*(2), 100–112.

Himmelstein, M. S., Young, D. M., Sanchez, D. T., & Jackson, J. S.. (2015). Vigilance in the discrimination-stress model for Black Americans. *Psychology & Health*, *30*(3), 253–267.

Holden, T. M., Simon, M. A., Arnold, D. T., Halloway, V., & Gerardin, J. (2022). Structural racism and COVID-19 response: higher risk of exposure drives disparate COVID-19 deaths among Black and Hispanic/Latinx residents of Illinois, USA. *BMC public health*, *22*(1), 1-13.

Hu, D., Kong, Y., Li, W., Han, Q., Zhang, X., Zhu, L. X., Wan, S. W., Liu, Z., Shen, Q., Yang, J., He, H. G., & Zhu, J. (2020). Frontline nurses' burnout, anxiety, depression, and fear statuses and their associated factors during the COVID-19 outbreak in Wuhan, China: A large-scale cross-sectional study. *EClinicalMedicine*, *24*, 100424.

Huo, L., Zhou, Y., Li, S., Ning, Y., Zeng, L., Liu, Z., Qian, W., Yang, J., Zhou, X., Liu, T., & Zhang, X. Y. (2021). Burnout and Its Relationship With Depressive Symptoms in Medical Staff During the COVID-19 Epidemic in China. *Frontiers in psychology*, *12*, 544.

Kass, N. E. (2001). An ethics framework for public health. *American journal of public health*, *91*(11), 1776-1782.

Kilmarx, P. H., Long, T., & Reid, M. J. A. (2021). A National Public Health Workforce to Control COVID-19 and Address Health Disparities in the United States. *Open Forum Infectious Diseases*, *8*(7).

Kim, G., Donnelly, L. I., & Ran, S. (2021). Fighting two pandemics at once: When COVID-19 meets racism. *Industrial and Organizational Psychology*, *14*(1-2), 206–209.

Kintziger, K. W., Stone, K. W., Jagger, M. A., & Horney, J. A. (2021). The impact of the COVID-19 response on the provision of other public health services in the U.S.: A cross sectional study. *PLOS ONE*, *16*(10), e0255844.

Kompaniyets L, Pennington AF, Goodman AB, Rosenblum HG, Belay B, Ko JY, et al. (2021). Underlying Medical Conditions and Severe Illness Among 540,667 Adults Hospitalized With COVID-19, March 2020–March 2021. *Prev Chronic Dis*, 18(E66), 1-13.

Krasna, H., & Fried, L. (2021). Generation Public Health: Fixing the Broken Bridge Between Public Health Education and the Governmental Workforce. *American Journal of Public Health*, *111*(8), 1413-1417.

Krishnamachari, B., Morris, A., Zastrow, D., Dsida, A., Harper, B., & Santella, A. J. (2021). The role of mask mandates, stay at home orders and school closure in curbing the COVID-19 pandemic prior to vaccination. *American Journal of Infection Control*, *49*(8), 1036–1042.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer publishing company.

Lazarus, R. S., & Folkman, S. (1986). *Cognitive Theories of Stress and the Issue of Circularity* (pp. 63–80).

Lazarus, R. S., & Folkman, S. (1987). Transactional theory and research on emotions and coping. *European Journal of personality*, *1*(3), 141-169.

Li, J., Xu, J., Zhou, H., You, H., Wang, X., Li, Y., Liang, Y., Li, S., Ma, L., Zeng, J., Cai, H., Xie, J., Pan, C., Hao, C., Gilmour, S., Lau, J. T.-F., Hao, Y., Xu, D. R., & Gu, J. (2021). Working conditions and health status of 6,317 front line public health workers across five provinces in China during the COVID-19 epidemic: a cross-sectional study. *BMC Public Health*, *21*(1).

Lipscomb, A. E., & Ashley, W. (2020). Surviving Being Black and a Clinician During a Dual Pandemic: Personal and Professional Challenges in a Disease and Racial Crisis. *Smith College Studies in Social Work*, 1-16.

Liu, S. R., & Modir, S. (2020). The outbreak that was always here: Racial trauma in the context of COVID-19 and implications for mental health providers. *Psychological Trauma: Theory, Research, Practice, and Policy*, *12*(5), 439.

Livingston, E., Cao, J., & Dimick, J. B. (2010). Tread carefully with stepwise regression. *Archives of Surgery*, *145*(11), 1039-1040.

Lund, E. M. (2020). Even more to handle: Additional sources of stress and trauma for clients from marginalized racial and ethnic groups in the United States during the COVID-19 pandemic. *Counselling Psychology Quarterly*, 1–10.

Mello, M. M., Greene, J. A., & Sharfstein, J. M. (2020). Attacks on Public Health Officials During COVID-19. *JAMA*, *324*(8), 741.

Miu, A. S., & Moore, J. R. (2021). Behind the Masks: Experiences of Mental Health Practitioners of Color During the COVID-19 Pandemic. *Academic Psychiatry*, *45*(5), 539–544.

Mollica, R. F., & Fernando, D. (2020). When racial trauma is a chief complaint among health-care staff. *The Lancet*, *396*(10262), e84.

Moody-Ayers, S. Y., Stewart, A. L., Covinsky, K. E., & Inouye, S. K. (2005). Prevalence and correlates of perceived societal racism in older African-American adults with Type 2 Diabetes Mellitus. *Journal of the American Geriatrics Society*, *53*(12), 2202-2208.

Morens, D. M., Breman, J. G., Calisher, C. H., Doherty, P. C., Hahn, B. H., Keusch, G. T., Kramer, L. D., Leduc, J. W., Monath, T. P., & Taubenberger, J. K. (2020). The Origin of COVID-19 and Why It Matters. *The American Journal of Tropical Medicine and Hygiene*, *103*(3), 955–959.

Ogunsuji, O., Ogundipe, H., Adebayo, O., Oladehin, T., Oiwoh, S., Obafemi, O., Soneye, O., Agaja, O., Uyilawa, O., Efuntoye, O., Alatishe, T., Williams, A., Ilesanmi, O., & Atilola, O. Internal Reliability and Validity of Copenhagen Burnout Inventory and Oldenburg Burnout Inventory Compared with Maslach Burnout Inventory among Nigerian Resident Doctors: A Pilot Study. *Dubai Medical Journal*, 1-7.

Ofei-Dodoo, S., Loo-Gross, C., & Kellerman, R. (2021). Burnout, depression, anxiety, and stress among family physicians in Kansas responding to the COVID-19 pandemic. *The Journal of the American Board of Family Medicine*, *34*(3), 522-530.

Patel, A., & Jernigan, D. B. (2020). Initial public health response and interim clinical guidance for the 2019 novel coronavirus outbreak—United States, December 31, 2019–February 4, 2020. *MMWR. Morbidity and Mortality Weekly Report*, *69*(5), 140-146.

Prasad, K., Mcloughlin, C., Stillman, M., Poplau, S., Goelz, E., Taylor, S., Nankivil, N., Brown,

R., Linzer, M., Cappelucci, K., Barbouche, M., & Sinsky, C. A. (2021). Prevalence and correlates of stress and burnout among U.S. healthcare workers during the COVID-19 pandemic: A national cross-sectional survey study. *Eclinicalmedicine*, *35*, 100879.

Navarro, J. A., & Markel, H. (2021). Politics, Pushback, and Pandemics: Challenges to Public Health Orders in the 1918 Influenza Pandemic. *American Journal of Public Health*, *111*(3), 416–422.

Nguyen, M.. (2021). Mask Mandates and COVID-19 Related Symptoms in the US. *Clinicoeconomics and Outcomes Research*, *Volume 13*, 757–766.

Parikh, A. K., & Leschied, J. R. (2022). Microaggressions in our daily workplace encounters: a barrier to achieving diversity and inclusion. *Pediatric Radiology*.

Pierce, C. M., Carew, J. V., Pierce-Gonzalez, D., & Wills, D. (1977). An Experiment in Racism. Education and Urban Society, 10(1), 61–87.

Pinho-Gomes, A.-C., Allen, A., Rae, M., & Ryder, J. (2021). Omicron: we must protect the health and wellbeing of the public health workforce. *BMJ*, n3123.

Silver, R. C., Holman, E. A., & Garfin, D. R.. (2021). Coping with cascading collective traumas in the United States. *Nature Human Behaviour*, *5*(1), 4–6.

Smallwood, N., Harrex, W., Rees, M., Willis, K., & Bennett, C. M. (2022). COVID -19 infection and the broader impacts of the pandemic on healthcare workers. *Respirology*. 1-16

Sohrabi, C., Alsafi, Z., O'Neill, N., Khan, M., Kerwan, A., Al-Jabir, A., Iosifidis, C., & Agha, R. (2020). World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). *International Journal of Surgery*, *76*, 71–76.

Spilchuk, V., Arrandale, V. H., & Armstrong, J. (2022). Potential risk factors associated with COVID-19 in health care workers. *Occupational Medicine*, *72*(1), 35–42.

Sternthal, M. J., Slopen, N., & Williams, D. R. (2011). Racial disparities in health: how much does stress really matter? 1. *Du Bois review: social science research on race*, *8*(1), 95-113.

Stone, K. W., Kintziger, K. W., Jagger, M. A., & Horney, J. A. (2021). Public Health Workforce Burnout in the COVID-19 Response in the US. *International Journal of Environmental Research and Public Health*, *18*(8), 4369.

Taquet, M., Luciano, S., Geddes, J. R., & Harrison, P. J. (2021). Bidirectional associations between COVID-19 and psychiatric disorder: retrospective cohort studies of 62 354 COVID-19 cases in the USA. *The Lancet Psychiatry*, *8*(2), 130-140.

Wiesman, J., & Baker, E. L. (2022). The Public Health Worker Mental Health Crisis—A Major Leadership Challenge. *Journal of Public Health Management and Practice*, *28*(1), 95-98.

Williamson, T., Goodwin, C. R., & Ubel, P. .. (2021). Minority Tax Reform — Avoiding Overtaxing Minorities When We Need Them Most. *New England Journal of Medicine*, *384*(20), 1877–1879.

Wu, H. H., Gallagher, R. J., Alshaabi, T., Adams, J. L., Minot, J. R., Arnold, M. V., Welles, B.F., Harp, R, Dodds, P. S., & Danforth, C. M. (2021). Say Their Names: Resurgence in the collective attention toward Black victims of fatal police violence following the death of George Floyd. *arXiv preprint arXiv:2106.10281*.

Yang, J. P., Nhan, E. R., & Tung, E. L. (2021). COVID-19 anti-Asian racism and race-based stress: A phenomenological qualitative media analysis. *Psychological trauma: theory, research, practice, and policy, 1-9*.

Yassine, B., Rojewski, J. & Ransom, M. (2022). Gender Inequity in the Public Health Workforce. *Journal of Public Health Management and Practice, 28* (2), E390-E396.

Appendix A

Letter of IRB Approval

Attachments:
• Exemption Notification - IRB ID: 22-129.pdf

TEACHERS COLLEGE
COLUMBIA UNIVERSITY

Teachers College IRB *Exempt Study Approval*

To: April Aviles
From: Myra Luna Lucero, Research Compliance Director
Subject: IRB Approval: 22-129 Protocol
Date: 03/09/2022

Thank you for submitting your study entitled, "*A CRISIS WITHIN A PUBLIC HEALTH CRISIS—U.S. PUBLIC HEALTH WORKERS' RACE-RELATED STRESS, TRAUMA, ANXIETY, DEPRESSION, AND BURNOUT DURING THE COVID-19 PANDEMIC: PREDICTING BURNOUT*;" the IRB has determined that your study is **Exempt** from committee review (Category **2**) on 03/09/2022.

Please keep in mind that the IRB Committee must be contacted if there are any changes to your research protocol. The number assigned to your protocol is **22-129**. Feel free to contact the IRB Office by using the "Messages" option in the electronic Mentor IRB system if you have any questions about this protocol.

Please note that your Consent form bears an official IRB authorization stamp and is attached to this email. Copies of this form with the IRB stamp must be used for your research work. Further, all research recruitment materials must include the study's IRB-approved protocol number.

As the PI of record for this protocol, you are required to:

- Use current, up-to-date IRB approved documents
- Ensure all study staff and their CITI certifications are on record with the IRB
- Notify the IRB of any changes or modifications to your study procedures
- Alert the IRB of any adverse events

You are also required to respond if the IRB communicates with you directly about any aspect of your protocol. Failure to adhere to your responsibilities as a study PI can result in action by the IRB up to and including suspension of your approval and cessation of your research.

You can retrieve a PDF copy of this approval letter from Mentor IRB.

Best wishes for your research work.

Sincerely,
Dr. Myra Luna Lucero
Research Compliance Director
irb@tc.edu

Appendix B

The Study Email

BLACK, INDIGENOUS & PEOPLE OF COLOR WHO ARE PUBLIC HEALTH WORKERS INVITED TO VOLUNTEER 12-15 MINUTES ANSWERING SURVEY QUESTIONS

About Their Experiences Working During the COVID-19 Pandemic

SHARE YOUR STORY!

FOR A 3 IN 250 CHANCE TO WIN 1 OF 3 $100 AMAZON GIFT CARDS

IRB Protocol Number 22-129

The Research Group on Disparities in Health (RGDH) within the Department of Health and Behavior Studies at Teachers College, Columbia University, in New York, New York is conducting a study. This study seeks those age 20 or above who worked within the U.S. public health workforce, or as a public health worker in any setting (e.g. government-affiliated, nonprofit, community-based, clinic or hospital setting, university-affiliated, etc.) within the past two years as a paid employee for a minimum of 6 months (i.e. during 2020 or 2021). We are seeking to understand the level of burnout and other experiences of public health workers during the COVID-19 pandemic. This includes the use of an online survey, and an opportunity for you to share your story (via open-ended questions) of any experiences with racism and discrimination at work that were unforgettable, stressful or traumatic—and that you felt were related to your race or ethnicity, as well as how it impacted you and how you coped. The present study may contribute to societal efforts to understand the experiences of Black, Indigenous and People of Color (BIPOC) public health workers during the past two years of the COVID-19 pandemic in the U.S. In addition, the study findings may lead to proposals for adequately meeting the needs of diverse public health workers—as a societal priority, since this workforce serves as the backbone of all emergency pandemic response efforts.

- Participation in this survey is limited to the first 250 volunteers
- Completing the online survey takes about 12-15 minutes
- Those who complete the survey will have a 3 in 250 chance of winning 1 of 3 $100 Amazon gift cards
- Please click on the link in the message below to view the informed consent, learn about your rights as a participant and proceed to the survey.
- We also invite you to forward this email to others who may be willing to volunteer, or send them a text message, or tweet using the message, below:

Black, Indigenous, and People of Color (BIPOC) in the U.S. Public Health Workforce invited to take Short 12-15 Minute Survey on stressful experiences working during the COVID-19 pandemic. Click on **https://tinyurl.com/PublicHealthWorker** to complete survey for a chance to win a $100 Amazon Gift Card

THANK YOU FOR YOUR PARTICIPATION!

If you have any questions or would like to have additional information about the study, please contact:

April Aviles, MPH, *Doctoral Candidate, Department of Health and Behavior Studies, Teachers College, Columbia University, Box 114, 525 W. 120th Street, New York, NY 10027; Ada2165@tc.columbia.edu*

BARBARA C. WALLACE, Ph.D., *Director, Research Group on Disparities in Health, Professor of Health Education, Clinical Psychologist, Department of Health and Behavior Studies, Teachers College, Columbia University, Box 114, 525 W. 120th Street, New York, NY 10027; bcw3@tc.columbia.edu; Study Contact Number: 267-269-7411*

Appendix C

The Study Text/Tweet

Black, Indigenous, and People of Color (BIPOC) in the U.S. Public Health Workforce invited to take Short 12-15 Minute Survey on stressful experiences working during the COVID-19 pandemic. Click on **https://tinyurl.com/PublicHealthWorker** to complete survey for a chance to win a $100 Amazon Gift Card

Appendix D

Informed Consent

Teachers College, Columbia University
525 West 120th Street
New York NY 10027
212-678-3000

INFORMED CONSENT

IRB Protocol Number 22-129

Protocol Title:
A Crisis Within a Public Health Crisis — U.S. Public Health Workers' Race-Related Stress, Trauma, Anxiety, Depression, and Burnout During the COVID-19 Pandemic: Predicting Burnout.

Principal Researcher: April Aviles, MPH
Teachers College, Columbia University
863-667-8491; Ada2165@tc.columbia.edu

INTRODUCTION You are invited to participate in this research study called the *"A Crisis Within a Public Health Crisis — U.S. Public Health Workers' Race-Related Stress, Trauma, Anxiety, Depression, and Burnout During the COVID-19 Pandemic: Predicting Burnout."*. You may qualify to take part in this research study if you: 1) are a public health worker; 2) are age 20 or above; 3) identify as Black, Indigenous or a Person of Color (e.g. Native American, Latinx, Asian, etc.); and, 4) worked within the U.S. public health workforce in any setting (e.g. government-affiliated, nonprofit, community-based, clinic or hospital setting, university-affiliated, etc.) within the past two years as a paid employee for a minimum of 6 months (i.e. during 2020 or 2021); and, 4) do not believe that COVID-19 is a hoax (i.e. so questions about the pandemic may be answered). This study is being done to learn about the level of burnout and other experiences of public health workers during the COVID-19 pandemic. **Approximately 250 people will participate in this study and it will take about 12-15 minutes of your time to complete.**

WHY IS THIS STUDY BEING DONE? This study is being done to obtain information that may contribute to societal efforts to understand the experiences of Black, Indigenous and People of Color (BIPOC) public health workers, in particular, during the past two years of the COVID-19 pandemic in the U.S. In addition, the study findings may lead to proposals for adequately meeting the needs of diverse public health workers—as a societal priority, since this workforce serves as the backbone of all emergency pandemic response efforts.

WHAT WILL I BE ASKED TO DO IF I AGREE TO TAKE PART IN THIS STUDY?
If you decide to participate in the study, you will answer a series of questions in an online survey. The questions will cover the following: your personal characteroistics and background, including your rating your health status; your assignments and experiences at work during the COVID-19 pandemic; about your stress at work before and during the pandemic; about any of

your experiences of burnout, stress, racism, discrimination and harassment at work perceived as related to race/ethnicity; and, open-ended questions at the end of the survey allow you to share your story of any experiences of racism and discrimination at work that you felt were related to your race/ethnicity, the impact, and how you coped.

WHAT POSSIBLE RISKS OR DISCOMFORTS CAN I EXPECT FROM TAKING PART IN THIS STUDY? The risks of study participation include the possibility that you may feel some discomfort from taking the survey or some stress due to some of the questions. However, your participation in this study is completely voluntary, and you can stop at any time.

WHAT POSSIBLE BENEFITS CAN I EXPECT FROM TAKING PART IN THIS STUDY? There is no direct benefit to you for participating in this study.

WILL I BE PAID FOR BEING IN THIS STUDY? You will not be paid to participate. However, when you complete the survey you will be invited to enter your email address and to hit a "submit" button—so that you are officially entered into a drawing for a chance to receive a prize (i.e., 1 of 3 bar coded Amazon gift certificates for $100). You do not have to enter the lottery drawing to complete the survey. Once you submit your email address, then it will automatically be entered into a private and secure data base that even the principal investigator cannot access. Once 250 people have completed the entire survey, you will have a 3 in 250 chance of winning 1 of 3 bar coded Amazon gift certificates for $100. The www.Amazon.com gift certificates will be sent to three randomly chosen e-mail accounts using a secure online program. This occurs without in any way linking your identity to the survey results. The principal investigator is not able to view any of the e-mail addresses to which the gift certificates are sent. Only the 3 winners will be contacted.

WHEN IS THE STUDY OVER? CAN I LEAVE THE STUDY BEFORE IT ENDS?
The study is over when you have completed the online survey. However, you can leave the study at any time even if you have not finished.

PROTECTION OF YOUR CONFIDENTIALITY The study does not involve collecting any of your personal identifying information, such as your name or address, allowing you to remain anonymous. (NOTE: Recall, as per what is above, you can elect to enter your e-mail address to enter the drawing for a chance to receive a prize. However, this occurs without in any way linking your identity to your survey answers, and the principal investigator cannot view any e-mail addresses.) Teachers College, Columbia University has determined that www.Qualtrics.com provides a secure platform for the online survey you will take. The survey data files will also be saved on the primary researcher's password protected computer. Regulations require that research data be kept for at least three years.

For quality assurance, the study team, and/or members of the Teachers College Institutional Review Board (IRB) may review the data collected from you as part of this study. Otherwise, all information obtained from your participation in this study will be held strictly confidential and will be disclosed only with your permission or as required by U.S. or State law.

HOW WILL THE RESULTS BE USED? The results of this study will be published in journals and presented at academic conferences. This study is being conducted as part of the doctoral dissertation of the principal investigator.

WHO CAN ANSWER MY QUESTIONS ABOUT THIS STUDY?
If you have any questions about taking part in this research study, you should contact the primary researcher, April Aviles at 863-667-8491or at Ada2165@tc.columbia.edu.
You can also contact the sponsor/supervisor of this research study, Dr. Barbara Wallace, at bcw3@tc.columbia.edu or 267-269-7411.

If you have questions or concerns about your rights as a research subject, you should contact the Institutional Review Board (IRB) (the human research ethics committee) at 212-678-4105 or email IRB@tc.edu. Or you can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY 10027. Box 151. The IRB is the committee that oversees human research protection for Teachers College, Columbia University.

Appendix E

Participants Rights

PARTICIPANT'S RIGHTS

- I have read the Informed Consent Form and have been offered the opportunity to discuss the form with the researcher.
- I have had ample opportunity to ask questions about the purposes, procedures, risks and benefits regarding this research study.
- I understand that my participation is voluntary. I may refuse to participate or withdraw participation at any time without penalty.
- The researcher may withdraw me from the research at his or her professional discretion. I understand that if I take the survey more than once I will be eliminated from the study.
- If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue my participation, the researcher will provide this information to me.
- Any information derived from the research study that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.
- I should receive a copy of the Informed Consent Form document. (I understand that I can download it).

By signing electronically, you agree to be in the study and confirm that you are a public health work, are Black, Indigenous, or a Person of Color (BIPOC) aged 20 or above, while you worked during the COVID-19 pandemic (2020, 2021) for at least 6 months.

Provide your electronic signature:

_____ **Date**: _____

Appendix F

Screening Tool

Teachers College, Columbia University
IRB Protocol Number 22-129

We are inviting those who worked within the U.S. public health workforce, or were public health workers in any setting during the COVID-19 pandemic to take a **Short 12-15 Minute Survey** on their stressful experiences while working. See if you qualify by answering the questions, below:

1-Have you worked for a city, state, or federal department of health—or within the U.S. public health workforce, or as a public health worker in any setting (e.g. government-affiliated, non-profit, community-based, clinic or hospital setting, university-affiliated, etc.) within the past two years as a paid employee? Specifically, in total, did you work for **a minimum of 6 months during 2020 or 2021**? ___Yes ___No

2- Are you at least 20 years of age? ___Yes ___No

3-Do you identify as Black or a Person of Color? Do you consider yourself to be any of the following: Black, African American, Indigenous, Native American, American Indian, Latinx, Hispanic, Asian, Asian Pacific Islander, etc.? **__No __Yes**

4-Some people believe that COVID-19 is a hoax, or is not real, so they would NOT be able to answer questions about COVID-19, as something that does not exist for them. Do you feel able to answer questions about your experiences during the COVID-19 Pandemic"? _Yes _No

If they answered YES to all of the above questions→ they access survey.
If they answered NO to any of the above questions→ they receive this message:
Thank you for your time, but, unfortunately, you are not qualified to participate in this study.

Feel free to invite others to participate in the study by forwarding the link to the survey to them

Black, Indigenous, and People of Color (BIPOC) in the U.S. Public Health Workforce invited to take Short 12-15 Minute Survey on stressful experiences working during the COVID-19 pandemic. Click on ***PublicHealthWorke****r to complete survey for a chance to win a $100 Amazon Gift Card*

Appendix G

The Study Survey

Survey on the Stressful Experiences of Those in the U.S. Public Health Workforce During the COVID-19 Pandemic

STUDY SURVEY

Teachers College, Columbia University
IRB Protocol Number 22-129

INSTRUCTIONS: Please answer the following questions as honestly as possible by either selecting your desired answer or by providing an answer in the text box.

Part I:

1-My gender is:
- a. Female
- b. Male
- c. Transgender

2-My age is: _____ [DROP DOWN MENU from 15 to 100—Exit any 17 & below)

3-I am currently:
- a. Single
- b. Married
- c. Separated
- d. Divorced
- e. Widowed
- f. In Domestic Partnership
- g. Living with Significant Other

4-How many children do you have? _____ [DROP DOWN MENU 0-10]

5. My race/ethnicity is as follows: (Please check all that apply or specify as you like.)
- a. American Indian / Alaska Native
- b. Asian (Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, or other Asian)
- c. Black / African American
- d. Hispanic / Latino (including Puerto Rican, Mexican, Mexican American, Chicano, Cuban, other Spanish)
- e. Middle Eastern / North African
- f. Native Hawaiian / Pacific Islander

g. White / Caucasian / European American → **EXIT page.**
h. Other group(s) (specify) _____

6-My skin color is

7-___Very Dark 6- ___Dark 5- ____Medium to Dark
4- ___Medium to Light 3-___Light 2-____Very Light 1___ White

[NOTE: create a continuous scale from light=1 to very dark=7 education
NOTE: prior research found the darker the skin tone, the higher the ability to perceive racism]

7-Were you born in the United States?

a. Yes
b. No

8-a-1. If you answered "Yes," what part of the US were you born in?

City_____ State_____

8-b-1. If you answered "No," please indicate the country in which you were born

Country of_____ [DROP DOWN MENU for countries]

9-My yearly household income is:

1-Less than $10,000
2-$10,000 to $19,000
3-$20,000 to $39,000
4-$40,000 to $49,000
5-$50,000 to $99,999
6-$100,000 to $199,999
7-$200,000 to $299,000
8-$300,000 to $399,000
9-$400,000 to $499,000
10-$500,000 to $799,000
11-$800,000 or More
__I do not know
[NOTE: create a continuous scale from low=1 category to high=11 category; create a mean category]

10-My highest education level/degree obtained is:

1__Some high school, or less
2__High school graduate, or GED
3__Some college credit, no degree
4__Associate degree or technical degree/training (e.g.: AA, AS, Certificate, etc.)
5__Bachelor's degree (e.g. BA, BS)
6__Master's degree (e.g. MA, MS, MEd)
7__Doctorate or Professional degree (e.g. PhD, EdD, DrPH, MD, DDS, DMD, PharmD)
[NOTE: create a continuous scale from low=1 to high=7 education]

11-My employment status is:

a. Full Time

b. Part Time
c. Per Diem
d. Currently Unemployed (explain why_____)
e. Currently Retired (explain why___)

[NOTE: create a dichotomous variable, employed yes=1; no=0]

12-During the COVID-19 pandemic, **<u>the ONE particular position</u> I held in the U.S. Public Health Workforce for a minimum of 6 months—that I am keeping in mind, as I answer questions** in this survey—**was located within**

__a city health department
__a state health department
__a federal health department (e.g. U.S. Department of Health & Human Services, etc.—or any federal division or office)
__some other government-affiliated setting
__a non-profit organization
__a community-based organization
__a clinic or hospital setting
__a university affiliated setting
__other (please explain_____)

13-During the COVID-19 pandemic, I worked in the following areas or situations: **(check all that apply)**

__COVID-19 testing/contact tracing-related work
__COVID-19 vaccination-related work
__Dedicated COVID-19 unit set up for pandemic
__Isolation area (i.e., created for COVID-19 positive patients)
__Special Field Hospital Established for Pandemic
__Travelled out of state to assist with COVID-19 patients
__ Other (please explain_____)

14- During the COVID-19 pandemic, I experienced as part of my work, as follows: **(check all that apply)**

___working long hours, or overtime (greater than 40 hours 5 days a week)
___working weekends (beyond a 5 day work week)
___conducting surveillance
___laboratory work
___data analysis
___time-consuming paperwork
___higher caseloads
___community outreach
___health education—messages, materials, dissemination to public
___forced to defer other public health priorities to focus on pandemic
___political pressure
___threats
___wanting to quit / stop working, or retire
___actually quitting/ stopping work, or retiring

15-For **how many years** have you been working within the field of public health (i.e. for a city, state, or federal department of health—or within the U.S. public health workforce, or as a public health worker in any setting [e.g. non-profit agency, community organization, hospital system, university-affiliated position, etc.]?

k. 1 year or less
l. 2-4 years
m. 5-7 years
n. 8-10 years
o. 11-15 years
p. 16-20 years
q. 21-25 years
r. 26-30 years
s. more than 30 years
t. Not applicable/I do not work in the field of public health or within the U.S. Public Health Workforce **[→ EXCLUDE from study→ exit page]**

16-During the COVID-19 pandemic, did you also volunteer in the community—or do pro bono work as your service? For example, did you volunteer at a church testing site, or food bank, or do grocery shopping for neighbors, or help get funding/wrote a grant (e.g. for a non-profit to become a testing site), etc.? __Yes __No. If, Yes→,

17-How many hours per week did you volunteer, on average, during the COVID-19 pandemic or at the height of a surge? **[DROP DOWN MENU 1-100]**

Part II:

1-Please check, below, what best describes you:

__I have now, or had COVID-19 at some point in the past two years **__Yes __No __Not Sure**
__I currently have, or had long-COVID-19
__Yes __No __Not Sure
__I think COVID-19 is a hoax; it does not exist. So, I cannot answer questions about COVID-19. **__Yes __No __Not Sure** **<u>NOTE: If select YES→exclude from study</u>**

2-I have also had, or currently have, the following (please check all that apply)

__lung disease (e.g. asthma, COPD, etc.)
__heart disease (e.g. hypertension/high blood pressure, prior stroke, etc.)
__diabetes
__obesity __Cancer __HIV/AIDS
__Not Applicable, none apply to me

3-My current height (feet) [DROP DOWN BOX, 4-9]

4-My current height (inches) [DROP DOWN BOX, 0-11]

5-My current weight (in pounds) [DROP DOWN BOX, 70-400]

[7, 8, 9 – for calculation of BMI)

6-In the past 2 years, during the COVID-19 pandemic (please check all that apply)
__My weight stayed about the same __I gained weight __I lost weight

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For BEFORE the COVID-19 pandemic:
7-I rate my overall **physical health** status as
__1-Very poor __2-Poor __3-Fair __4-Good __5-Very Good __6-Excellent

For NOW, DURING the COVID-19 pandemic:
8-I rate my overall **physical health** status as
__1-Very poor __2-Poor __3-Fair __4-Good __5-Very Good __6-Excellent

----------[paired t-test with 7 and 8]-----

For BEFORE the COVID-19 pandemic:
9-I rate my overall **mental/emotional health** status as
__1-Very poor __2-Poor __3-Fair __4-Good __5-Very Good __6-Excellent

For NOW, DURING the COVID-19 pandemic:
10-I rate my overall **mental/emotional health** status as
__1-Very poor __2-Poor __3-Fair __4-Good __5-Very Good __6-Excellent

----------[paired t-test with 9 and 10]-----

Part III:

For BEFORE the COVID-19 pandemic:
1- I rate my overall stress experienced **at work, or professionally**

0	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
No Stress										*Maximum/ Extreme Stress*

For NOW, DURING the COVID-19 pandemic
2- I rate my overall stress experienced **at work, or professionally**

0	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
No Stress										*Maximum/ Extreme Stress*

----------[paired t-test with 1 and 2]-----

For BEFORE the COVID-19 pandemic:

3- I rate my overall stress experienced **at home, or in my personal life**

0	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
No Stress										*Maximum/ Extreme Stress*

For NOW, DURING the COVID-19 pandemic

4- I rate my overall stress experienced **at home, or in my personal life**

0	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
No Stress										*Maximum/ Extreme Stress*

----------[paired t-test with 3 and 4]-----

Part IV:

1-I sometimes say things that I think will please people, or what I think they want to hear—versus the honest truth, which might be difficult or painful for other people to hear and accept, or might lead them to judge me harshly…

I rate myself on a scale of 0 to 10, as follows:

0	1	2	3	4	5	6	7	8	9	10
0-I am not like this at all										10-I am like this all the

---

Part V:

Having SOCIAL SUPPORT means having people in your life who provide the following kinds of support and assistance: you can ask them for advice, or receive words of encouragement; get money or get food in an emergency; or have a place to temporarily wait for help, or stay or live in an emergency.

1-Please indicate the extent to which you experience SOCIAL SUPPORT in your life at this time (i.e., right now):

1. I have no one like this in my life right now
2. I have at least 1 one person like this in my life right now
3. I have at least 2 people like this in my life right now
4. I have 3-5 people like this in my life right now
5. I have 6 or more people like this in my life right now

Part VI:

Instructions: Below you find a series of statements with which you may agree or disagree. Using the scale, please respond to each item.

1-(1)-I always find new and interesting aspects in my work
__1-strongly agree __2-agree __3-disagree __ 4-strongly disagree
2-(2)-There are days when I feel tired before I arrive at work
__1-strongly agree __2-agree __3-disagree __ 4-strongly disagree
3-(3)-It happens more and more often that I talk about my work in a negative way
__1-strongly agree __2-agree __3-disagree __ 4-strongly disagree
4-(4)-After work, I tend to need more time than in the past in order to relax and feel better
__1-strongly agree __2-agree __3-disagree __ 4-strongly disagree
5-(5)-I can tolerate the pressure of my work very well
__1-strongly agree __2-agree __3-disagree __ 4-strongly disagree
6-(6)Lately, I tend to think less at work and do my job almost mechanically
__1-strongly agree __2-agree __3-disagree __ 4-strongly disagree
7-(9)-Over time, one can become disconnected from this type of work
__1-strongly agree __2-agree __3-disagree __ 4-strongly disagree
8-(10)-After working, I have enough energy for my leisure activities
__1-strongly agree __2-agree __3-disagree __ 4-strongly disagree
9-(12)-After my work, I usually feel worn out and weary
__1-strongly agree __2-agree __3-disagree __ 4-strongly disagree
10-(15)-I feel more and more engaged in my work
__1-strongly agree __2-agree __3-disagree __ 4-strongly disagree

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Part VII:

Please read the statement and then answer the question that follows.

Insomnia is difficulty sleeping, or sleep interruption, and may involve trouble falling asleep, remaining asleep, and/or early awakening without being able to fall back asleep.

1-Do you think you experienced any **insomnia** in the past year of 12 months?
0-No___
1-Yes, a very mild level___
2-Yes, a moderate level___
3-Yes, a severe level___
4-Yes, a very severe level___

Depression is an overwhelming feeling of intense sadness. It can include feeling helpless, hopeless, and worthless. It can sometimes be expressed through angry outbursts, as well as bursting into tears. There can also be loss of appetite, or an increase in appetite. There can also be difficulty sleeping or oversleeping. In addition, there can be a loss of interest in your activities. Such a depression can last for days or weeks. This goes beyond typical feelings of sadness, such as following some disappointment.

2-Do you think you experienced any **depression** in the past year or 12 months?

0-No___
1-Yes, a very mild level___
2-Yes, a moderate level___
3-Yes, a severe level___
4-Yes, a very severe level___

Anxiety is an overwhelming and intense feeling of nervousness, fear, tension, powerlessness, and apprehension. It can reach a peak so there are moments of panic where one's heart may be pounding/beating quickly, or there is rapid breathing/difficulty breathing. A person may also experience sweating and trembling. Sometimes it can be so intense that one has trouble concentrating/thinking, leaving the house, or trouble being around other people. The fear can be very intense, and one can feel like there is some impending danger. This goes beyond typical feelings of nervousness, such as when anticipating a new situation, or something unexpected, or unknown.

3-Do you think you experienced any **anxiety** in the past year or 12 months?
0-No___
1-Yes, a very mild level___
2-Yes, a moderate level___
3-Yes, a severe level___
4-Yes, a very severe level___

Trauma is the most shocking and horrible thing to ever happen to a person (unless prior trauma)—such as: serious accident or fire; seeing someone seriously injured or die; war; earthquake/flood; physical/sexual abuse; or, a loved one's homicide, suicide, or other tragedy. Trauma symptoms *may* include: anxiety; nightmares; feeling numb, unable to love, and detached with no interest in spending time with others; guilt about surviving if others did not; flashbacks from trauma as images that unexpectedly "pop up" in the mind; avoiding reminders of trauma; and problems concentrating.

4-Do you think you experienced any **trauma** in the past year or 12 months?
0-No___
1-Yes, a very mild level___
2-Yes, a moderate level___
3-Yes, a severe level___
4-Yes, a very severe level___

Receipt of Counseling
5-In the past year, did you seek out any kind of counseling or advice for any insomnia, depression, anxiety, or trauma—such as from a mental health professional or other helper?
a. No
b. Yes
c. Not Applicable/ No experience of depression/anxiety/trauma

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Part VIII:

Instructions: The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate with a check how often you felt or thought a certain way.

1. In the last month, how often have you felt that you were unable to control the important things in your life?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

2. In the last month, how often have you felt confident about your ability to handle your personal problems?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

3. In the last month, how often have you felt that things were going your way?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

4. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

___0=never ___1=almost never ___2=sometimes ___3=fairly often ___4=very often

---

Part IX:

Instructions: Here are some situations that can arise at work. Please tell me how often you have experienced them during the LAST 12 MONTHS.

1. How often are you UNFAIRLY given the jobs that no one else wants to do?

___1=once a week or more ___2=a few times a month ___3= a few times a year ___4=less than once a year ___5=never

2. At work, when different opinions would be helpful, how often is your opinion not asked for?

___1=once a week or more ___2=a few times a month ___3= a few times a year ___4=less than once a year ___5=never

3. How often are you watched more closely than others?

___1=once a week or more ___2=a few times a month ___3= a few times a year ___4=less than once a year ___5=never

4-How often do you hear racial or ethnic slurs or jokes at work, including any that may be directed at you?

___1=once a week or more ___2=a few times a month ___3= a few times a year ___4=less than once a year ___5=never

5-(8). How often do you feel that you have to work twice as hard as others work?

___1=once a week or more ___2=a few times a month ___3= a few times a year ___4=less than once a year ___5=never

6-(9). How often do you feel that you are ignored or not taken seriously by your boss?

___1=once a week or more ___2=a few times a month ___3= a few times a year ___4=less than once a year ___5=never

7-(10). How often do others assume that you work in a lower status job than you do and treat you as such?

___1=once a week or more ___2=a few times a month ___3= a few times a year ___4=less than once a year ___5=never

8-(11). How often has a coworker with less experience and fewer qualifications gotten promoted before you?

___1=once a week or more ___2=a few times a month ___3= a few times a year ___4=less than once a year ___5=never

9-(12). How often have you been unfairly humiliated in front of others at work?

___1=once a week or more ___2=a few times a month ___3= a few times a year ___4=less than once a year ___5=never

---

Part X:

Instructions: In dealing with these day-to-day experiences that you just told me about, how often do you:

1-Think in advance about the kinds of problems you are likely to experience?

___1=very often ___2=fairly often ___3= not too often ___4=hardly ever ___5=never

2. Try to prepare for possible insults before leaving home?

___1=very often ___2=fairly often ___3= not too often ___4=hardly ever ___5=never

3-(originally 4) Carefully watch what you say and how you say it?

___1=very often ___2=fairly often ___3= not too often ___4=hardly ever ___5=never

4-(originally 5) Carefully observe what happens around you?

___1=very often ___2=fairly often ___3= not too often ___4=hardly ever ___5=never

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Part XI: Cultural Taxation Scale (CTS-4)

Instructions: At work, I feel or have felt:

1. Pressured to take on other extra work that is uncompensated because of my racial identity.

__1= strongly disagree __2= disagree__3=neither agree nor disagree __4=agree __ 5=strongly agree

2. I have been approached by colleagues for help because of my racial identity.

__1= strongly disagree __2= disagree__3=neither agree nor disagree __4=agree __ 5=strongly agree

3. I am involved in more 'unofficial' service activities (e.g. mentoring colleagues, advising colleagues, etc.) than my colleagues because of my racial identity.

__1= strongly disagree __2= disagree__3=neither agree nor disagree __4=agree __ 5=strongly agree

4. I take on more service activities (e.g. committee assignments, diversity-related work, etc.) than my colleagues because of my racial identity.

__1= strongly disagree __2= disagree__3=neither agree nor disagree __4=agree __ 5=strongly agree

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Part XII:

Lastly, please answer the following open-ended questions, allowing you to freely share.

Note: One word or very brief answers are acceptable. And, if you did not have any experiences with racism and discrimination AT WORK, you can type NA for Not Applicable in the text box.

1- Please briefly describe any experiences with racism and discrimination AT WORK that were unforgettable, stressful or traumatic—and that you felt were related to your race or ethnicity—If you had such experiences.
[500 WORD TEXT BOX]

2- If you had experiences of racism and discrimination AT WORK, please briefly describe any reactions you may have had to them, including how it impacted you, or changed you, or affected your overall life.
[500 WORD TEXT BOX]

3-Finally, if you had experiences of racism and discrimination AT WORK, please share how you coped or dealt with those experiences.
[500 WORD TEXT BOX]

THANK YOU!
END OF SURVEY

SHARE WITH OTHERS THE LINK THAT LED YOU TO THIS STUDY!

*Black, Indigenous, and People of Color (BIPOC) in the U.S. Public Health Workforce invited to take Short 12-15 Minute Survey on stressful experiences working during the COVID-19 pandemic. Click on **PublicHealthWorke**r to complete survey for a chance to win a $100 Amazon Gift Card*

COUNSELING RESOURCES

If you need immediate assistance, please refer to the following contact information.

You can download this page with contact information for counseling resources, OR SKIP TO THE LINK, BELOW, FOR ENTERING YOUR EMAIL INTO THE LOTTERY DRAWING

FOR A CHANCE TO RECEIVE A PRIZE (i.e., 1 of 3 bar coded Amazon gift certificates for $100).

1-For Free Texting Crisis Help:

- **You text 741741** when in crisis as a service available 24 hours a day, 7 days a week. You will reach a live trained Crisis Counselor who will respond quickly. The Crisis Counselor helps to move you from a hot moment to a cool calm and safe state, using effective active listening and suggested referrals—all using the Crisis Text Live's secure platform.
- If you have a phone plan with AT&T, T-Mobile, Sprint, or Verizon, texting to 741741 is free of charge.

2-Contact a Crisis Intervention Hotline for Immediate Help and Referrals:

https://www.allaboutcounseling.com/crisis_hotlines.htm

Examples of Crisis Intervention Hotlines:

- If you are in immediate danger, call 911
- National Suicide Hotline: 800-SUICIDE (800-784-2433)
- National Suicide Prevention Lifeline: 800-273-TALK (800-273-8255)
- Grief Recovery Helpline: 800-445-4808

3-Seek Out Top Rated, Low-Cost Online Counseling Services:

https://www.e-counseling.com/tlp/therapy-1/?imt=1

- Please see a list of the top rated online counseling services—with the average weekly cost as low as $60.

4-Seek Out Affordable Online Counseling:

https://www.betterhelp.com/about/

- Access affordable and convenient online counseling with professionals.

5-Seek Help from the Study Sponsor by E-Mail or Phone: bcw3@tc.columbia.edu or 267-269-7411 (i.e., the study contact number)

- You may contact the study sponsor, Dr. Barbara Wallace, receiving help with referrals. Dr. Wallace is a licensed psychologist with experience working with the study population.

Remember, please share the invitation to join this study with others who may qualify, sending them the study link:

*Black, Indigenous, and People of Color (BIPOC) in the U.S. Public Health Workforce invited to take Short 12-15 Minute Survey on stressful experiences working during the COVID-19 pandemic. Click on **PublicHealthWorker** to complete survey for a chance to win a $100 Amazon Gift Card*